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Universidad del Perú. Decana de América

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Facultad de Farmacia y Bioquímica

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**Actividad antibacteriana y anti-biopelícula de los
aceites esenciales de *Citrus paradisi*, *Juglans neotropica*
Diels, *Schinus molle* L. y *Tagetes elliptica* Smith**

TESIS

Para optar el Grado Académico de Doctor en Farmacia y
Bioquímica

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ACTA DE SUSTENTACIÓN DE TESIS PARA OPTAR
AL GRADO ACADÉMICO DE DOCTOR EN FARMACIA Y BIOQUÍMICA

Siendo las **09:00 horas del 06 de abril de 2022** se reunieron mediante la plataforma de Google Meet de la Unidad de Posgrado de la Facultad de Farmacia y Bioquímica de la Universidad Nacional Mayor de San Marcos, el Jurado Evaluador de Tesis, presidido por el Dr. Víctor Crispín Pérez e integrado por los siguientes miembros: Dra. María Elena Salazar Salvatierra (Asesora), Dra. Mirtha Roque Alcarraz y Dr. Jorge Luis López Bulnes; para la sustentación oral y pública de la tesis intitulada: "**Actividad antibacteriana y anti-biopelícula de los aceites esenciales de *Citrus paradisi*, *Juglans neotropica* Diels, *Schinus molle* L. y *Tagetes elliptica* Smitt**", presentado por el Magíster en Microbiología **Julio Reynaldo Ruiz Quiroz**.

Acto seguido se procedió a la exposición de la tesis, con el fin de optar al Grado Académico de **Doctor en Farmacia y Bioquímica**. Formuladas las preguntas, éstas fueron absueltas por el graduando.

A continuación, el Jurado Evaluador de Tesis procedió a la calificación, la que dio como resultado el siguiente calificativo:

DIECINUEVE (19) EXCELENTE

Luego, el Presidente del Jurado recomienda que la Facultad proponga que se le otorgue al Magíster en Microbiología **Julio Reynaldo Ruiz Quiroz** el Grado Académico de **Doctor en Farmacia y Bioquímica**.

Siendo las **10:30 AM** hrs. se levanta la sesión.

Se extiende el acta en Lima, a las **10:35** hrs. del **06** de abril de 2022.

Dr. Víctor Crispín Pérez (P.P., D.E.)
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Observaciones:

DEDICATORIA

A Dios nuestro más importante guía, por haberme dado la vida y el valor necesario para afrontarla.

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RESUMEN

Objetivos: Determinar la actividad antibacteriana y antibiopelícula *in vitro* de los aceites esenciales (AEs) de cáscara de *Citrus paradisi*, y de hojas de *Juglans neotropica* Diels, *Schinus molle* L. y *Tagetes elliptica* Smith contra *Staphylococcus aureus*, *Staphylococcus epidermidis* y *Pseudomonas aeruginosa*, y la composición química de los AEs mencionados. **Métodos:** la actividad antibacteriana, antibiopelícula y composición química de los AEs fueron determinados por microdilución en placa, microdilución en placa modificado, y cromatografía de gases/espectrometría de masas (CG/EM) respectivamente. **Resultados:** En los AEs de *C. paradisi* se encontraron 21 componentes, en *J. neotropica* Diels 36 componentes, en *S. molle* 37 componentes, y en *T. elliptica* Smith 33 componentes; siendo sus principales componentes D-Limoneno (83,45%), α -pineno (39,88%), α -felandreno y β -mirceno (71,26%) respectivamente. La concentración mínima inhibitoria (CMI) para los AEs de *C. paradisi*, *S. molle* L. y *T. elliptica* Smith fueron menores a 2,5 y 5 $\mu\text{L}/\text{mL}$ para *S. aureus* y *S. epidermidis* respectivamente, con la excepción de *J. neotropica* Diels ($> 40 \mu\text{L}/\text{mL}$); y todos fueron inactivos contra *P. aeruginosa*. Las concentraciones mínimas de erradicación de biopelícula (CMEBs) para los AEs testeados fueron $\leq 40 \mu\text{L}/\text{mL}$ para biopelículas de *S. epidermidis*, y para biopelículas de *S. aureus* fueron menores de 30 $\mu\text{L}/\text{mL}$, con excepción de *Citrus paradisi* que fue $> 40 \mu\text{L}/\text{mL}$; y todos los aceites fueron inactivos contra biopelículas de *P. aeruginosa*. **Conclusiones:** Los AEs estudiados tuvieron buena actividad antibacteriana y relativa actividad antibiopelícula contra *S. aureus* y *S. epidermidis* y ningún AE tuvo actividad contra *P. aeruginosa*.

Palabras clave: antibacteriano, antibiopelícula, *Citrus paradisi*, *Juglans neotropica*, *Schinus molle*, *Tagetes elliptica*, aceite esencial.

ABSTRACT

Objectives: To determine the in vitro antibacterial and antibiofilm activity of essential oils (EOs) from the peel of *Citrus paradisi*, and from the leaves of *Juglans neotropica* Diels, *Schinus molle* L. and *Tagetes elliptica* Smith against *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Pseudomonas aeruginosa*, and the chemical composition of the mentioned EOs. **Methods:** The antibacterial activity, antibiofilm activity, and chemical composition of EOs were determined by microplate dilution, modified microplate dilution, and gas chromatography/mass spectrometry (GC/MS), respectively. **Results:** In the EOs of *C. paradisi* 21 components were found, in *J. neotropica* Diels 36 components, in *S. molle* 37 components, and in *T. elliptica* Smith 33 components; being its main components D-Limonene (83.45%), α -pinene (39.88%), α -phellandrene and β -myrcene (71.26%) respectively. The minimum inhibitory concentration (MIC) for EOs from *C. paradisi*, *S. molle* L. and *T. elliptica* Smith were less than 2.5 and 5 $\mu\text{L}/\text{mL}$ for *S. aureus* and *S. epidermidis*, respectively, with the exception of *J. neotropica* Diels (>40 $\mu\text{L}/\text{mL}$); and all were inactive against *P. aeruginosa*. The minimum biofilm eradication concentrations (MBECs) for the EOs tested were ≤ 40 $\mu\text{L}/\text{mL}$ for *S. epidermidis* biofilms, and for *S. aureus* biofilms they were less than 30 $\mu\text{L}/\text{mL}$, with the exception of *Citrus paradisi* which was $> 40\mu\text{L}/\text{mL}$; and all oils were inactive against *P. aeruginosa* biofilms. **Conclusions:** The studied EOs had good antibacterial activity and relative antibiofilm activity against *S. aureus* and *S. epidermidis* and none of the EOs had activity against *P. aeruginosa*.

Key words: antibacterial, antibiofilm, *Citrus paradisi*, *Juglans neotropica*, *Schinus molle*, *Tagetes elleptica*, essential oil.

RESUMO

Objetivos: Determinar a atividade antibacteriana e antibiofilme in vitro dos óleos essenciais (OEs) da casca de *Citrus paradisi* e das folhas de *Juglans neotropica* Diels, *Schinus molle* L. e *Tagetes elliptica* Smith contra *Staphylococcus aureus*, *Staphylococcus epidermidis* e *Pseudomonas aeruginosa*, e a composição química dos OEs mencionados. **Métodos:** A atividade antibacteriana, atividade antibiofilme e composição química dos OEs foram determinadas por diluição de microplaca, diluição de microplaca modificada e cromatografia gasosa/espectrometria de massa (GC/MS), respectivamente. **Resultados:** Nos OEs de *C. paradisi* foram encontrados 21 componentes, em *J. neotropica* Diels 36 componentes, em *S. molle* 37 componentes e em *T. elliptica* Smith 33 componentes; sendo seus principais componentes D-Limoneno (83,45%), α -pineno (39,88%), α -felandreno e β -mirceno (71,26%), respectivamente. A concentração inibitória mínima (CIM) para OEs de *C. paradisi*, *S. molle* L. e *T. elliptica* Smith foi inferior a 2,5 e 5 $\mu\text{L/mL}$ para *S. aureus* e *S. epidermidis*, respectivamente, com exceção de *J. neotropica* Diels ($>40 \mu\text{L/mL}$); e todos foram inativos contra *P. aeruginosa*. As concentrações mínimas de erradicação de biofilme (MBECs) para os OEs testados foram $\leq 40 \mu\text{L/mL}$ para biofilmes de *S. epidermidis*, e para biofilmes de *S. aureus* foram inferiores a 30 $\mu\text{L/mL}$, com exceção de *Citrus paradisi* que foi $> 40\mu\text{L/ ml}$; e todos os óleos foram inativos contra biofilmes de *P. aeruginosa*. **Conclusões:** Os OEs estudados apresentaram boa atividade antibacteriana e relativa atividade antibiofilme contra *S. aureus* e *S. epidermidis* e nenhum dos OEs apresentou atividade contra *P. aeruginosa*.

Palavras chave: antibacteriano, antibiofilme, *Citrus paradisi*, *Juglans neotropica*, *Schinus molle*, *Tagetes elleptica*, óleo essencial.

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CAPÍTULO I. INTRODUCCIÓN

Las infecciones representan un serio problema de sanidad y una de las razones primordiales de enfermedad y muerte en el mundo, especialmente como consecuencia de la disminución de la eficacia de los antibióticos. (1). Los microorganismos viven en la naturaleza generalmente agrupados, formando biopelículas, adheridos a una superficie. Costerton definió biopelículas como: «una comunidad de microorganismos inmersa en un medio líquido, caracterizada por microorganismos que se hallan unidas a un substrato o superficie, o unas a otras, que se encuentran embebidas en una matriz extracelular producida por ellas mismas, y que muestran un fenotipo alterado en cuanto al grado de multiplicación celular o la expresión de sus genes» (2).

Los microorganismos que forman una biopelícula pueden ser monoespecie o poliespecies distribuidos en varios vecindarios. Los elementos que unen a una biopelícula son una matriz de polisacáridos, ADN extracelular y proteínas, que forman una sustancia polimérica extracelular (3). Vivir en una comunidad les dá muchos beneficios. La proximidad física de otras células mejora las interacciones sinérgicas, incluso entre miembros de diferentes especies: uso combinado de subproductos metabólicos, mejor tolerancia a los agentes antibacterianos, protección contra cambios ambientales, transferencia horizontal de material genético entre microorganismos y protección contra depredadores o el sistema inmunológico del huésped (4). Por otro lado la gran mayoría de infecciones hospitalarias asociadas a bacterias multidrogorresistentes se podrían deber a que son producidas por biopelículas, pero las pruebas de susceptibilidad rutinarias se realizan como si fueran microorganismos planctónicos (3).

Un factor de virulencia muy importante de *Staphylococcus aureus* son las biopelículas y están relacionadas en infecciones en superficies bióticas (otitis media, infecciones osteoarticulares, etc.) y también en aquellas ligadas a dispositivos médicos, como la endocarditis de válvula mitral. Una característica inherente de la formación de biopelícula en estafilococos es la producción del polisacárido intercelular adhesina. En la formación y la regulación de la biopelícula están involucrados algunos genes de biosíntesis (icaADBC) y reguladores (IcaR, sar, agr, rbf, sigma B) (5).

Las biopelículas relacionadas a *Pseudomonas aeruginosa*, sobre todo en pacientes con fibrosis quística representan un importante problema en el aumento de su resistencia antimicrobiana (6).

De continuar la actual situación referente al aumento de la resistencia a los antimicrobianos y en particular cuando las bacterias como *S. aureus* y *P. aeruginosa* se encuentran bajo la forma de biopelícula, se pronostica un aumento de resistencia causada por estas bacteria (1). En nuestro país en pacientes hospitalizados, la proporción de resistencia del *S. aureus* a la oxacilina es del 84%, a penicilina 99%, a eritromicina 80% y a clindamicina fue 75%. La resistencia antimicrobiana de *P. aeruginosa* en pacientes hospitalizados en el Perú, en el año 2012, fue elevado tanto para la cefoperazona/sulbactam, imipenem y ciprofoxacino con 60%; gentamicina con 58%; meropenem con 56%; cefepime con 54%, ceftazidima con 50% y amikacina con 46% (7). Esto lleva a pensar que esta resistencia en UCI, podría deberse a la formación de biopelículas en los diversos dispositivos médicos usados en estas salas.

En países en desarrollo, como el Perú, las plantas medicinales son todavía la principal arma terapéutica de la medicina tradicional. Las plantas peruanas tienen gran potencial para el descubrimiento de nuevos antimicrobianos. Se estima que hay 25000 especies de plantas conocidas en el Perú, con 17144 angiospermas y gimnospermas, de las que el 31,3 % (5354) son especies nativas.(8).

1.1. Objetivos de la investigación

1.1.1. Objetivo General

Determinar la actividad antibacteriana y antibiopelícula *in vitro* de los AEs de *Citrus paradisi*, *Juglans neotropica* Diels, *Schinus molle* L. y *Tagetes elliptica* Smith contra *Staphylococcus aureus*, *Staphylococcus epidermidis* y *Pseudomonas aeruginosa*.

1.1.2. Objetivos Específicos

- Determinar la composición química de AEs las especies en estudio por cromatografía de gases acoplado a espectroscopia de masas.
- Determinar la Concentración Mínima Inhibitoria (CMI) de los AEs de la cáscara de *Citrus paradisi* contra *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.
- Determinar la CMI del AE de las hojas de *Juglans neotropica* Diels contra *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.
- Determinar la CMI del AE de las hojas de *Schinus molle* L. contra *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.

- Determinar la CMI del AE de las hojas de *Tagetes elliptica* Smith contra *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.
- Determinar la Concentración Mínima de Erradicación de Biopelícula (CMEB) de los AEs de la cáscara de *Citrus paradisi* contra biopelículas de *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.
- Determinar la CMEB del AE de hojas de *Shinus molle* L. contra biopelículas de las bacterias estudiadas en la presente tesis.
- Determinar la CMEB del AE de las hojas de *T. elliptica* Smith contra biopelículas de las bacterias estudiadas en la presente tesis.

CAPÍTULO II. MARCO TEÓRICO

2.1. Antecedentes

Nuestro país es uno de los de mayor diversidad en fauna y flora, en el que está muy arraigado culturalmente el uso de las plantas medicinales. Los nativos peruanos tienen conocimientos ancestrales sobre los usos medicinales de las plantas que pueblan su territorio. Pero lamentablemente una gran parte de estas plantas no tienen estudios fitoquímicos o farmacológicos que avalen sus propiedades, por lo que el estudio científico de las mismas podría llevar revelar una gran cantidad de nuevos compuestos con posible uso terapéutico (9).

Los aceites esenciales poseen una gran variedad de actividades bioactivas terapéuticas, manifestando propiedades antiinflamatorias (10), antioxidantes (11), y anticancerígenos (12); así como actividad biocida contra una variedad de microorganismos y en el campo de la cosmética (13).

El “nogal peruano” *Juglans neotropica* Diels se encuentra en el ande peruano y han reportado que su fracción hidroalcohólica de su corteza tuvo efecto frente a biopelículas de *S. epidermidis*, mientras que su extracto etanólico tuvo efecto frente a estafilococos (14). Por otro lado, Rather et al. demostraron actividad antibacteriana del AE de *Juglans regia* contra *P. aeruginosa* y estafilococos (*S. aureus* y *S. epidermidis*) con CMI de 31,25 µg/mL y 15,62 µg/mL respectivamente (15).

Schinus molle “molle” se encuentra prácticamente en todo el ande del Perú, pero con mayor frecuencia entre los 100 a 3200 msnm de la vertiente occidental, así como en los valles y las laderas interandinas (16). Estudios previos reportan actividad antibacteriana de su aceite esencial, con CMI de 63 y 125 µg/mL contra *S. aureus* y *S. epidermidis* (17), además se han reportado actividad contra *Streptococcus pyogenes* (18); por otro lado también se reportaron efectos del molle contra la levadura oportunista *Candida albicans* (16).

2.2. Aspectos teóricos

2.2.1. *Citrus paradisi* “toronja”

Los cítricos se incluyen en la familia de las Rutaceas, con 33 géneros, de los que *Fortunella*, *Poncirus* y *Citrus* tienen frutos cítricos, al igual que sus híbridos (19). La “toronja” según APG IV 2016 pertenece a la Clase Equisetopsida (anexo 1), además según la clasificación APG III 2009 se ubica en el clado malvidas (20).

Clasificación taxonómica

Clado	: Malvidas
Orden	: Sapindales
Familia	: Rutaceae
Género	: <i>Citrus</i>
Especie	: <i>Citrus x paradisi</i> Macfad

La cáscara del género *Citrus* contiene flavonoides (flavanonas y polimetoxiflavonas), observados en especies como *Citrus paradisi* “toronja” y *Citrus sinensis* “naranja”, dentro de los flavonoides tenemos a la narangina y hesperidina, respectivamente, también se advierten la presencia de flavonas como la nobiletina y tangeretina. Estudios *in vitro* revelaron que estos compuestos posiblemente actúan como agentes antifúngicos contra *Penicillium digitatum*, las polimetoxiflavonas son más activas que las flavanonas (21). En el género *Citrus* encontramos tres tipos de flavonoides como: flavanonas, flavonas, flavonoles, relacionados con la reducción del riesgo de padecer enfermedades coronarias, prevenir el cáncer y capturar radicales libres, también se describen actividades antiinflamatorias y antimicrobianas (22,23).

2.2.2. *Juglans neotropica* Diels “nogal”

La familia Juglandaceae incluye 7 a 8 géneros y aproximadamente 60 especies nativas tanto de regiones templadas y subtropicales de Europa, Asia y América (24). El “nogal” según APG IV 2016 pertenece a la Clase Equisetopsida (anexo 2), además según la clasificación APG III 2009 se ubica en el clado fábidas (20).

Clasificación taxonómica

Clado	: Fábidas
Orden	: Fagales
Familia	: Juglandaceae
Género	: <i>Juglans</i>
Especie	: <i>Juglans neotropica</i> Diels

Los nombres comunes de la especie son nogal y tocte. En el Perú se distribuye entre 1000 y 3000 msnm (25); también se encuentran en Colombia y Ecuador (16).

En cuanto a la composición química, las hojas tienen alcaloides como la juglandina y la juglona. Las hojas del “nogal” en el Perú, se utilizan en infusión para detener la diarrea (por su efecto astringente), lavar heridas, combatir la tos y teñir el cabello de negro (16).

2.2.3. *Schinus molle* “molle”

La familia Anacardiaceae, a la que pertenece el molle, tiene aproximadamente 60 géneros y 600 especies que están presentes en regiones subtropicales y tropicales (24). El “molle” según APG IV 2016 pertenece a la Clase Equisetopsida (anexo 3), además según la clasificación APG III 2009 se ubica en el clado malvidas (20).

Clasificación Taxonómica:

Clado	: Malvidas
Orden	: Sapindales
Familia	: Anacardiaceae
Género	: <i>Schinus</i>
Especie	: <i>Schinus molle</i> L.

Nombres comunes: “mulli”, “falsa pimienta”, “aguaribay”, “cullash”, “bálsamo sanalotodo”, “anacahuite”, “árbol de la vida”, “pepertree”, “molle”, “pimentera”, “huigan”, “turbinto”, “huiñan”, “lentisco” (16,26).

Es común encontrar el “molle” a lo largo de los andes peruanos, pero más a menudo en altitudes de 100-3200 msnm en las laderas occidentales y valles interandinos (26).

En el “molle” los análisis fitoquímicos revelan que tiene diversos compuestos químicos como: alcaloides, esteroides, flavonoides, saponinas esteroidales, taninos, terpenos y aceite esencial (triterpenos y sesquiterpenos, etc.) (27).

En Perú, la planta entera del *Schinus molle* se usa externamente como un antiséptico tópico y para tratar fracturas, y su savia se usa como un laxante suave y diurético (27). Las hojas y el fruto se utilizan para tratar enfermedades de las vías aéreas (26), y las hojas (machacadas en leche) para tratar el ojo rojo (28).

2.2.4. *Tagetes elliptica* Smith “Chincho”

El “chincho” según APG IV 2016 pertenece a la Clase Equisetopsida (anexo 4), además según la clasificación APG III 2009 se ubica en el clado campanúlidas (20).

Clasificación taxonómica

Clado	: Campanúlidas
Orden	: Asterales
Familia	: Asteraceae
Género	: <i>Tagetes</i>
Especie	: <i>Tagetes elliptica</i> Sm.

Son plantas generalmente herbáceas y en nuestro país existen varias especies de este género: *Tagetes filifolia*, *Tagetes mandonii* Sch. Bip., *Tagetes minuta* L. y *Tagetes patula* L.; la mayoría de ellas de uso tradicional como aromatizante en alimentos y en la medicina tradicional (29).

En la investigación realizada por Segovia et al. acerca de la composición del AE de las hojas de “chincho” revelaron entre sus principales componentes a: alfa-pineno, ambrosina, butanidina, τ -cadineno; forbol; isocariofileno, metoxicitrolenal, l-verbenona, entre otros (30).

2.2.7. Aceite esenciales (AEs)

Los AEs son una mezcla de compuestos de naturaleza volátil, que pueden ser obtenidos de hojas, semillas, frutos de plantas por diversas técnicas. Entre los componentes más

abundantes de los aceites esenciales encontramos a los mono y sesquiterpenos, incluidos cetonas, éteres, que dan aroma y propiedades bioactivas. Dentro de las principales actividades farmacológicas atribuidas a los aceites esenciales tenemos su capacidad antioxidante, antiinflamatoria, antimicrobiana y anticancerígena. Por otro lado, también se conoce actividad biocida contra insectos, protozoos, etc. Finalmente los aceites esenciales también se usan en cosmética, aromaterapia, y conservación de alimentos (31,32).

2.2.8. Resistencia antibacteriana

La resistencia antimicrobiana es un problema de Salud Pública. La resistencia bacteriana es un problema de carácter mundial que afecta a todos los grupos poblacionales, en especial los niños. Según la Organización Mundial de la Salud, la resistencia a los antimicrobianos es el fenómeno en el que un microorganismo no se ve afectado por un antimicrobiano al que antes fue susceptible. La resistencia es una consecuencia del uso de los antimicrobianos, y en particular de su abuso, y surge por mutación del microorganismo o adquisición de genes de resistencia (33).

Los antibióticos no son nuevos en la naturaleza, por lo que algunos microorganismos ya poseen una resistencia intrínseca a algunos antibióticos. Los principales mecanismos de resistencia bacteriana a los antibióticos son por resistencia debido a la modificación de antibióticos, modificación del blanco, remodelación de la pared celular, bombas de eflujo, sobreproducción del blanco o sustrato, reducción de la permeabilidad, modificación de enzimas que activan antibióticos, ocultar el blanco de los antibióticos (34).

2.2.9. Biopelículas

Las biopelículas son la forma predominante de vida en las bacterias (~ 99%). Esto repercute en una mayor resistencia y supervivencia de las bacterias, que pueden tener consecuencias en diferentes ámbitos, como en la industria alimentaria, farmacéutica, cosmética, y también ocasiona graves efectos en la salud humana (35).

Las biopelículas tienen diferentes papeles en la naturaleza; uno de los cuales es promover la diversidad genética (por diversos mecanismos) y el mantenimiento de la densidad

celular (por mecanismos de quorum sensing); por su particular estructura también brindan protección contra factores estresantes ambientales (antibióticos y desinfectantes). También son responsables de diversas enfermedades en humanos y entre ellas la fibrosis quística, artritis séptica, caries dental, e infecciones asociadas a dispositivos médicos e implantes quirúrgicos. Por otro lado, las biopelículas tiene un efecto perjudicial cuando por ejemplo se desarrollan en tuberías de abastecimiento de agua en diferentes industrias, ya que esto aumenta la resistencia hidrodinámica (36).

Una biopelícula empieza a formarse con la adsorción de células planctónicas, hasta que se llegan a una etapa de adhesión irreversible, posteriormente se siguen acumulando más células planctónicas, empiezan a producir sustancias poliméricas extracelulares, ADN extracelular, proteínas y moléculas del quorum sensing. Las biopelículas maduras desprenden células plantónicas, que les sirve para dispersarse y encontrar otra superficie para empezar otro ciclo de formación de biopelículas (37).

Las biopelículas tienen una amplia gama de propiedades que les otorgan características relevantes; capacidad adaptativa, fenotipos en la biopelícula, heterogeneidad fisiológica, quorum sensing (la capacidad de comunicarse entre sí a través de moléculas de su propia fabricación, por ejemplo las acil-homoserina-lactonas), y resistencia a los agentes antimicrobianos (38).

CAPÍTULO III. METODOLOGÍA

3.1. Tipo de investigación

El tipo de investigación fue descriptivo y analítico.

3.2. Diseño metodológico

Se realizó la obtención de los aceites esenciales de las diferentes plantas y luego se indentificaron los componentes por CG/EM. Para la actividad antimicrobiana se usó la técnica de microdilución en caldo y para la actividad antibiopelícula se utilizó una técnica de microdilución en placa modificado. Finalmente para el procesamiento de datos se aplicó estadística descriptiva, empleando Excel 365.

3.3. Unidad de análisis

Los AEs de la cáscara de *Citrus paradisi*, hojas de *Juglans neotropica* Diels, hojas de *Schinus molle* y hojas de *Tagetes elliptica* Smith.

3.4. Microorganismos de estudio

Cepas de *Pseudomonas aeruginosa* ATCC 27853, *Staphylococcus aureus* ATCC 25923, y *Staphylococcus epidermidis* ATCC 12228.

Cepas productoras de biopelículas: *Pseudomonas aeruginosa* ATCC 15442, *Staphylococcus aureus* ATCC 33591, y *Staphylococcus epidermidis* ATCC 35984.

3.5. Muestra

Estuvo constituida por los AEs provenientes de: 6,6 Kg de cáscara de *Citrus paradisi*, 4,85 Kg de hojas de *Juglans neotropica* Diels, 4,12 Kg de hojas de *Schinus molle* y 4,87 Kg de *Tagetes elliptica* Smith.

3.6. Técnica o instrumentos de recolección de la información o de datos

Se usó observación indirecta con la ayuda de CG/EM para la evaluación de la composición química de los AEs y método colorimétrico para la evaluación de la actividad antibacteriana y antibiopelícula de los AEs. La recolección de datos se hizo en tablas y figuras.

3.6.1. Recolección de la muestra

Las plantas fueron recolectadas entre noviembre y febrero del 2018, en las regiones Amazonas “nogal”, Lima (“molle” y “chincho”), y Piura “toronja”. Las partes utilizadas fueron la cáscara de “toronja”, y las hojas de “nogal”, “molle” y “chincho”.

3.6.2. Identificación de las especies

La identificación botánica de las 4 especies botánicas usadas en la tesis fue realizada por el consultor botánico Blgo. José Campos de la Cruz, y las respectivas certificaciones están en los anexos 1-4.

3.6.3. Obtención del aceite esencial

El proceso de extracción de los aceites esenciales de las partes seleccionadas de las plantas en estudio se hizo por técnicas de hidrodestilación, con un equipo de extracción conformado por un balón que sirvió como fuente productora de vapor de agua, una pieza cilíndrica para colocar el material de extracción y un condensador que permitió el destilado del aceite. Para eliminar el agua remanente del proceso anterior, al aceite esencial obtenido se le adicionó sulfato de sodio anhidro. Luego el aceite se guardó en refrigeración (2-8°C) en un frasco de vidrio ámbar sellado herméticamente, hasta su uso. Adicionalmente se determinó el rendimiento del aceite esencial (39).

3.6.4. Análisis preliminar y fisicoquímico

Se realizó la determinación de las características organolépticas (color, olor, sabor y aspecto) y la densidad (40).

3.6.5. Determinación de los componentes químicos del aceite esencial

La composición química de los AEs fue determinada por cromatografía de gases acoplado a espectrometría de masas (CG/EM). Los parámetros usados para esta determinación fueron: 200 µL volumen de inyección, helio como gas portador, 18,4 mL/min de flujo total, 50°C de temperatura inicial, 110°C de temperatura final y 220°C como temperatura de inyección. El tiempo de corrida fue de 52, 70, 65 y 60 minutos para los aceites esenciales de toronja, nogal, molle y chincho respectivamente. Los parámetros para la espectrometría de masas usados fueron 200°C de temperatura de detección y 70 eV de energía de ionización. Para la identificación de los compuestos químicos encontrados en los aceites esenciales se utilizó la base de datos NIST14s.lib, utilizando análisis

comparativo de EM. La abundancia relativa de los componentes obtenidos se hizo por las mediciones de las áreas totales frente a las áreas parciales. El equipo usado en el análisis fue un cromatógrafo de gases Shimadzu GC-2010 plus (41).

3.6.6. Microorganismos y condiciones de crecimiento

Las cepas utilizadas fueron *S. aureus* ATCC 25923, *S. epidermidis* ATCC 12228 y *P. aeruginosa* ATCC 27853 para evaluar la actividad antibacteriana. Para la actividad antibiopelícula se usó cepas productoras de biopelícula de *S. aureus*, *S. epidermidis* y *P. aeruginosa*; con números de colección ATCC 33591, 35894 y 15442 respectivamente. Las bacterias fueron almacenadas en congelación hasta antes de su uso. Para la reactivación las cepas fueron sembradas en agar CASO (Merck) por 24 h a 35°C.

3.6.7. Determinación de la actividad antibacteriana

La CMI fue obtenida por una técnica de dilución en microplaca, usando las directrices de Liu M, et al. con algunas modificaciones (14,42). Este ensayo se fundamenta en diluciones seriadas de los aceites esenciales en caldo Mueller Hinton, cuya actividad se detectó por examinación visual en los diferentes pozos de las microplaca, usando un marcador de actividad indirecta de supervivencia celular (resazurina), que evidenciará la inhibición de crecimiento bacteriano. El ensayo se realizó en microplacas de poliestireno de 96 pozos de fondo en U y estériles (Brand). Las muestras se prepararon en el rango de concentraciones de 0,078 – 40 µL/mL, usando como diluyente el caldo Mueller Hinton (CMH) (Merck) y tween 80. En este método se incluyeron pozos de control negativo (bacterias más caldo tripticasa soya), control positivo (bacterias más caldo tripticasa soya más antibióticos). 100 uL de las 10 diluciones 2X de las muestras fueron adicionadas a los pozos debidamente señalizados, a las que luego se agregaron 100 uL del inóculo 2X (suplementado con resazurina 20 mg/mL) a todos los pozos con muestras.

El inóculo final de las suspensiones bacterianas de *S. aureus*, *S. epidermidis* o *P. aeruginosa* en cada pozo fue de 5×10^5 ufc/mL, y fueron establecidos a partir de patrones de turbidez (14). Los ensayos fueron hechos por triplicado.

Posteriormente se incubaron las microplacas por 18-24 h a 37°C. Visualmente se examinó por variaciones de color. Se registró como crecimiento positivo a los pozos donde hubo un cambio de color a rosado o incoloro, del color púrpura inicial, y como crecimiento

inhibido cuando mantuvo su color de partida. La CMI fue la mínima dilución en la que se mantuvo el color inicial. Las pruebas se hicieron por triplicado (43).

3.6.8. Determinación de la Concentración Mínima de Erradicación de Biopelícula (CMEB)

Se emplearon técnicas de diluciones seriales para determinar la CMBE de los aceites esenciales de la tesis.

Para la prueba se usaron microplacas (Brand plates, 781660) de 96 pozos estériles. Se preparó en caldo Mueller Hinton suspensiones de bacterias productoras de biopelículas (*P. aeruginosa*, *S. aureus*, y *S. epidermidis*) a una concentración de 5×10^5 ufc/mL. Luego se adicionaron 100 μ L del inóculo a los pozos de las microplacas, y se llevó a incubación a 37°C por 24 h. Se usó un control de esterilidad y de crecimiento similar al del procedimiento del CMI. Posteriormente, se vació la microplaca, y luego se agregaron los mismos volúmenes que en la primera parte de las muestras diluídas de los AEs empleadas en el ensayo anterior. Luego las microplacas se reincubaron a 37°C por 24 h, se vaciaron las microplacas y se lavaron 3 veces con PBS estéril. A continuación las microplacas se secaron a 37°C, y posteriormente se vertieron a los pozos CMH (con el indicador redox resazurina) a razón de 100 μ L por pozo. Luego, otra vez se incubaron las microplacas a 37°C por 30-60 minutos, y se realizó su lectura visual. Los parámetros de lectura fueron similares a los de la prueba de la CMI, con la diferencia que el valor hallado fue el CMEB. Se trabajaron en microplacas independientes para cada bacteria y las pruebas se realizaron por triplicado (14).

3.7. Procesamiento de datos

Se realizó con la ayuda de tablas y figuras; además para cada experimento se consideró el promedio de tres mediciones y la desviación estándar.

CAPÍTULO IV. RESULTADOS

4.1. Análisis preliminar y fisicoquímico

Los resultados del análisis preliminar y fisicoquímico de los aceites esenciales estudiados se presentan en la tabla 1.

Tabla 1. Análisis organoléptico y densidad de los aceites esenciales

Características	Aceite esencial			
	<i>Citrus paradisi</i> (C)	<i>Juglans neotropica</i> Diels (H)	<i>Schinus molle</i> L. (H)	<i>Tagetes elliptica</i> Smith (H)
Rendimiento (V/P)	0,15 %	0,00008 %	1,1 %	0,041 %
Olor	Aroma agradable	Sui generis	Picante	Sui generis
Sabor	Picante fresco	N.D.	Amargo	Picante astringente
Color	Ligeramente amarillento	Amarillo	Ambar	Anaranjado
Aspecto	Líquido fluido y transparente	Viscoso	viscoso	Líquido translúcido y viscoso
Densidad (20°C)	0,852	N.D.	0,8720	0,7800

N.D.: No determinado, C: cáscara, H: hojas

4.2. Determinación de los componentes químicos de los aceites esenciales

Los componentes químicos determinadas por CG/EM de los AEs de la cáscara de “toronja”, y de las hojas del “nogal”, “molle” y “chincho” se observan en las tablas 2-5 y los anexos 5-8. Los más abundantes en el aceite esencial de *C. paradisi* fueron D-Limoneno (83,45 %), Octanal (8,68%) y β -mirceno (2,48 %) y en total se obtuvo 21 compuestos (Tabla 2 y Anexo 5). El aceite esencial de *J. neotropical* Diels, revelaron 36 compuestos, y los más abundantes fueron α -pineno (39,88 %), cariofileno (27,66 %) y β -pineno (11,0 %), β -mirceno (5,09 %) (Tabla 3 y Anexo 6). En cuanto al aceite esencial de *S. molle*, mostró 33 componentes, y los más abundantes fueron α -felandreno (19,59%), canfeno (19,10%), α -pineno (16,56%), β -pineno (8,85%) (Tabla 4 y Anexo 7). En el AE del chincho se encontraron 35 compuestos, entre ellos β -mirceno (63,49%), cis-linalool óxido (10,07%), 2-tujeno (7,77%), 2-octen-4-ol (3,87%), ácido pentanoico, 2 propenil ester (3,81%), trans-beta-ocimeno (3,73%), D-limoneno (3,17%), beta-pineno (1,44%), y trans-tagenona (0,46%) (Tabla 5 y Anexo 8)

Tabla 2. Composición química del aceite esencial de cáscara de *Citrus paradisi*

Número	Componente	TR ^a (min)	% en la muestra ^b
1	5-clorovalérico ácido	4,375	0,01
2	2-pentanona, 4-methyl-, oxima	4,608	0,28
3	Butano, 1-fluoro	4,799	0,09
4	Heptanal	9,716	0,23
5	α -pineno	12,081	1,41
6	β -felandreno	16,271	2,21
7	β -mirceno	19,056	1,15
8	β -mirceno	19,085	1,33
9	Octanal	21,136	5,33
10	Octanal	21,217	3,35
11	D-limoneno	25,400	21,21
12	D-limoneno	25,587	8,89
13	Ciclohexano, 1-metil-4-(1-metiletenil)-1-, (S)-	25,960	23,32
14	Ciclohexano, 3-metil-6-(1-metiletenil)-1-, (3R-trans)-	26,022	3,65
15	D-limoneno	26,134	7,93
16	D-limoneno	26,210	5,39
17	D-limoneno	26,373	14,06
18	1,3,6-Octatrieno, 3,7-dimetil-, (Z)-	30,074	0,16
19	γ -terpineno	31,495	0,09
20	trans-Linalool oxido (furanoide)	33,949	0,05
21	1-octanol	34,780	0,25
22	Linalool	37,968	0,27
23	Nonanal	38,460	0,10
24	Citronelal	42,866	0,04
25	Terpinen-4-ol	44,332	0,03
26	α -terpineol	45,413	0,03
27	Decanal	46,685	0,06
28	2,6-octadienal,3,7-dimetil-,(Z)-	48,814	0,03
29	Citral	50,583	0,03
			100,00

Metabolitos enlistados por orden de aparición

^a TR, Tiempo de retención

^b Porcentaje de la muestra basada en el área relativa (área de pico en el cromatograma)

Tabla 3. Composición química del aceite esencial de hojas de *Juglans neotropica* Diels

Número	Componente	TR ^a (min)	% en la muestra ^b
1	Hexano, 2,4-dimetil-	5,042	0,18
2	Biciclo[3.1.0]hex-2-eno,2-metil-5-(1-metiletil)-	11,582	0,34
3	α -pineno	12,145	39,88
4	Biciclo[3.1.1]heptano, 6,6-dimetil-2-metileno-,(1S)-	16,425	11,00
5	β -mirceneno	18,993	5,09
6	1,3-ciclohexadieno, 1-metil-4-(1-metiletil)-	22,474	0,37
7	o-cimeno	23,961	0,44
8	D-limoneno	24,643	3,47
9	1,3,6-Octatrieno, 3,7-dimetil-, (Z)-	29,844	0,90
10	γ -terpineno	31,363	1,01
11	Ciclohexano, 1-metil-4-(1-metiletilideno)-	35,954	0,22
12	Biciclo[3.1.1]hep-3-en-2-ona, 4,6,6,-trimetil	37,660	0,20
13	Nonanal	38,448	0,20
14	Geranil nitrilo	39,680	3,28
15	6-metil-3,5-heptadieno-2-ona	45,660	0,10
16	Benceno, 2-metoxi-4-metil-1-(1-metietil)-	48,461	0,10
17	Benceno, 1-metoxi-4-metil-2-(1-metietil)-	48,982	0,22
18	Linalil acetato	49,781	0,28
19	Trisulfuro, di-2-propenil	51,913	0,13
20	Timol	52,050	0,04
21	3,9-dodecadiina	53,105	0,03
22	α -cubebeno	54,544	0,28
23	α -cubebeno	55,802	1,26
24	Ciclohexano, 1-etil-1-metil-2,4-bis(1-metiletenil)-,[1S-(1. α .,2. β .,4. β .)]-	56,617	0,03
25	Biciclo[7.2.0]undec-4-eno, 4,11,11-trimetil-8-metileno	57,262	0,04
26	Cariofileno	57,933	27,66
27	α -guaiano	58,733	0,75
28	α -cubebeno	59,236	0,15
29	Humuleno	59,366	1,40
30	Naftaleno, 1,2,4a,5,8,8a-hexahidro-4,7-dimetil-1-(1-metiletil)-, (1. α .,4a. β .,8a. α .)-(./-.)-	60,278	0,03
31	8-Isopropil-5-metil-2-metileno-1,2,3,4,	61,036	0,03
32	Azuleno, 1,2,3,5,7,8,8a-octahidro-1,4-dimetil-7-(1-metiletenil)-, [1S-(1. α .,7. α .,8a. β .)]-	61,656	0,29
33	α -farneseno	61,756	0,16
34	Cadina-1(10),4-dieno	62,383	0,33
35	Naftaleno, 1,2,3,4,6,8a-hexahidro-1,6,dimetil-4-(1-metiletil)- 1	62,740	0,06
36	Oxido de cariofileno	64,900	0,04
			100,00

Metabolitos enlistados por orden de aparición

^a TR, Tiempo de retención

^b Porcentaje de la muestra basada en el área relativa (área de pico en el cromatograma)

Tabla 4. Composición química del aceite esencial de hojas de *Schinus molle*

Número	Componente	TR ^a (min)	% en la muestra ^b
1	Tolueno	4,246	0,12
2	Hexano,2,4-dimetil-	4,986	0,08
3	1-heptano,2,6-dimetil-	8,336	0,05
4	Triciclo[2.2.1.0(2,6)]heptano,1,7,7-trimetil-	11,110	4,34
5	3-tujeno	11,634	0,18
6	α -pineno	12,338	16,56
7	Camfeno	13,716	19,10
8	Beta-pineno	16,640	8,85
9	β -mirceno	19,066	1,53
10	α -felandreno	21,043	19,59
11	o-cimeno	24,297	3,11
12	3-(4-metilbenzoi)-2-thioxo-4-thiazolil 4-metilbenzoato	24,374	0,92
13	o-cimeno	24,525	1,85
14	1-pentanona,1-(4-metilfenil)-	24,598	0,92
15	o-cimeno	24,619	1,53
16	β -felandreno	25,415	15,16
17	γ -terpineno	25,459	1,53
18	D-limoneno	25,547	4,04
19	1,3,6-octatrieno,3,7-dimetil-,(Z)-	29,932	0,19
20	Ciclohexano, 1-metil-4-(1-metiletilideno)-	35,962	0,05
21	Terpinen-4-ol	44,329	0,01
22	2-ciclohexen-1-ona, 4-(1-metiletil)-	44,954	0,01
23	Biciclo[3.1.0]hexan-3-ol, 4-metileno-1-(metiletil)-, (1. α .,3. α .,5. α .)-	46,141	0,01
24	Bornil acetato	51,305	0,02
25	Ciclohexano, 1-etenil-1-metil-2,4-bis(1-metiletenil)-,[1S-(1. α .,2. β .,4. β .)]-	56,615	0,01
26	1H-Cicloprop[e]azuleno, 1a,2,3,4,4a,5,6,7b-octahidro-1,1,4,7-tetrametil-	57,394	0,02
27	Cariofileno	57,823	0,04
28	Humuleno	59,360	0,01
29	γ -muuroleno	60,400	0,00
30	Germacreno D	60,578	0,02
31	Germacreno B	61,262	0,07
32	α -muuroleno	61,438	0,01
33	Naftaleno, 1,2,3,4,4a,5,6,8a-octahidro-7-metil-4-metileno-1-(1-metiletil)-	61,995	0,01
34	Naftaleno, 1,2,4a,5,8,8a-hexahidro-4,7-dimetil-1-(1-metiletil)-	62,395	0,04
35	Ciclohexanometanol, 4-etenil-, α ., α .,4-trimetil-3-(1-metiletenil)-	63,459	0,01
36	Germacreno D-4-ol	64,566	0,01
37	1H-Cicloprop[e]azulen-7-ol, decahidro-1,1,7-trimetil-4-metileno-	64,695	0,01
			100,00

Metabolitos enlistados por orden de aparición

^a TR, Tiempo de retención

^b Porcentaje de la muestra basada en el área relativa (área de pico en el cromatograma)

Tabla 5. Composición química del aceite esencial de hojas de *Tagetes elliptica* Smith

Número	Componente	TR ^a (min)	% en la muestra ^b
1	Furan, 2-etil	3,089	0,02
2	Metil isobutil cetona	3,673	0,07
3	Isopropilideno-	5,032	0,02
4	Ácido butanoico, 2-metil, etil ester	6,878	0,14
5	Ácido hexánico, metil ester	11,589	0,17
6	α -pineno	12,069	0,23
7	2(10)-Pinene	16,405	1,44
8	β -mirceno	19,907	54,90
9	2-Tujeno	19,992	7,77
10	β -mirceno	20,072	8,59
11	cis,cis-Linoleico ácido	22,523	0,07
12	2,8-decadieno	23,776	0,08
13	D-limoneno	24,838	3,17
14	Trans-,beta.-Ocimeno	27,924	3,73
15	beta.-cis-Ocimeno	29,934	0,03
16	Ácido pentanoico, 2-propenil ester	31,204	3,81
17	Terpinoleno	35,965	0,02
18	2,2-dimetil-3-heptanona	36,175	0,59
19	Cis-Linalool oxido	37,463	10,07
20	Linalool	38,010	0,04
21	Amil isovalerato	38,541	0,04
22	2,6-Dimetil-8-(tetrahidropirano-2-iloxi)-octa-2,6-dien-1-ol	39,068	0,03
23	Alilciclohexano	39,539	0,05
24	2-octen-4-ol	39,880	3,87
25	Ácido octanoico, metil ester	40,700	0,07
26	trans-Tagetona	42,204	0,46
27	β -Linalool	42,493	0,22
28	1,2:5,6-Diepoxiciclooctano	43,030	0,01
29	8-Hidroxilinalool	43,286	0,03
30	1,1'-Bicicloheptil	44,223	0,05
31	p-Mentano-8-ol	45,476	0,05
32	Decanal	46,683	0,04
33	Verbenona	48,224	0,08
34	Cis-Linalool oxido	50,600	0,01
35	Cariofileno	57,826	0,04
			100,00

Metabolitos enlistados por orden de aparición

^a TR, Tiempo de retención

^b Porcentaje de la muestra basada en el área relativa (área de pico en el cromatograma)

4.3. Concentración mínima inhibitoria de los aceites esenciales estudiados

Se determinó unas CMI de 20 y 5 $\mu\text{L}/\text{mL}$ contra *S. aureus* de los AEs de molle y chincho respectivamente y el AE de toronja fue inactivo. Por otro lado se hallaron CMI de 5 $\mu\text{L}/\text{mL}$ frente a *S. epidermidis* del AE de toronja y de 0,3125 $\mu\text{L}/\text{mL}$ para los AEs de hojas de *S. molle* L. y *T. elliptica* Smith. El AE de *Juglans neotropica* Diels fue inactivo contra las cepas estudiadas (CMI > 40 $\mu\text{L}/\text{mL}$).

Los CMI de los AEs de la plantas estudiadas contra los microorganismos *Staphylococcus epidermidis* ATCC 1228 (figura 1), *Staphylococcus aureus* ATCC 25923 (figura 2) y *Pseudomonas aeruginosa* ATCC 27853 (figura 3) se observan en la tabla 6.

Tabla 6. Determinación de la Concentración Mínima Inhibitoria de los aceites esenciales

Aceite esencial	Concentración Mínima Inhibitoria ($\mu\text{L}/\text{mL}$)		
	<i>Staphylococcus aureus</i>	<i>Staphylococcus epidermidis</i>	<i>Pseudomonas aeruginosa</i>
<i>Citrus paradisi</i>	> 40	5	> 40
<i>Juglans neotropica</i> Diels	> 40	> 40	> 40
<i>Schinus molle</i>	20	0,3125	> 40
<i>Tagetes elliptica</i> Smith	5	0,3125	> 40



Figura 1. Determinación de las CMI de los aceites esenciales contra *Staphylococcus epidermidis*.

Leyenda: S.e.: *Staphylococcus epidermidis*; CE: Control de esterilidad; CP: Control positivo; AE 1: Aceite esencial de *Citrus paradisi*; AE 2: Aceite esencial de *Schinus molle*; AE 3: Aceite esencial de *Tagetes elliptica* Smith.

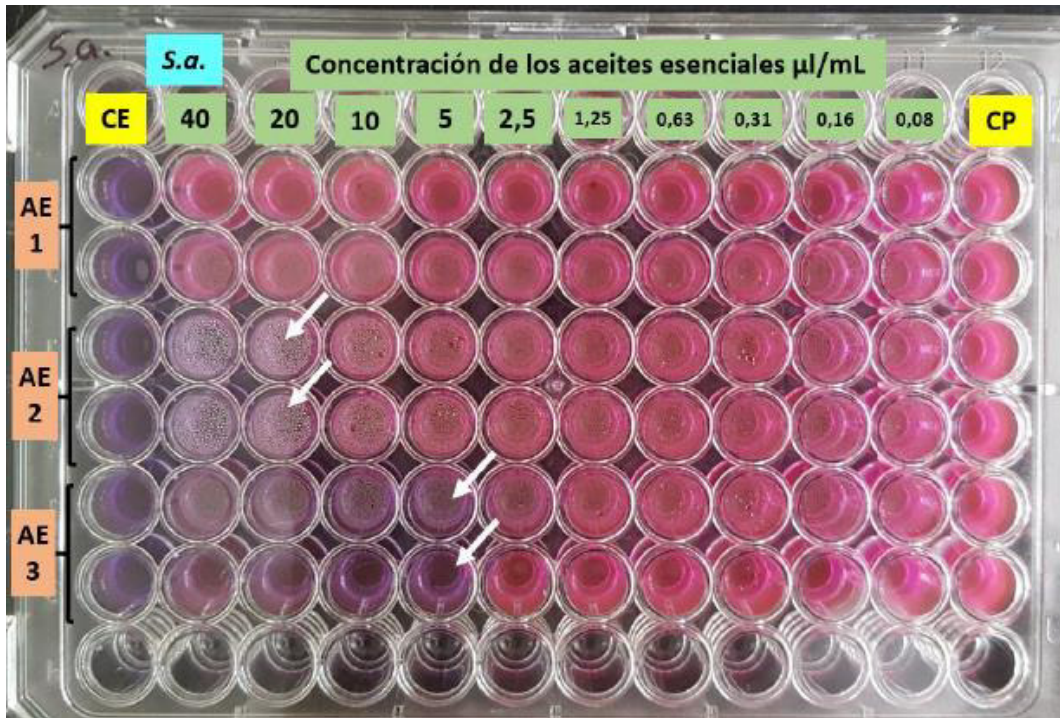


Figura 2. Determinación de las CMI de los aceites esenciales contra *Staphylococcus aureus*.
Leyenda: S.a.: *Staphylococcus aureus*; CE: Control de esterilidad; CP: Control positivo; AE 1: Aceite esencial de *Citrus paradisi*; AE 2: Aceite esencial de *Schinus molle*; AE 3: Aceite esencial de *Tagetes elliptica* Smith.



Figura 3. Determinación de las CMI de los aceites esenciales contra *Pseudomonas aeruginosa*.
Leyenda: P.a.: *Pseudomonas aeruginosa*; CE: Control de esterilidad; CP: Control positivo; AE 1: Aceite esencial de *Citrus paradisi*; AE 2: Aceite esencial de *Schinus molle*; AE 3: Aceite esencial de *Tagetes elliptica* Smith.

4.4. Concentración Mínima de Erradicación de Biopelícula de los aceites esenciales

La concentración mínima de erradicación de biopelícula (CMEB) fue de 30 y 5 $\mu\text{L}/\text{mL}$ contra biopelículas de *S. aureus* ATCC 33591 de los AEs de las hojas del molle y el chincho respectivamente, además tuvo un CMEB $> 40 \mu\text{L}/\text{mL}$ contra la misma biopelícula para el AE de la cáscara de *C. paradisi*. Para las biopelículas de *Staphylococcus epidermidis* ATCC 35984, se encontraron valores de CMEBs de 40 y 20 $\mu\text{L}/\text{mL}$ para los AEs de las hojas de *S. molle* y *T. elliptica* Smith respectivamente; siendo inactivo (CMEB $> 40 \mu\text{L}/\text{mL}$) el AE de *C. paradisi* para esta biopelícula. Todos los aceites ensayados fueron inactivos contra las biopelículas de *Pseudomonas aeruginosa* ATCC 15442. Los resultados compilados de todos estos ensayos se observan en la tabla 7. Por otro lado, no se realizó ensayos para esta actividad con el aceite esencial de *Juglans neotropica* Diels por haber sido inactivo en la prueba del CMI para todas las bacterias ensayadas.

Tabla 7. Determinación de las Concentraciones Mínimas de Erradicación de Biopelículas de los aceites esenciales contra biopelículas de *Staphylococcus aureus*, *Staphylococcus epidermidis* y *Pseudomonas aeruginosa*.

Aceite esencial	Concentración Mínima de Erradicación de Biopelícula ($\mu\text{L}/\text{mL}$)		
	<i>Staphylococcus aureus</i>	<i>Staphylococcus epidermidis</i>	<i>Pseudomonas aeruginosa</i>
<i>Citrus paradisi</i>	> 40	40	> 40
<i>Schinus molle</i>	30	20	> 40
<i>Tagetes elliptica</i> Smith	15	5	> 40

En la figura 4 se observa el resultado de las CMEBs de los AEs de las plantas en estudio contra la cepa productora de biopelícula *Staphylococcus aureus* ATCC 33591.

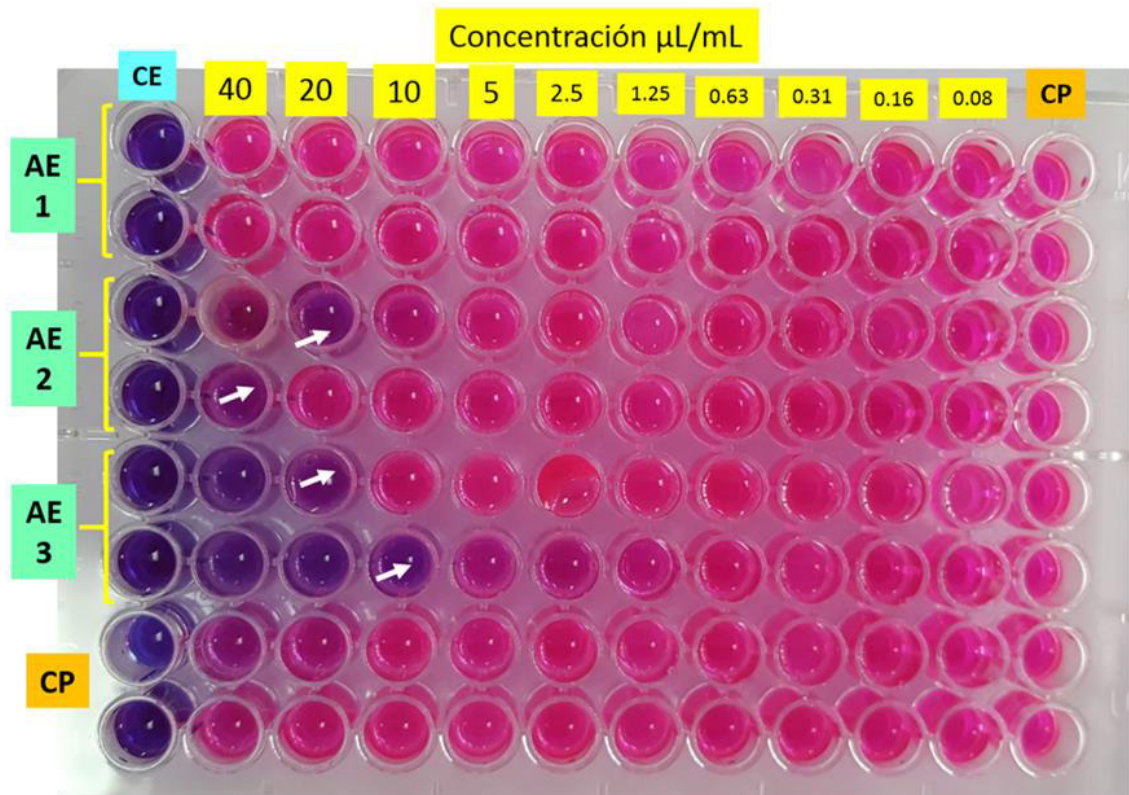


Figura 4. Determinación de las Concentraciones Mínimas de Erradicación de Biopelícula (CMEBs) de los aceites esenciales contra *Staphylococcus aureus* ATCC 33591.

Leyenda: S.a.: *Staphylococcus aureus*; CE: Control de esterilidad; CP: Control positivo; AE 1: Aceite esencial de *Citrus paradisi*; AE 2: Aceite esencial de *Schinus molle*; AE 3: Aceite esencial de *Tagetes elliptica* Smith. La flecha blanca indica el valor de la CMEB.

CAPÍTULO V. DISCUSIÓN

Análisis preliminar y fisicoquímico

El rendimiento del AE de *Citrus paradisi* de 0,15%(V/P) es similar a otro estudio que reportó un valor de 0,13 % (V/P) (44), pero Miya (45) encontró mayores rendimientos, que oscilan entre 0,34-0,57 %.

El rendimiento del aceite esencial de las hojas de *Juglans neotropica* Diels fue de 0,00008 %, un porcentaje muy bajo, por lo que en un futuro se debe extraer con otros métodos más eficientes. No hay reportes en la literatura sobre rendimientos del aceite mencionado, sin embargo Bou Abdallah (46) reportó rendimientos que oscilan entre el 0,033 -0,075% para AEs de las hojas de *Juglans regia*.

El rendimiento del AE de hojas de *S. molle* de 1,1%, fue mayor que los reportados en otros estudios (47,48), que van desde 0.1154 - 0,214 %. Por otro lado se reportan mayores rendimientos en el aceite esencial de frutos de *Shinus molle*, Llanos(49) encontró valores entre de 6,575% -7,705% (v/p) y Osorio (50) obtuvo 5 %.

El rendimiento del AE chincho fue de 0,041%, menor al obtenido por López (51) que fue entre 0,20-0,30% y Segovia(52) que fue de 0,41%. Las diferencias en el rendimiento se deben probablemente a las distintas condiciones de extracción de los aceites esenciales, además de las diferentes condiciones edafológicas de las plantas.

Composición química de los aceites esenciales.

AE de cáscara de *Citrus paradisi* analizado por CG-ES, reveló 21 compuestos volátiles (Tabla 2), similar a los 20 reportados por Silva (53), pero menores a los 30 reportados por Morales-Saldaña (54). Los principales componentes químicos encontrados en este aceite (Tabla 2 y Anexo 5) son D-Limoneno (83,45%), Octanal (8,68%), β -mirceno (2,48%), β -felandreno (2,21 %) y α - pineno (1,41%). Estos resultados concuerdan con lo encontrado en otros estudios (45,53,55), pero difieren en la concentración de α - pineno, β -pineno y linalol (53,55). El D-limoneno es el compuesto más abundante en las especies del género *Citrus*, oscilando entre el 60-95%(56), lo que concuerda con lo hallado en esta tesis.

Este es el primer reporte de la composición química del aceite esencial de hojas de *Juglans neotropica* Diels, en el análisis de CG-ES se observaron 36 compuestos volátiles (Tabla 3), siendo los más abundantes alfa-pineno (39,88 %), cariofileno (27,66 %) y beta-pineno (11,0 %), beta-mirceno (5,09 %), D-limoneno (3,47 %), geranil-nitrilo (3,28 %),

alfa-cubeneno (1,69%), humoleno (1,40%) y gamma-terpineno (1,01%). Los compuestos β -pineno, cariofileno y D-limoneno también son los más abundantes en AE de hojas de *Juglans regia* L (15,57,58).

El análisis por CG-ES del AE de *Schinus molle* reveló 37 compuestos volátiles (Tabla 4). Los principales compuestos encontrados fueron: α -felandreno (19,59%), canfeno (19,10%), α -pineno (16,56%), β -pineno (8,85%), o-cimeno (6,53%), triciclono (4,24%), D-limoneno (4,04%), y γ -terpineno (1,53%). Los resultados coinciden con los hallados en otros estudios (17,59–61), pero con algunas diferencias como la presencia de elemol, β -mirceno (17,60) y epi- α -cadimol (62) no encontrados en la presente tesis.

El análisis por CG-ES del AE de las hojas de *Tagetes elliptica* Smith reveló 35 compuestos (Tabla 5), con predominancia de β -mirceno (63,49%), cis-linalool óxido (10,07%), 2-tujeno (7,77%), 2-octen-4-ol (3,87%), ácido pentanoico, 2 propenil ester (3,81%), trans- β -ocimeno (3,73%), D-limoneno (3,17%), β -pineno (1,44%), y trans-tagenona (0,46%). El resultado es semejante en algunos componentes (β -mirceno, pineno) al encontrado por López (51). En los aceites esenciales de las hojas del género *Tagetes* se han reportado la presencia de D-Limoneno, β -pineno, β -mirceno, y tagenona (63,64).

Actividad antibacteriana

El aceite esencial de la cáscara de *Citrus paradisi* no mostró actividad frente a *S. aureus* (CMI \geq 40 μ L/mL), en contraste Denkova (65) reportó un CMI de 600 ppm para esta cepa, y Mantilla (66) también demostró actividad con el aceite al 25%. Este último hallazgo se hizo con la técnica de disco difusión y a una concentración más elevada que la trabajada en la presente tesis. Respecto a *S. epidermidis* en esta tesis se encontró muy buena actividad con un CMI= 5 μ L/mL. En la presente investigación no se detectó efecto del AE de toronja contra *P. aeruginosa*, en contraste con lo reportado por Ou (67) que reportó actividad a 20 mg/mL.

La actividad presentada por el aceite esencial estudiado se atribuye probablemente a la presencia de los hidrocarburos monoterpenos o sesquiterpenos y sus derivados oxigenados, entre los cuales tenemos a D-limoneno, linalol o citral (65). Otras actividades

reportadas para el aceite esencial de *C. paradisi* son contra *Streptococcus mutans* (44) y contra *Candida albicans* (53).

No hubo efecto del AE de hojas de nogal contra ninguna de las cepas estudiadas (CMI > 40 $\mu\text{L}/\text{mL}$). En la literatura no se encontró estudios sobre este aceite, pero si para el aceite esencial de hojas de *Juglans regia*, en la que Rather (15) encontró CMI de 31,25 $\mu\text{g}/\text{mL}$ para *P. aeruginosa*, y 15,62 $\mu\text{g}/\text{mL}$ para *S. epidermidis* y *S. aureus* utilizando otro metodología. Por otra parte *J. neotropica* (extracto etanólico de la corteza) tuvo una CMI de 125 $\mu\text{g}/\text{mL}$ contra *S. aureus* y *S. epidermidis* (14), y la infusión de las hojas del nogal tuvo actividad contra *Candida albicans* (68).

El AE de las hojas de *S. molle* presentó gran actividad frente a *S. epidermidis* (CMI= 0.3125 $\mu\text{L}/\text{mL}$), moderada frente a *S. aureus* (CMI= 20 $\mu\text{L}/\text{mL}$), y no tuvo actividad contra *P. aeruginosa* (CMI > 40 $\mu\text{L}/\text{mL}$). Estos hallazgos son similares a los reportados por otros autores (17,69), con la diferencia de que reportan actividad frente a *P. aeruginosa*, pero a una concentración mayor (11,25 mg/mL) a la trabajada en el presente trabajo de investigación (69). Por otro parte do Prado (62) encontró actividad del AE de *S. molle* contra *S. aureus* metilino resistente con una CMI= 5000 $\mu\text{g}/\text{mL}$.

El AE de chincho demostró una excelente actividad frente a *Staphylococcus epidermidis* y *Staphylococcus aureus*, con CMI de 0,3125 $\mu\text{L}/\text{mL}$ y 5 $\mu\text{L}/\text{mL}$ respectivamente. De otro lado el aceite no mostró actividad contra *Pseudomonas aeruginosa* (CMI > 40 $\mu\text{L}/\text{mL}$). Un estudio empleando el mismo aceite, encontró actividad significativa contra para *Staphylococcus aureus* y *Pseudomonas aeruginosa* (30), las diferencias en actividades respecto a *P. aeruginosa* probablemente se deben a factores edafológicos. Otros investigadores reportaron actividad del aceite esencial de hojas de *Tagetes filifolia* (70) y *Tagetes minuta* (71,72) contra *S. aureus*; y del AE de hojas de *Tagetes pusilla* (73) contra *S. aureus* y *P. aeruginosa*.

Actividad antibiopelícula

El aceite esencial de la cáscara de *Citrus paradisi* no tuvo ningún efecto de erradicación de biopelículas de *S. aureus* y *P. aeruginosa*, pero tuvo un CMEB de 40 $\mu\text{L}/\text{mL}$ contra

biopelículas de *S. epidermidis*. Estos resultados concuerdan con los de Adukwu (74) que no encontró actividad contra biopelículas de *S. aureus* meticilino resistentes.

En cuanto al AE de las hojas de *S. molle* no tuvo actividad para la erradicación de biopelículas de *P. aeruginosa*, pero si contra biopelículas de *S. aureus* (CMEB= 30 $\mu\text{L}/\text{mL}$) y *S. epidermidis* (CMEB= 20 $\mu\text{L}/\text{mL}$). No hay reportes de actividad del aceite de *Schinus molle* sobre biopelículas, pero si en concordancia con el hallazgo de la presente tesis, Romero (75) no encontró actividad anti-biopelícula del extracto etanólico de *Schinus fasciculatus* contra biopelículas de *Staphylococcus coagulasa* negativos.

El AE de hojas de *Tagetes elliptica* Smith no tuvo actividad contra la erradicación de biopelículas de *P. aeruginosa*, pero si contra biopelículas de *S. aureus* (CMEB= 15 $\mu\text{L}/\text{mL}$) y *S. epidermidis* (CMEB= 5 $\mu\text{L}/\text{mL}$). Este fue el aceite que tuvo mejor resultado en la tesis trabajada. El extracto etanólico de hojas de *Tagetes minuta* inhibió entre 55% y 62%.la formación de biopelículas de *Staphylococcus coagulasa* negativos (75).

CAPÍTULO VI. CONCLUSIONES

- Se determinó la composición química de los AEs de la cáscara de *C. paradisi* y de las hojas de *J. neotropica* Diels, *S. molle*, y *T. elliptica* Smith por CG-EM.
- La CMI del AE de la cáscara de *Citrus paradisi* fue de 5 µL/mL para *S. aureus*, y no tuvo actividad contra *S. epidermidis* y *P. aeruginosa*.
- El AE de hojas de *Juglans neotropica* Diels no tuvo efecto contra los microorganismos enfrentados.
- Las CMIs del AE de hojas de *Schinus molle* fueron de 20 µL/mL y 0,3125 µL/mL para *S. aureus* y *S. epidermidis* respectivamente y fue inactivo para *P. aeruginosa*.
- Las CMIs del AE de hojas de *Tagetes elliptica* Smith fueron de 5 µL/mL para *S. aureus* y de 0,3125 µL/mL para *S. epidermidis* y fue inactivo para *P. aeruginosa*.
- El AE de la cáscara de *Citrus paradisi* fue inactivo (CMEB > 40 µL/mL) para la erradicación de biopelículas de *P. aeruginosa*, *S. aureus*, y *S. epidermidis*.
- Las CMEBs del AE de hojas de *Schinus molle* fueron de 30 µL/mL y 20 µL/mL para la erradicación de biopelículas de los estafilococos estudiados, y fue inactivo en la erradicación de biopelículas de *Pseudomonas aeruginosa*.
- Las CMEBs del AE de hojas de *Tagetes elliptica* Smith fueron de 15 µL/mL para la erradicación de biopelículas de *S. aureus* y de 5 µL/mL para la erradicación de biopelículas *S. epidermidis*, y fue inactivo para la erradicación de biopelículas de *Pseudomonas aeruginosa*.

CAPÍTULO VII. REFERENCIAS BIBLIOGRÁFICAS

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CAPÍTULO VIII. ANEXOS

ANEXO 1: Certificado de identificación botánica de la “toronja”

JOSÉ R. CAMPOS DE LA CRUZ
CONSULTOR BOTÁNICO
Email: jocamde@gmail.com
Cel : 963689079



CERTIFICACIÓN DE IDENTIFICACION BOTÁNICA

JOSÉ RICARDO CAMPOS DE LA CRUZ. BIÓLOGO COLEGIADO - CBP N° 3796 - INSCRITO EN EL REGISTRO DE PROFESIONALES QUE REALIZAN CERTIFICACIÓN DE IDENTIFICACIÓN TAXONÓMICA DE ESPECÍMENES Y PRODUCTOS DE FLORA - RESOLUCIÓN DIRECTORAL N° 0311-2013- MINAGRI-DGFFS-DGEFFS.

CERTIFICA.

Que, el Mg. RUIZ QUIROZ, Julio Reynaldo, egresado del doctorado en Farmacia y Bioquímica de la Universidad Nacional Mayor de San Marcos, con fines de investigación ha solicitado la identificación y certificación botánica de una planta procedente del departamento de Piura, donde es conocida con el nombre vulgar de “toronja”, la muestra ha sido identificada con el nombre científico de *Citrus × paradisi Macfad.* de la Familia Rutaceae y el Orden Sapindales. Según la base de Trópicos que sigue el sistema moderno de clasificación de las angiospermas (APG), publicado en 1998 por el Grupo para la Filogenia de las Angiospermas, revisado por APG II (2003), APG III (2009) y APG IV (2016), este Sistema de clasificación considera a todas las plantas verdes en la Clase Equisetopsida (Chasse, MW y JL. Reavel. 2009), la especie identificada se ubica en las siguientes categorías taxonómicas.

Reino: Plantae

División: Angiospermae

Clase: Equisetopsida

Subclase: Magnoliidae

Superorden: Rosanae

Orden: Sapindales

Familia: Rutaceae

Género: Citrus

Especie: Citrus x paradisi Macfad.

Nombre vulgar: “toronja”

Se expide la presente certificación con fines de investigación científica.

Lima, 16 de marzo del 2022



Jr. Sánchez Silva N° 156- piso 2. Urb. Santa Luzmila. Lima 07
Emailjocamde@gmail.com; joricampos@yahoo.es

ANEXO 2: Certificado de identificación botánica del “nogal”



CERTIFICACIÓN DE IDENTIFICACION BOTÁNICA

JOSÉ RICARDO CAMPOS DE LA CRUZ. BIÓLOGO COLEGIADO - CBP N° 3796 - INSCRITO EN EL REGISTRO DE PROFESIONALES QUE REALIZAN CERTIFICACIÓN DE IDENTIFICACIÓN TAXONÓMICA DE ESPECÍMENES Y PRODUCTOS DE FLORA - RESOLUCIÓN DIRECTORAL N° 0311-2013- MINAGRI-DGFFS-DGEFFS.

CERTIFICA.

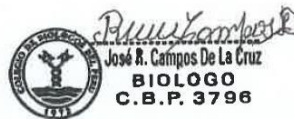
Que, el Mg. RUIZ QUIROZ, Julio Reynaldo, egresado del doctorado en Farmacia y Bioquímica de la Universidad Nacional Mayor de San Marcos, con fines de investigación ha solicitado la identificación y certificación botánica de una planta procedente del distrito del Tingo, provincia de Luya, departamento de Amazonas, donde es conocida con el nombre vulgar de “nogal peruano”, la muestra ha sido identificada con el nombre científico de *Juglans neotropica* Diels. de la Familia Juglandaceae y el Orden Fagales. Según la base de Trópicos que sigue el sistema moderno de clasificación de las angiospermas (APG), publicado en 1998 por el Grupo para la Filogenia de las Angiospermas, revisado por APG II (2003), APG III (2009) y APG IV (2016), este Sistema de clasificación considera a todas las plantas verdes en la Clase Equisetopsida (Chasse, MW y JL. Reavel. 2009), la especie identificada se ubica en las siguientes categorías taxonómicas.

Reino: Plantae
División: Angiospermae
Clase: Equisetopsida
Subclase: Magnoliidae
Superorden: Rosanae
Orden: Fagales
Familia: Juglandaceae
Género: *Juglans*
Especie: *Juglans neotropica* Diels.

Nombre vulgar: “nogal peruano”

Se expide la presente certificación con fines de investigación científica.

Lima, 16 de marzo del 2022



Jr. Sánchez Silva N° 156- piso 2. Urb. Santa Luzmila. Lima 07
Emailjocamde@gmail.com; joricampos@yahoo.es

ANEXO 3: Certificado de identificación botánica del “molle”

JOSÉ R. CAMPOS DE LA CRUZ
CONSULTOR BOTÁNICO
Email: jocamde@gmail.com
Cel: 963689079



CERTIFICACIÓN DE IDENTIFICACION BOTÁNICA

JOSÉ RICARDO CAMPOS DE LA CRUZ. BIÓLOGO COLEGIADO - CBP N° 3796 - INSCRITO EN EL REGISTRO DE PROFESIONALES QUE REALIZAN CERTIFICACIÓN DE IDENTIFICACIÓN TAXONÓMICA DE ESPECÍMENES Y PRODUCTOS DE FLORA - RESOLUCIÓN DIRECTORAL N° 0311-2013- MINAGRI-DGFFS-DGEFFS.

CERTIFICA.

Que, el Mg. RUIZ QUIROZ, Julio Reynaldo, egresado del doctorado en Farmacia y Bioquímica de la Universidad Nacional Mayor de San Marcos, con fines de investigación ha solicitado la identificación y certificación botánica de una planta procedente del distrito de Santa Eulalia, provincia de Huarochirí, departamento de Lima, donde es conocida con el nombre vulgar de “molle”, la muestra ha sido identificada con el nombre científico de *Schinus molle* L. de la Familia Anacardiaceae y el Orden Fagales. Según la base de Trópicos que sigue el sistema moderno de clasificación de las angiospermas (APG), publicado en 1998 por el Grupo para la Filogenia de las Angiospermas, revisado por APG II (2003), APG III (2009) y APG IV (2016), este Sistema de clasificación considera a todas las plantas verdes en la Clase Equisetopsida (Chasse, MW y JL. Reavel. 2009), la especie identificada se ubica en las siguientes categorías taxonómicas.

Reino: Plantae
División: Angiospermae
Clase: Equisetopsida
Subclase: Magnoliidae
Superorden: Rosanae
Orden: Sapindales
Familia: Anacardiaceae
Género: *Schinus*
Especie: *Schinus molle* L.

Nombre vulgar: “molle”

Se expide la presente certificación con fines de investigación científica.

Lima, 16 de marzo del 2022



Jr. Sánchez Silva N° 156- piso 2. Urb. Santa Luzmila. Lima 07
Email: jocamde@gmail.com; joricampos@yahoo.es

ANEXO 4: Certificado de identificación botánica del “chincho”



CERTIFICACIÓN DE IDENTIFICACION BOTÁNICA

JOSÉ RICARDO CAMPOS DE LA CRUZ, BIÓLOGO COLEGIADO - CBP N° 3796 – INSCRITO EN EL REGISTRO DE PROFESIONALES QUE REALIZAN CERTIFICACIÓN DE IDENTIFICACIÓN TAXONÓMICA DE ESPECÍMENES Y PRODUCTOS DE FLORA - RESOLUCIÓN DIRECTORAL N° 0311-2013- MINAGRI-DGFFS-DGEFFS.

CERTIFICA:

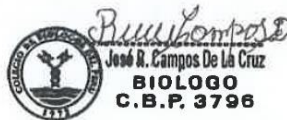
Que, el Mg. RUIZ QUIROZ, Julio Reynaldo, egresado del doctorado en Farmacia y Bioquímica de la Universidad Nacional Mayor de San Marcos, con fines de investigación ha solicitado la identificación y certificación botánica de una planta procedente del distrito de Callahuanca, provincia de Huarochirí, región de Lima, donde es conocida con el nombre vulgar de “chincho”, la muestra ha sido identificada con el nombre científico de *Tagetes elliptica Sm.* de la Familia Asteraceae y el Orden Asterales. Según la base de Trópicos que sigue el sistema moderno de clasificación de las angiospermas (APG), publicado en 1998 por el Grupo para la Filogenia de las Angiospermas, revisado por APG II (2003), APG III (2009) y APG IV (2016), este Sistema de clasificación considera a todas las plantas verdes en la Clase Equisetopsida (Chasse, MW y JL. Reavel. 2009), la especie identificada se ubica en las siguientes categorías taxonómicas.

Reino: Plantae
División: Angiospermae
Clase: Equisetopsida
Subclase: Magnoliidae
Superorden: Asterales
Orden: Asterales
Familia: Asteraceae
Género: *Tagetes*
Especie: *Tagetes elliptica Sm.*

Nombre vulgar: “chincho”

Se expide la presente certificación con fines de investigación científica.

Lima, 16 de marzo del 2022



Jr. Sánchez Silva N° 156- piso 2. Urb. Santa Luzmila. Lima 07
Emailjocamde@gmail.com; joricampos@yahoo.es

ANEXO 5: Resultados del análisis de CG/EM del aceite esencial de la cáscara de *Citrus paradisi*.

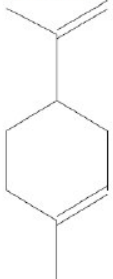


UNIVERSIDAD NACIONAL DE INGENIERÍA
FACULTAD DE CIENCIAS
LABICER (Laboratorio N° 12)
ANÁLISIS QUÍMICO, CONSULTORÍA E INVESTIGACIÓN



INFORME TÉCNICO N° 1275 – 18 – LABICER

- 1. DATOS DEL SOLICITANTE**
 - 1.1 NOMBRES DE LAS SOLICITANTES : JULIO REYNALDO RUIZ QUIROZ
 - 1.2 DNI : 07760326
- 2. CRONOGRAMA DE FECHAS**
 - 2.1 FECHA DE RECEPCIÓN : 24 / 07 / 2018
 - 2.2 FECHA DE ENSAYO : 25 / 07 / 2018
 - 2.3 FECHA DE EMISIÓN : 01 / 08 / 2018
- 3. ANÁLISIS SOLICITADO** : ANÁLISIS DE ACEITE ESENCIAL *CITRUS PARADISI*[®] (TORONJA)
- 4. DATOS REFERENCIALES DE LA MUESTRA SEGÚN SOLICITANTE**
 - 4.1 IDENTIFICACIÓN DE LA MUESTRA : 01 MUESTRA DE ACEITE ESENCIAL DE “*CITRUS PARADISI*” (TORONJA)
- 5. LUGAR DE RECEPCIÓN** : LABORATORIO LABICER - FACULTAD DE CIENCIAS
- 6. CONDICIONES AMBIENTALES** : Temperatura: 20.1 °C; Humedad relativa: 65%
- 7. DOCUMENTO DE REFERENCIA** : Bilal Gurbuza, *et. al.* Rosemary (*Rosmarinus officinalis* L.) cultivation studies under Ankara ecological conditions. *Industrial Crops and Products* 88 (2016) 12–16.
- 8. EQUIPOS UTILIZADOS**
CROMATÓGRAFO DE GASES. SHIMADZU, GC-2010 Plus.
AUTOMUESTREADOR: SHIMADZU, AOC-6000.
Detector de espectrometría de masas: SHIMADZU, GCMS-QP210 Ultra.
COLUMNA GC: RESTEK. RTX-5MS, 30m x 0.25 mm ID x 0.25 µm df. Serial: 1346249.
- 9. RESULTADOS**

MUESTRA	COMPONENTE PRINCIPAL <i>Análisis de Componentes Volátiles - Inyección por Headspace (HS)</i>	MÉTODO UTILIZADO
Aceite esencial de “ <i>Citrus paradisi</i> ” (toronja)	 <p>Componente mayoritario: D-Limonene</p>	Cromatografía de gases acoplado a espectrometría de masas

**Ver en Anexos (Tabla N°1) la lista de compuestos de la muestra, obtenido por el software del equipo GCMSsolution de SHIMADZU utilizando la librería NIST.*

10. OBSERVACIONES

Se encontraron 21 componentes volátiles en la muestra de aceite esencial, siendo los componentes mayoritarios: D-Limonene (83,45 %), Octanal (8,68%) y beta Myrcene (2,48 %) (Porcentaje relativo calculado de las áreas del cromatograma de la muestra).

11. VALIDEZ DEL INFORME TÉCNICO

Los resultados de este Informe técnico son válido solo para la muestra proporcionada por el solicitante del servicio en las condiciones indicadas del presente informe técnico.

Bach. Jesús Utano Reyes
Analista
LABICER –UNI

MSc Otilia Acha de la Cruz
Responsable de Análisis
Jefa de laboratorio
CQP 202

El Laboratorio no se responsabiliza del muestreo ni de la procedencia de la muestra.

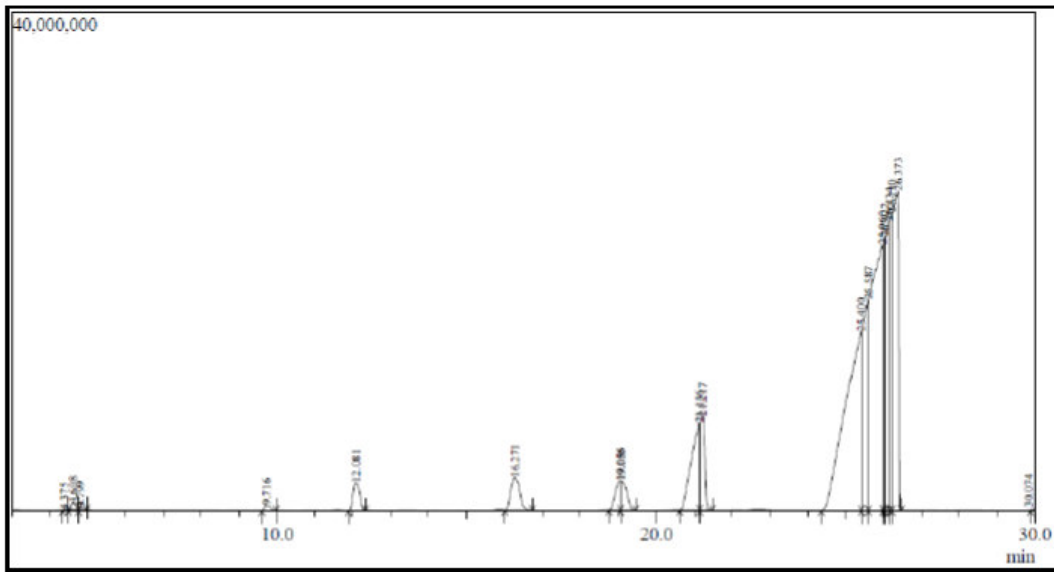


FIGURA N°1: PRIMERA PARTE DEL CROMATOGRÁMA DE 3 A 30 MINUTOS

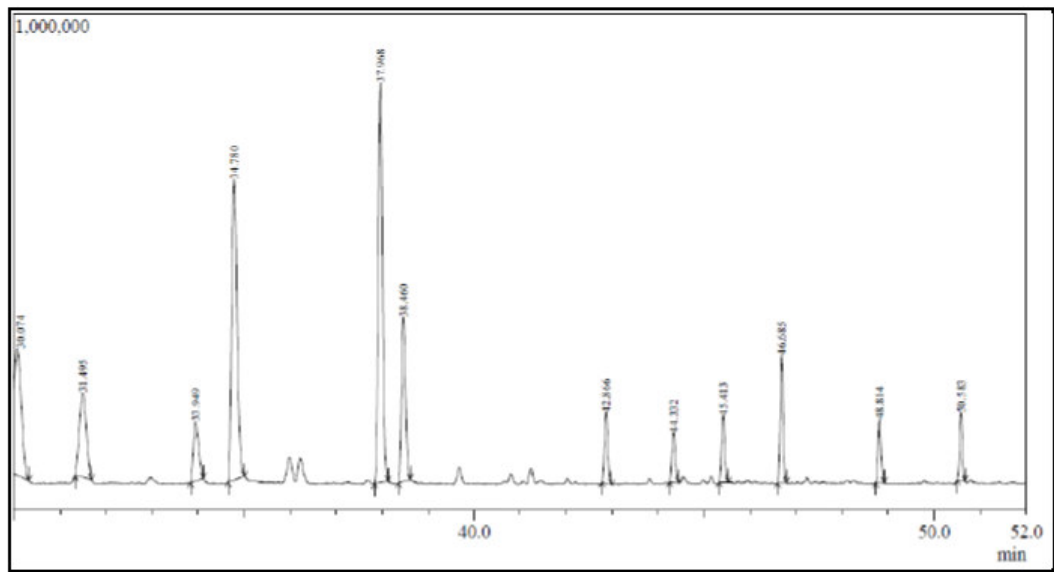


FIGURA N°2: SEGUNDA PARTE DEL CROMATOGRÁMA DE 30 A 52 MINUTOS

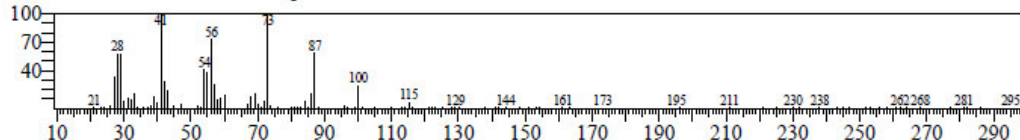
TABLA N°1: RESULTADOS DE COMPOSICIÓN DE ACEITE ESENCIAL DE TORONJA

Peak#	R.Time	Area	Area%	Height	Height%	Name
1	4.375	229248	0.01	30033	0.02	5-Chlorovaleric acid
2	4.608	5584070	0.28	541816	0.31	2-Pentanone, 4-methyl-, oxime
3	4.799	1802697	0.09	177606	0.10	Butane, 1-fluoro-
4	9.716	4576735	0.23	420188	0.24	Heptanal
5	12.081	27734808	1.41	2275168	1.29	.alpha.-Pinene
6	16.271	43508198	2.21	2628421	1.49	.beta.-Phellandrene
7	19.056	22657782	1.15	2375820	1.35	.beta.-Myrcene
8	19.085	26134692	1.33	2354379	1.34	.beta.-Myrcene
9	21.136	104714798	5.33	6999727	3.98	Octanal
10	21.217	65908562	3.35	7573164	4.31	Octanal
11	25.400	417071604	21.21	14372025	8.17	D-Limonene
12	25.587	174877750	8.89	16908584	9.62	D-Limonene
13	25.960	438835673	22.32	21316860	12.12	Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)-
14	26.022	71777836	3.65	21963805	12.49	Cyclohexene, 3-methyl-6-(1-methylethenyl)-, (3R-trans)-
15	26.134	155926639	7.93	23233851	13.21	D-Limonene
16	26.210	106002757	5.39	23876906	13.58	D-Limonene
17	26.373	276550812	14.06	25610008	14.56	D-Limonene
18	30.074	3100117	0.16	255245	0.15	1,3,6-Octatriene, 3,7-dimethyl-, (Z)-
19	31.495	1795897	0.09	170392	0.10	.gamma.-Terpinene
20	33.949	1025457	0.05	119897	0.07	trans-Linalool oxide (furanoid)
21	34.780	4946558	0.25	606683	0.35	1-Octanol
22	37.968	5299545	0.27	806872	0.46	Linalool
23	38.460	2040653	0.10	331628	0.19	Nonanal
24	42.866	719868	0.04	142569	0.08	Citronellal
25	44.332	528777	0.03	100783	0.06	Terpinen-4-ol
26	45.413	664811	0.03	134813	0.08	.alpha.-Terpineol
27	46.685	1126726	0.06	257778	0.15	Decanal
28	48.814	584441	0.03	127488	0.07	2,6-Octadienal, 3,7-dimethyl-, (Z)-
29	50.583	570343	0.03	135930	0.08	Citral
		1966297854	100.00	175848439	100.00	

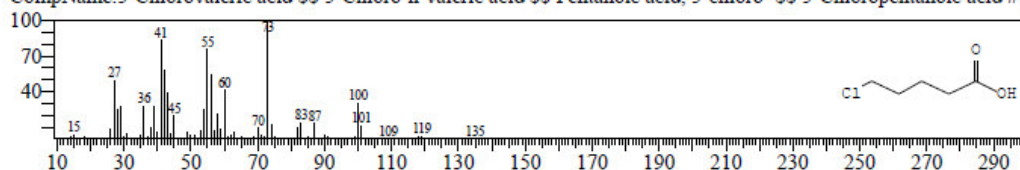
Library

<< Target >>

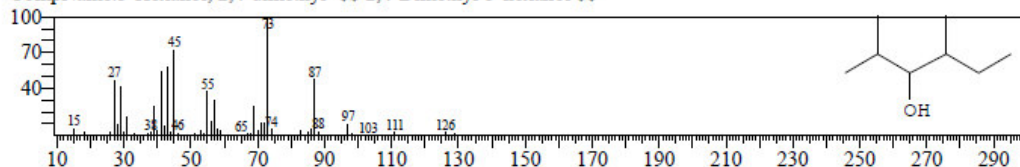
Line#:1 R.Time:4.375(Scan#:276) MassPeaks:139
RawMode:Averaged 4.370-4.380(275-277) BasePeak:41.00(3276)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



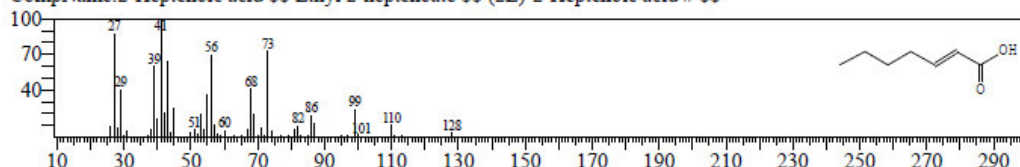
Hit#:1 Entry:6560 Library:NIST14s.lib
SI:79 Formula:C5H9ClO2 CAS:1119-46-6 MolWeight:136 RefIndex:1100
CompName:5-Chlorovaleric acid \$\$ 5-Chloro-n-valeric acid \$\$ Pentanoic acid, 5-chloro- \$\$ 5-Chloropentanoic acid # 5



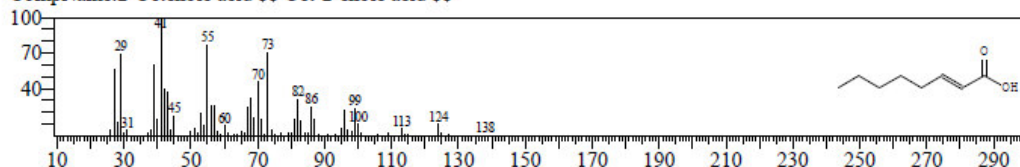
Hit#:2 Entry:5794 Library:NIST14s.lib
SI:78 Formula:C8H18O CAS:13432-25-2 MolWeight:130 RefIndex:851
CompName:3-Hexanol, 2,4-dimethyl- \$\$ 2,4-Dimethyl-3-hexanol \$\$



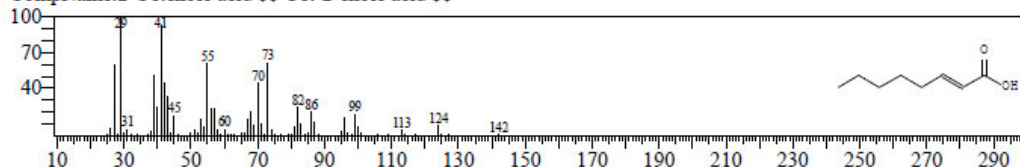
Hit#:3 Entry:5206 Library:NIST14s.lib
SI:78 Formula:C7H12O2 CAS:18999-28-5 MolWeight:128 RefIndex:1081
CompName:2-Heptenoic acid \$\$ Ethyl 2-heptenoate \$\$ (2E)-2-Heptenoic acid # \$\$



Hit#:4 Entry:7779 Library:NIST14s.lib
SI:76 Formula:C8H14O2 CAS:1470-50-4 MolWeight:142 RefIndex:1181
CompName:2-Octenoic acid \$\$ Oct-2-enoic acid \$\$

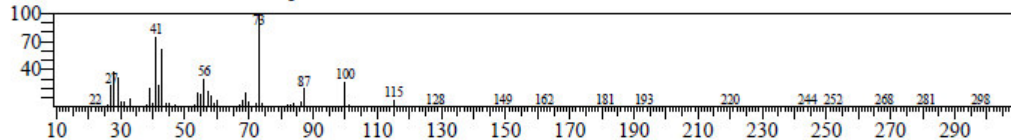


Hit#:5 Entry:7776 Library:NIST14s.lib
SI:76 Formula:C8H14O2 CAS:1470-50-4 MolWeight:142 RefIndex:1181
CompName:2-Octenoic acid \$\$ Oct-2-enoic acid \$\$

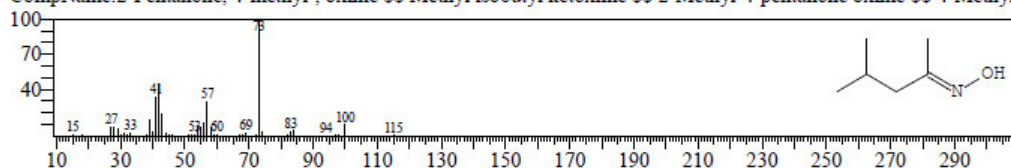


<< Target >>

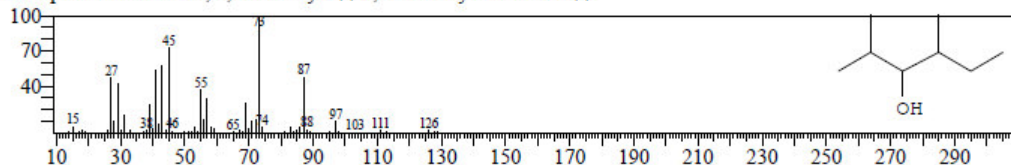
Line#:2 R Time:4.610(Scan#:323) MassPeaks:166
RawMode:Averaged 4.605-4.615(322-324) BasePeak:73.00(76508)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



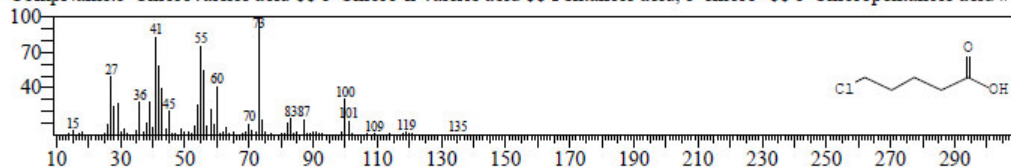
Hit#:1 Entry:3563 Library:NIST14s.lib
SI:81 Formula:C6H13NO CAS:105-44-2 MolWeight:115 RefIndex:886
CompName:2-Pentanone, 4-methyl-, oxime \$\$ Methyl isobutyl ketoxime \$\$ 2-Methyl-4-pentanone oxime \$\$ 4-Methyl-



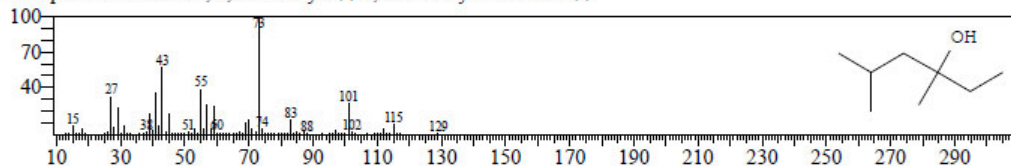
Hit#:2 Entry:5794 Library:NIST14s.lib
SI:81 Formula:C8H18O CAS:13432-25-2 MolWeight:130 RefIndex:851
CompName:3-Hexanol, 2,4-dimethyl- \$\$ 2,4-Dimethyl-3-hexanol \$\$



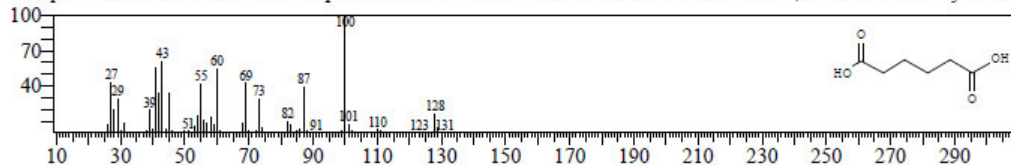
Hit#:3 Entry:6560 Library:NIST14s.lib
SI:80 Formula:C5H9ClO2 CAS:1119-46-6 MolWeight:136 RefIndex:1100
CompName:5-Chlorovaleric acid \$\$ 5-Chloro-n-valeric acid \$\$ Pentanoic acid, 5-chloro- \$\$ 5-Chloropentanoic acid # \$



Hit#:4 Entry:5793 Library:NIST14s.lib
SI:80 Formula:C8H18O CAS:4209-91-0 MolWeight:130 RefIndex:844
CompName:3-Hexanol, 3,5-dimethyl- \$\$ 3,5-Dimethyl-3-hexanol \$\$

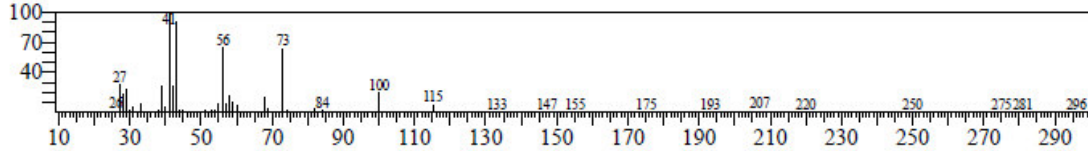


Hit#:5 Entry:8412 Library:NIST14s.lib
SI:80 Formula:C6H10O4 CAS:124-04-9 MolWeight:146 RefIndex:1330
CompName:Hexanedioic acid \$\$ Adipic acid \$\$ Acifloctin \$\$ Acinetten \$\$ Adilactetten \$\$ 1,4-Butanedicarboxylic acid

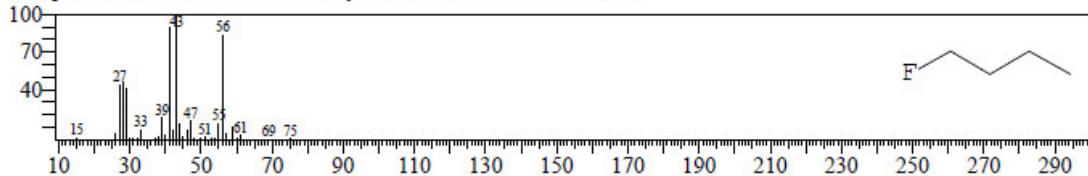


<< Target >>

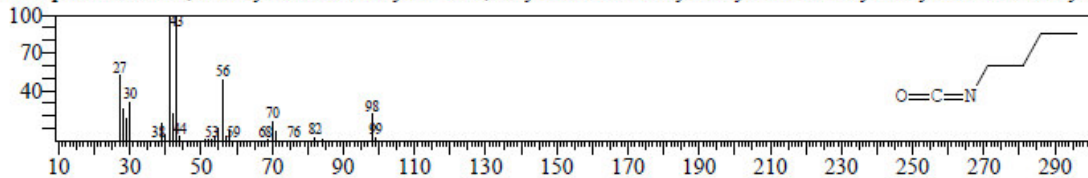
Line# 3 R.Time: 4.800(Scan#: 361) MassPeaks: 169
RawMode: Averaged 4.795-4.805(360-362) BasePeak: 41.00(11819)
BG Mode: Calc. from Peak Group 1 - Event 1 Scan



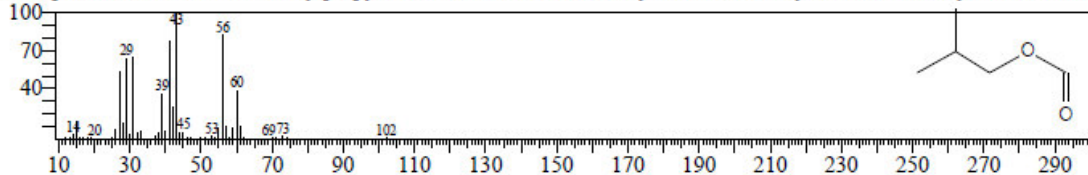
Hit# 1 Entry: 528 Library: NIST14s.lib
SI: 83 Formula: C4H9F CAS: 2366-52-1 MolWeight: 76 RetIndex: 392
CompName: Butane, 1-fluoro- \$\$ Butyl fluoride \$\$ 1-Fluorobutane \$\$



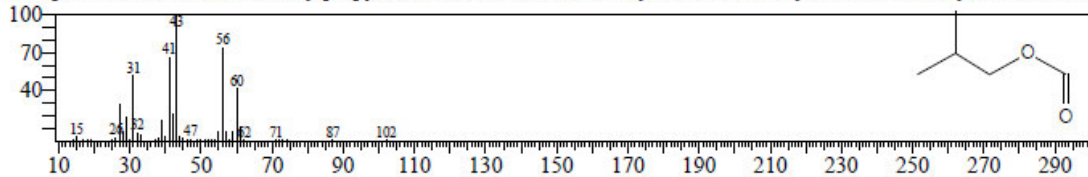
Hit# 2 Entry: 1713 Library: NIST14s.lib
SI: 83 Formula: C5H9NO CAS: 111-36-4 MolWeight: 99 RetIndex: 0
CompName: Butane, 1-isocyanato- \$\$ Isocyanic acid, butyl ester \$\$ n-Butyl isocyanate \$\$ Butyl isocyanate \$\$ 1-Isocyan



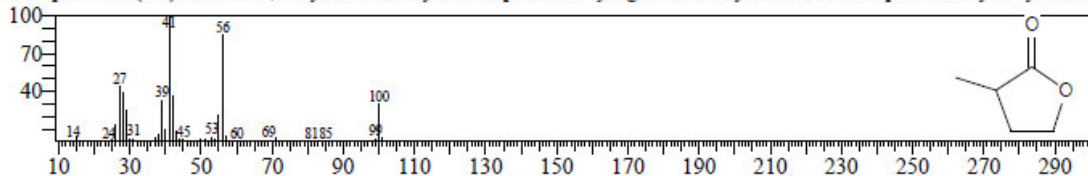
Hit# 3 Entry: 2069 Library: NIST14s.lib
SI: 81 Formula: C5H10O2 CAS: 542-55-2 MolWeight: 102 RetIndex: 718
CompName: Formic acid, 2-methylpropyl ester \$\$ Formic acid, isobutyl ester \$\$ Isobutyl formate \$\$ Tetryl formate \$\$ 2



Hit# 4 Entry: 2070 Library: NIST14s.lib
SI: 81 Formula: C5H10O2 CAS: 542-55-2 MolWeight: 102 RetIndex: 718
CompName: Formic acid, 2-methylpropyl ester \$\$ Formic acid, isobutyl ester \$\$ Isobutyl formate \$\$ Tetryl formate \$\$ 2



Hit# 5 Entry: 1768 Library: NIST14s.lib
SI: 81 Formula: C5H8O2 CAS: 1679-47-6 MolWeight: 100 RetIndex: 886
CompName: 2(3H)-Furanone, dihydro-3-methyl- \$\$ alpha-Methyl-gamma-butyrolactone \$\$ alpha-Methylbutyrolactone

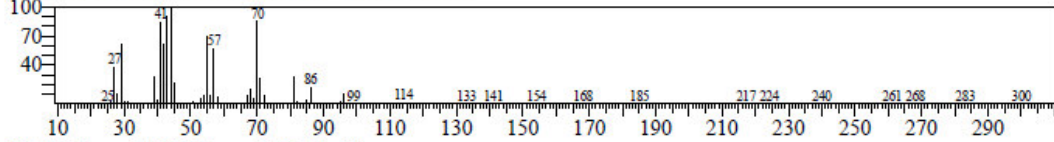


<< Target >>

Line#:4 R.Time:9.715(Scan#:1344) MassPeaks:144

RawMode:Averaged 9.710-9.720(1343-1345) BasePeak:43.95(47233)

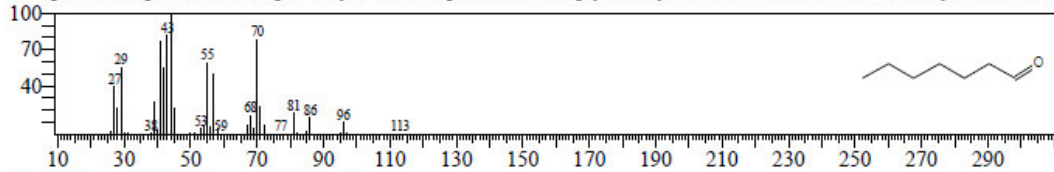
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:3405 Library:NIST14s.lib

SI:97 Formula:C7H14O CAS:111-71-7 MolWeight:114 RetIndex:905

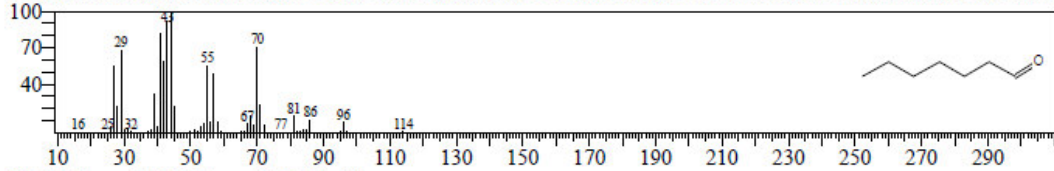
CompName:Heptanal \$\$ n-Heptaldehyde \$\$ n-Heptanal \$\$ n-Heptylaldehyde \$\$ Enanthal \$\$ Enanthaldehyde \$\$ Enant



Hit#:2 Entry:3403 Library:NIST14s.lib

SI:96 Formula:C7H14O CAS:111-71-7 MolWeight:114 RetIndex:905

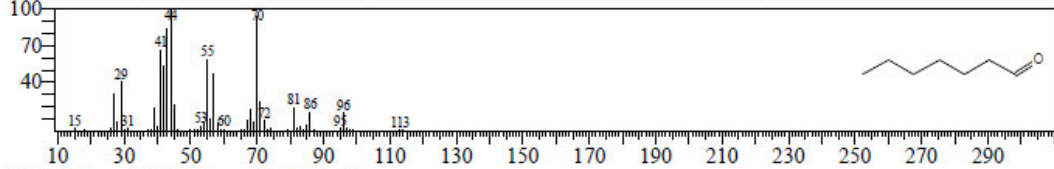
CompName:Heptanal \$\$ n-Heptaldehyde \$\$ n-Heptanal \$\$ n-Heptylaldehyde \$\$ Enanthal \$\$ Enanthaldehyde \$\$ Enant



Hit#:3 Entry:3406 Library:NIST14s.lib

SI:96 Formula:C7H14O CAS:111-71-7 MolWeight:114 RetIndex:905

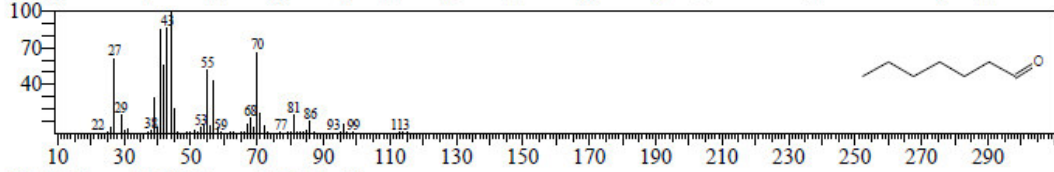
CompName:Heptanal \$\$ n-Heptaldehyde \$\$ n-Heptanal \$\$ n-Heptylaldehyde \$\$ Enanthal \$\$ Enanthaldehyde \$\$ Enant



Hit#:4 Entry:3404 Library:NIST14s.lib

SI:93 Formula:C7H14O CAS:111-71-7 MolWeight:114 RetIndex:905

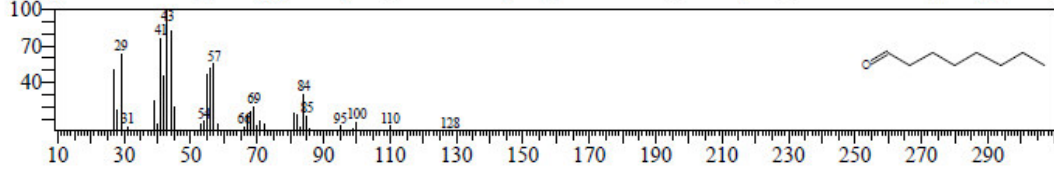
CompName:Heptanal \$\$ n-Heptaldehyde \$\$ n-Heptanal \$\$ n-Heptylaldehyde \$\$ Enanthal \$\$ Enanthaldehyde \$\$ Enant



Hit#:5 Entry:5284 Library:NIST14s.lib

SI:87 Formula:C8H16O CAS:124-13-0 MolWeight:128 RetIndex:1005

CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$\$ Antifoam-LF \$\$ Caprylaldehy

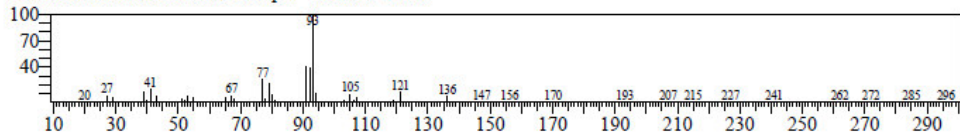


<< Target >>

Line# 5 R.Time:12.080(Scan#:1817) MassPeaks:173

RawMode:Averaged 12.075-12.085(1816-1818) BasePeak:93.05(583178)

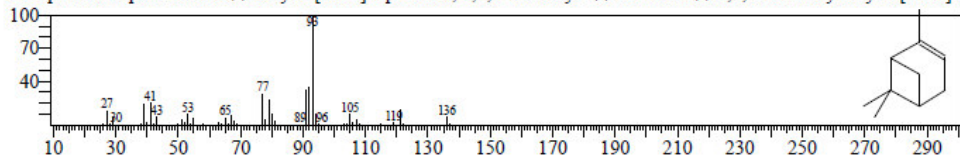
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit# 1 Entry:6850 Library:NIST14s.lib

SI:96 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948

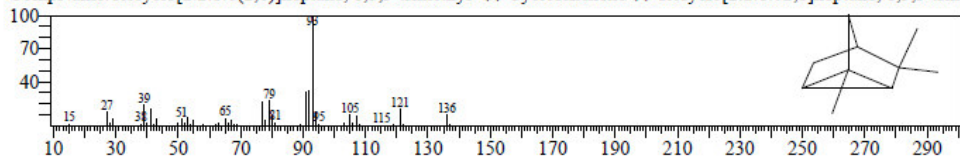
CompName:alpha-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



Hit# 2 Entry:6848 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729

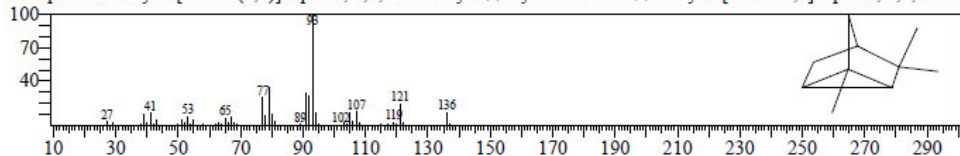
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit# 3 Entry:6828 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729

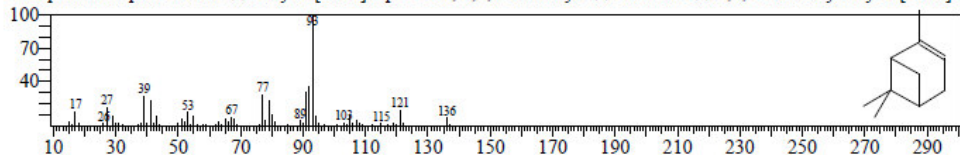
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit# 4 Entry:6849 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948

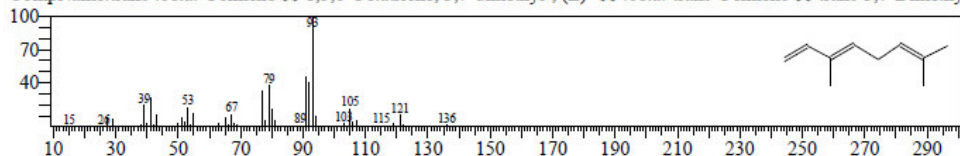
CompName:alpha-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



Hit# 5 Entry:6844 Library:NIST14s.lib

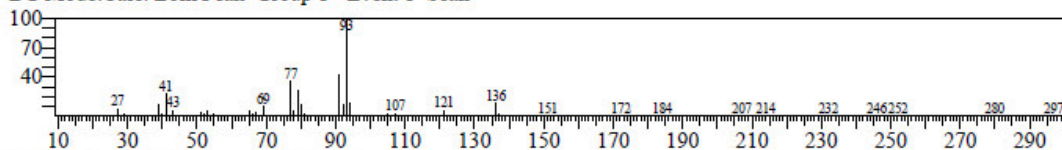
SI:93 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976

CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethy

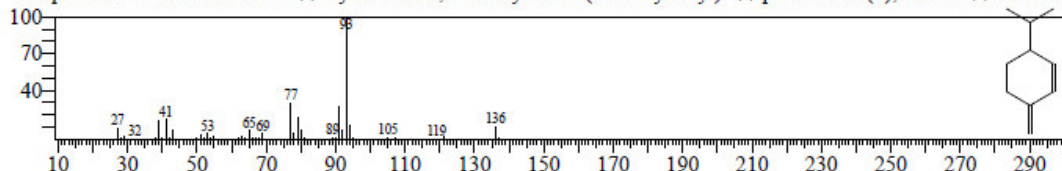


<< Target >>

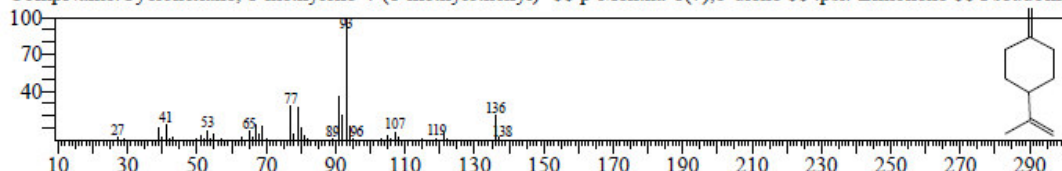
Line#:6 R.Time:16.270(Scan#:2655) MassPeaks:205
RawMode:Averaged 16.265-16.275(2654-2656) BasePeak:93.05(704776)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



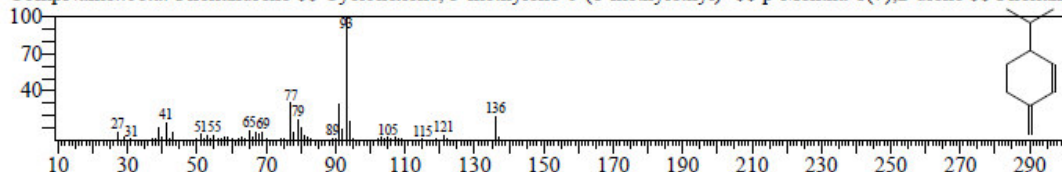
Hit#:1 Entry:6822 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellanc



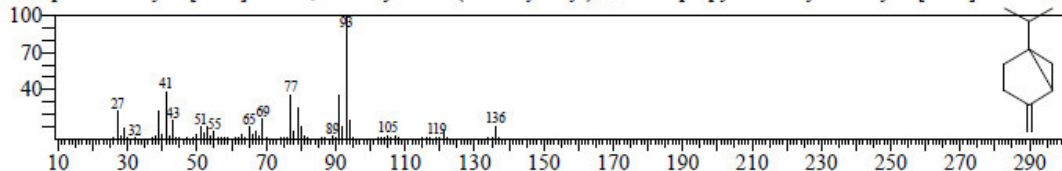
Hit#:2 Entry:6833 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:499-97-8 MolWeight:136 RetIndex:1013
CompName:Cyclohexane, 1-methylene-4-(1-methylethenyl)- \$\$ p-Mentha-1(7),8-diene \$\$.psi.-Limonene \$\$ Pseudolin



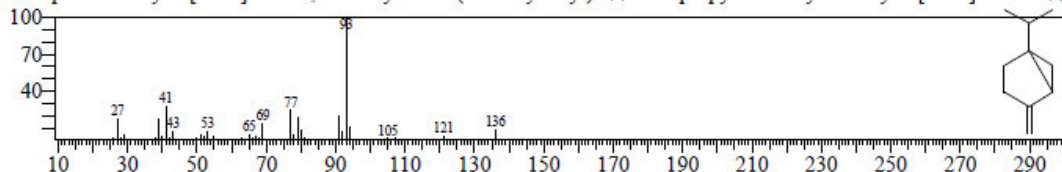
Hit#:3 Entry:6823 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellanc



Hit#:4 Entry:6817 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

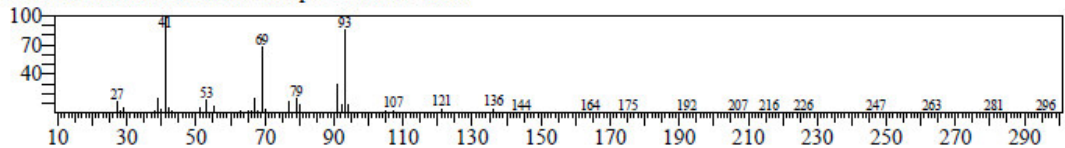


Hit#:5 Entry:6811 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

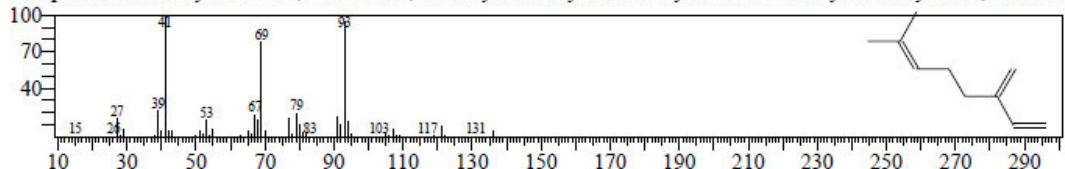


<< Target >>

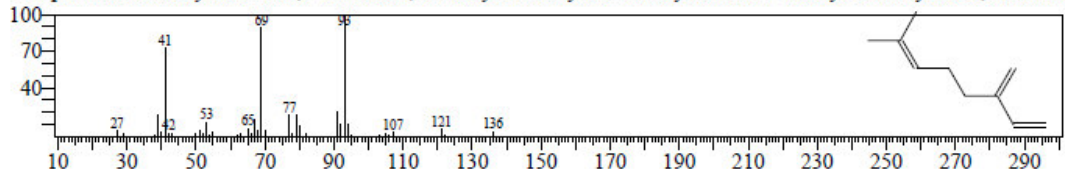
Line#:7 R.Time:19.055(Scan#:3212) MassPeaks:158
RawMode:Averaged 19.050-19.060(3211-3213) BasePeak:41.00(30069)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



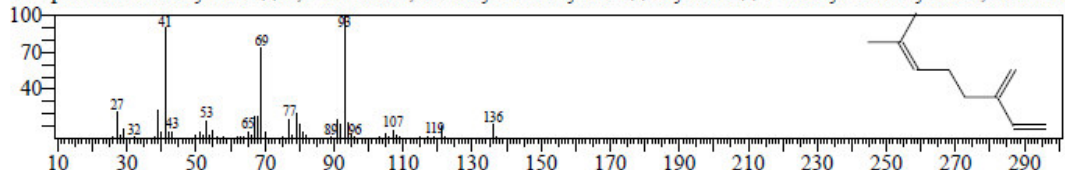
Hit#:1 Entry:6778 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



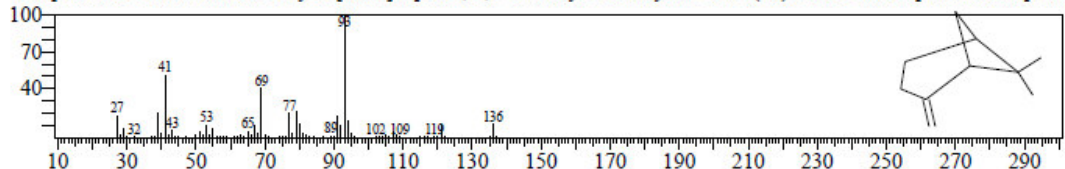
Hit#:2 Entry:6820 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



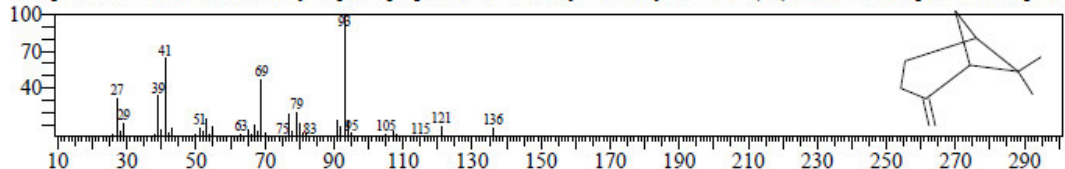
Hit#:3 Entry:6810 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



Hit#:4 Entry:6809 Library:NIST14s.lib
SI:89 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

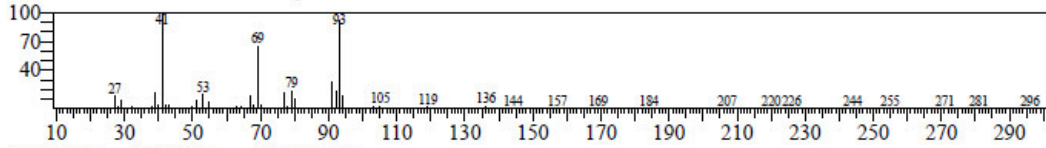


Hit#:5 Entry:6807 Library:NIST14s.lib
SI:89 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



<< Target >>

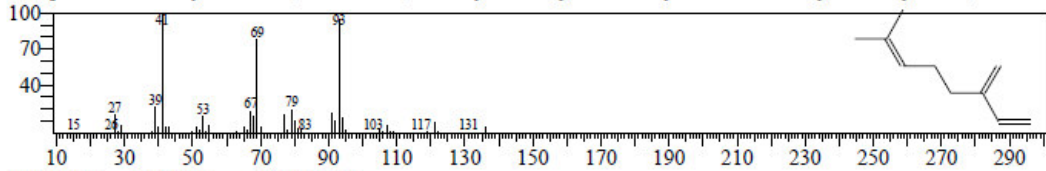
Line# 8 R.Time:19.085(Scan#:3218) MassPeaks:186
RawMode:Averaged 19.080-19.090(3217-3219) BasePeak:41.00(18611)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit# 1 Entry:6778 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958

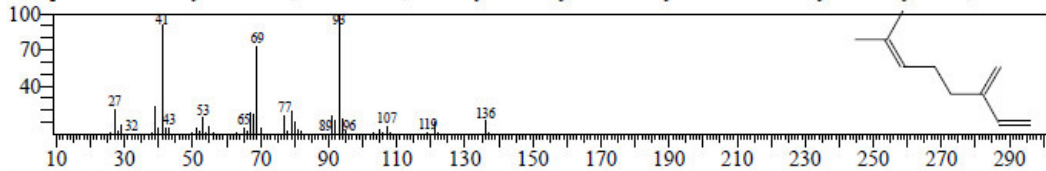
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



Hit# 2 Entry:6810 Library:NIST14s.lib

SI:92 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958

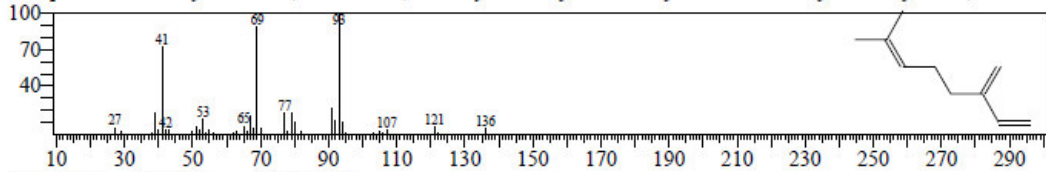
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



Hit# 3 Entry:6820 Library:NIST14s.lib

SI:92 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958

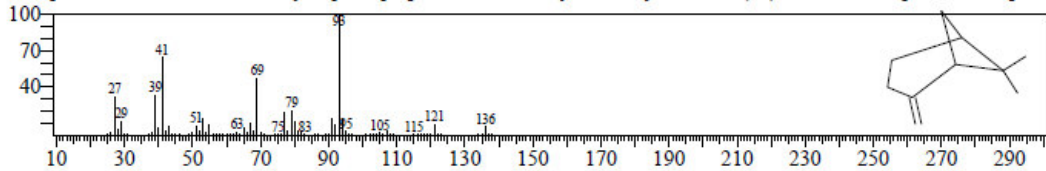
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



Hit# 4 Entry:6807 Library:NIST14s.lib

SI:90 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943

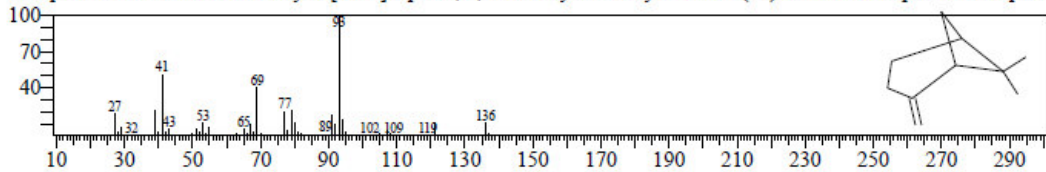
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



Hit# 5 Entry:6809 Library:NIST14s.lib

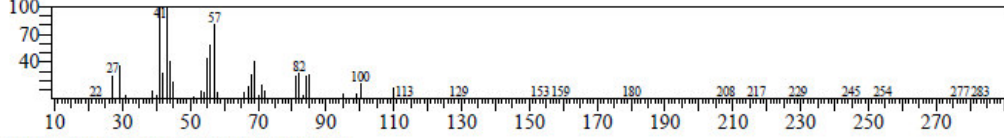
SI:89 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943

CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

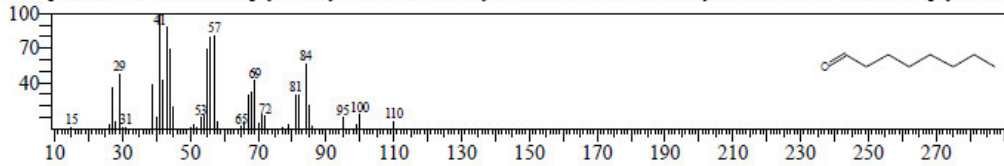


<< Target >>

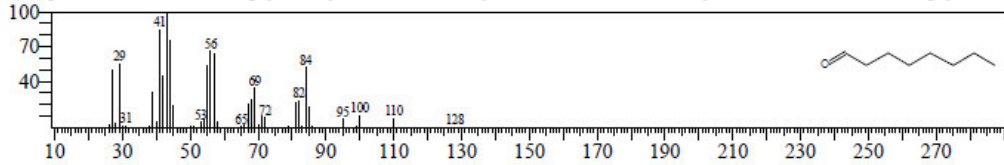
Line#:9 R.Time:21.135(Scan#:3628) MassPeaks:162
RawMode:Averaged 21.130-21.140(3627-3629) BasePeak:41.00(17099)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



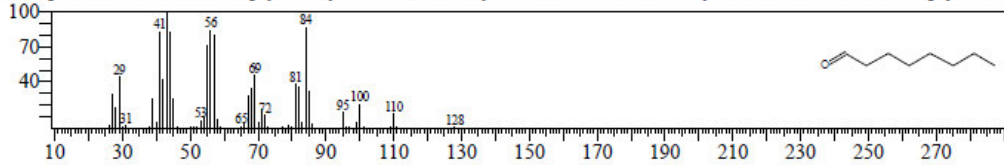
Hit#:1 Entry:5278 Library:NIST14s.lib
SI:92 Formula:C8H16O CAS:124-13-0 MolWeight:128 RefIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$ Antifoam-LF \$\$ Caprylaldehy



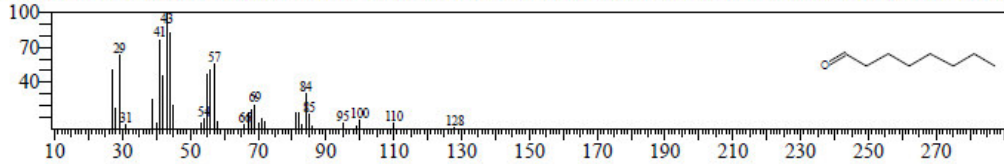
Hit#:2 Entry:5283 Library:NIST14s.lib
SI:92 Formula:C8H16O CAS:124-13-0 MolWeight:128 RefIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$ Antifoam-LF \$\$ Caprylaldehy



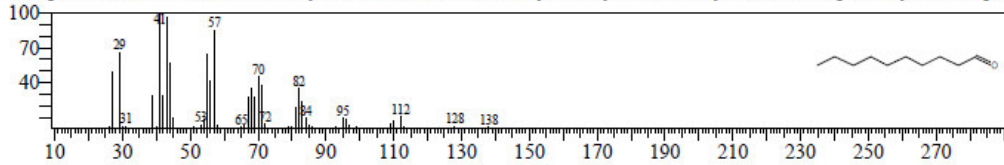
Hit#:3 Entry:5305 Library:NIST14s.lib
SI:91 Formula:C8H16O CAS:124-13-0 MolWeight:128 RefIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$ Antifoam-LF \$\$ Caprylaldehy



Hit#:4 Entry:5284 Library:NIST14s.lib
SI:89 Formula:C8H16O CAS:124-13-0 MolWeight:128 RefIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$ Antifoam-LF \$\$ Caprylaldehy

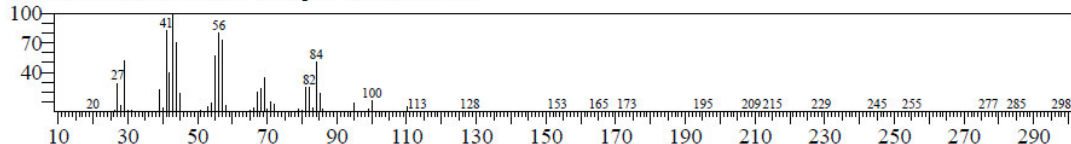


Hit#:5 Entry:10710 Library:NIST14s.lib
SI:87 Formula:C10H20O CAS:112-31-2 MolWeight:156 RefIndex:1204
CompName:Decanal \$\$ n-Decaldehyde \$\$ n-Decanal \$\$ n-Decyl aldehyde \$\$ Aldehyde C10 \$\$ Capraldehyde \$\$ Capri

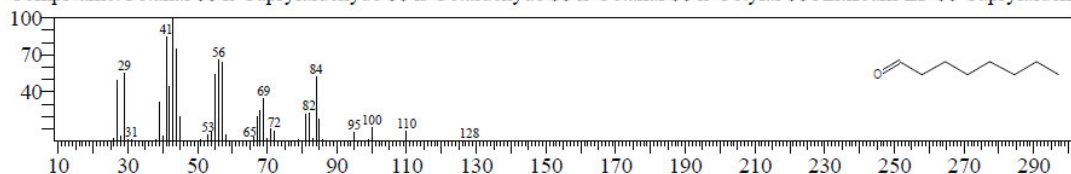


<< Target >>

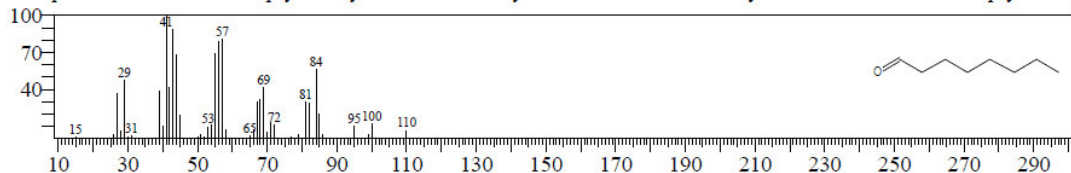
Line#:10 R.Time:21.215(Scan#:3644) MassPeaks:178
RawMode:Averaged 21.210-21.220(3643-3645) BasePeak:43.00(218458)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



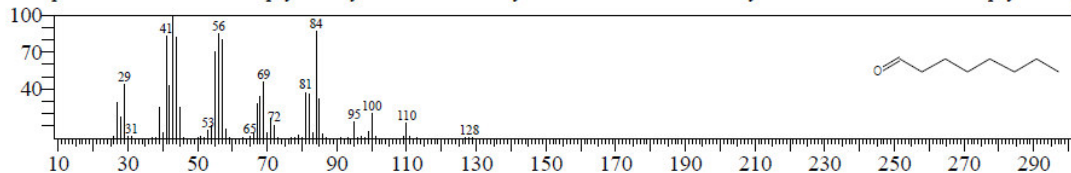
Hit#:1 Entry:5283 Library:NIST14s.lib
SI:97 Formula:C8H16O CAS:124-13-0 MolWeight:128 RetIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$\$ Antifoam-LF \$\$ Caprylaldehy



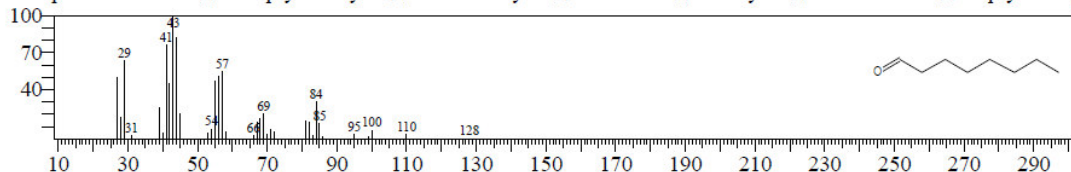
Hit#:2 Entry:5278 Library:NIST14s.lib
SI:95 Formula:C8H16O CAS:124-13-0 MolWeight:128 RetIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$\$ Antifoam-LF \$\$ Caprylaldehy



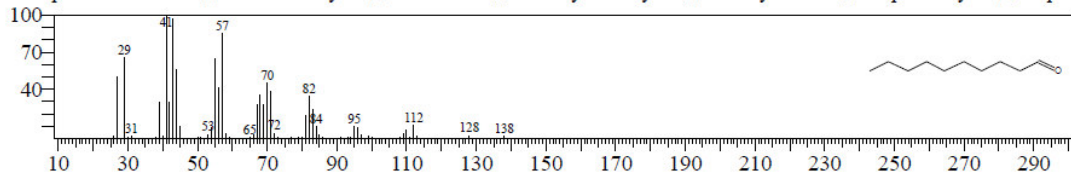
Hit#:3 Entry:5305 Library:NIST14s.lib
SI:95 Formula:C8H16O CAS:124-13-0 MolWeight:128 RetIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$\$ Antifoam-LF \$\$ Caprylaldehy



Hit#:4 Entry:5284 Library:NIST14s.lib
SI:93 Formula:C8H16O CAS:124-13-0 MolWeight:128 RetIndex:1005
CompName:Octanal \$\$ n-Caprylaldehyde \$\$ n-Octaldehyde \$\$ n-Octanal \$\$ n-Octylal \$\$ Antifoam-LF \$\$ Caprylaldehy

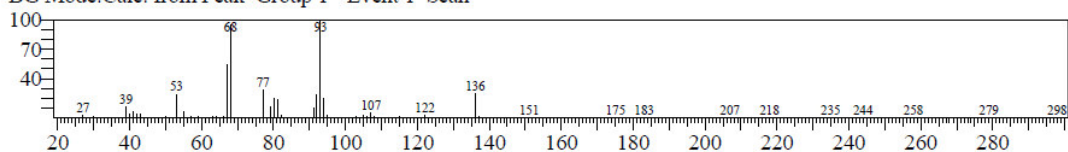


Hit#:5 Entry:10710 Library:NIST14s.lib
SI:88 Formula:C10H20O CAS:112-31-2 MolWeight:156 RetIndex:1204
CompName:Decanal \$\$ n-Decaldehyde \$\$ n-Decanal \$\$ n-Decyl aldehyde \$\$ Aldehyde C10 \$\$ Capraldehyde \$\$ Capri

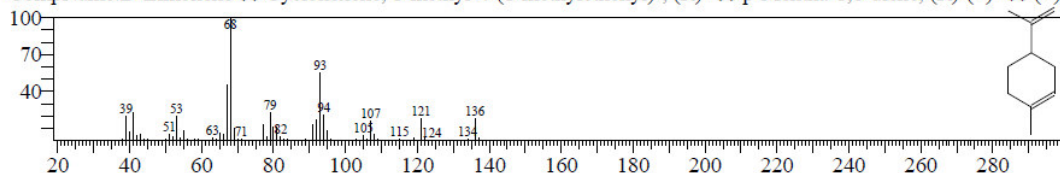


<< Target >>

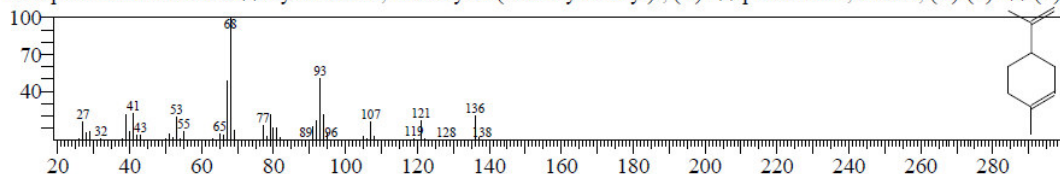
Line#:11 R.Time:25.400(Scan#:4481) MassPeaks:169
RawMode:Averaged 25.395-25.405(4480-4482) BasePeak:93.05(34878)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



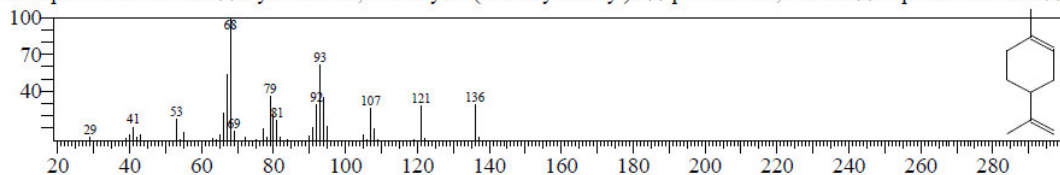
Hit#:1 Entry:6791 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



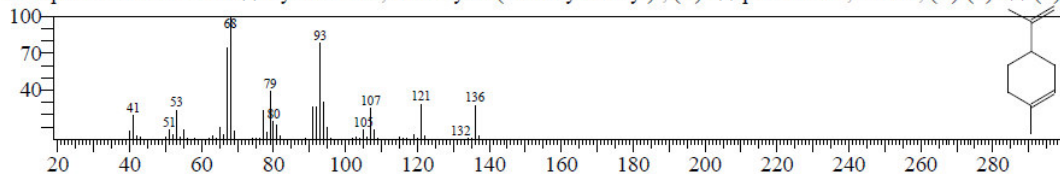
Hit#:2 Entry:6792 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



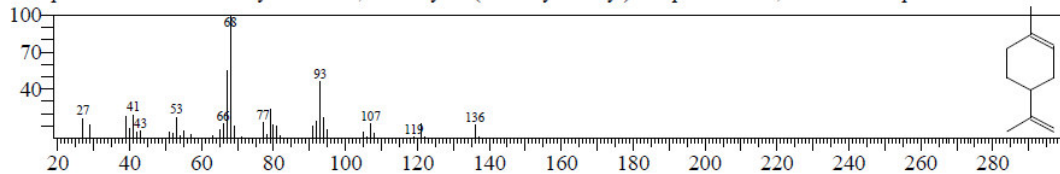
Hit#:3 Entry:6790 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



Hit#:4 Entry:6793 Library:NIST14s.lib
SI:84 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

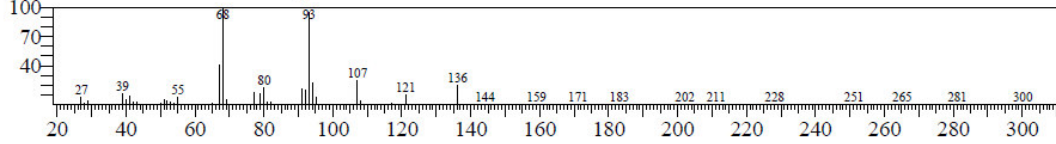


Hit#:5 Entry:6785 Library:NIST14s.lib
SI:84 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

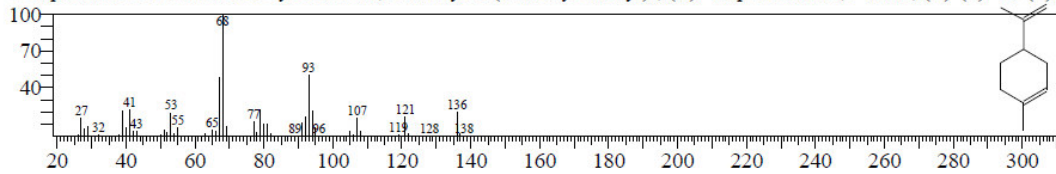


<< Target >>

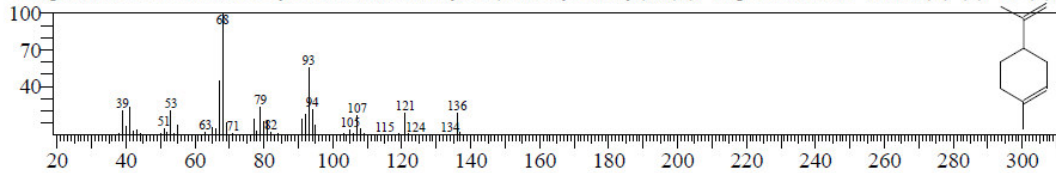
Line#:12 R.Time:25.585(Scan#:4518) MassPeaks:156
RawMode:Averaged 25.580-25.590(4517-4519) BasePeak:68.05(38811)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



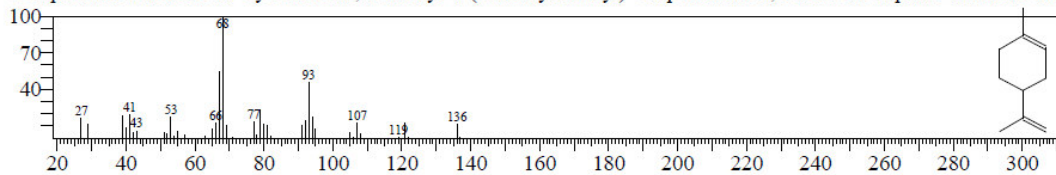
Hit#:1 Entry:6792 Library:NIST14s.lib
SI:89 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



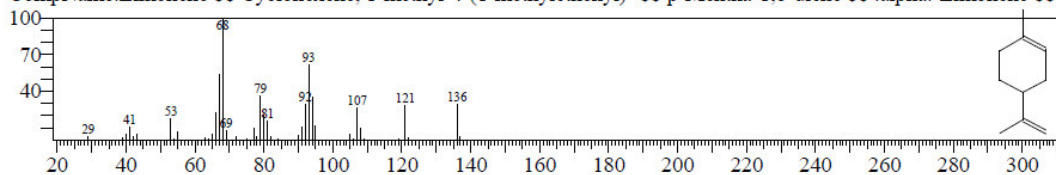
Hit#:2 Entry:6791 Library:NIST14s.lib
SI:88 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



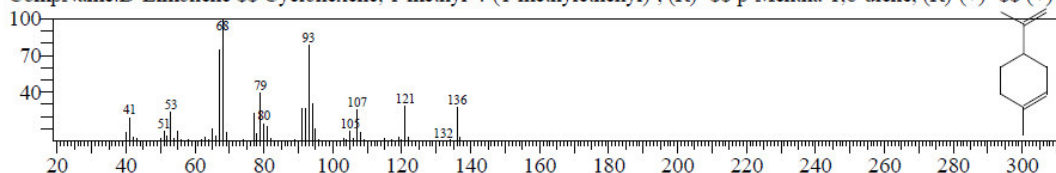
Hit#:3 Entry:6785 Library:NIST14s.lib
SI:87 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



Hit#:4 Entry:6790 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

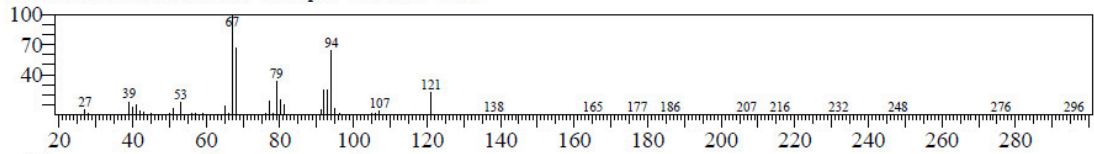


Hit#:5 Entry:6793 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

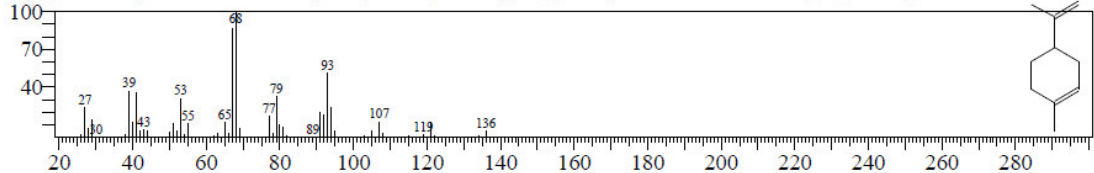


<< Target >>

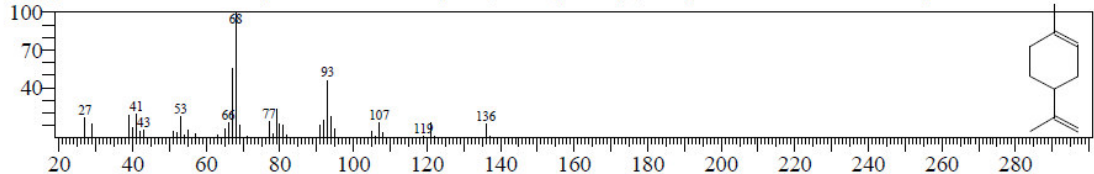
Line#:13 R.Time:25.960(Scan#:4593) MassPeaks:149
RawMode:Averaged 25.955-25.965(4592-4594) BasePeak:67.05(54674)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



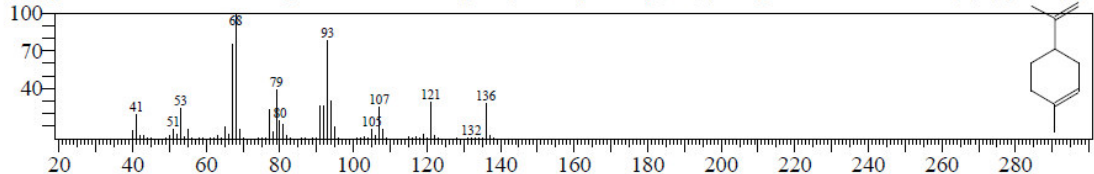
Hit#:1 Entry:6787 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:5989-54-8 MolWeight:136 RetIndex:1018
CompName:Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)- \$\$ p-Mentha-1,8-diene, (S)-(-)- \$\$ (-)-Limonene \$\$ L-Li



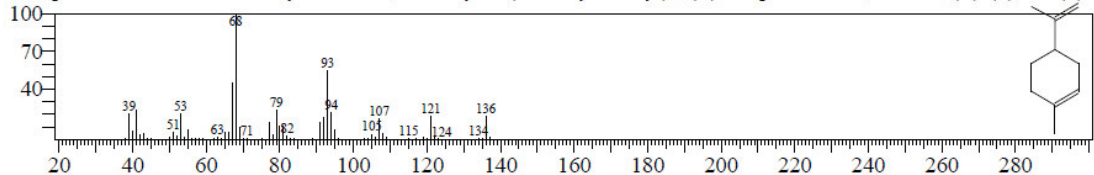
Hit#:2 Entry:6785 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



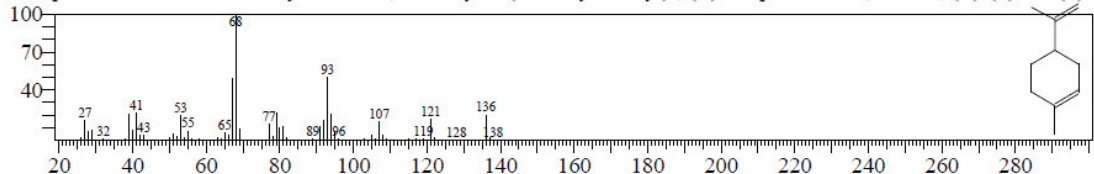
Hit#:3 Entry:6793 Library:NIST14s.lib
SI:80 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



Hit#:4 Entry:6791 Library:NIST14s.lib
SI:80 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

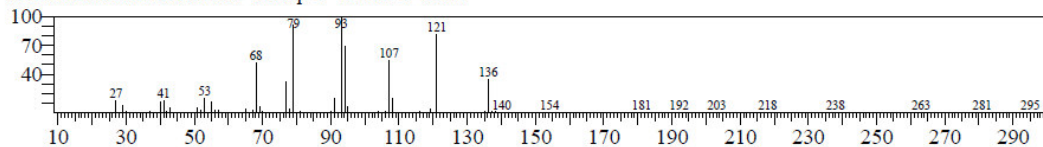


Hit#:5 Entry:6792 Library:NIST14s.lib
SI:80 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



<< Target >>

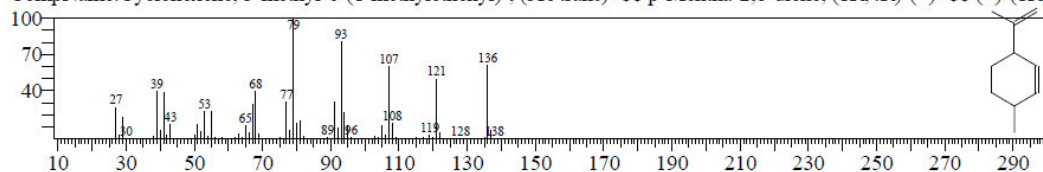
Line#:14 R.Time:26.020(Scan#:4605) MassPeaks:165
RawMode:Averaged 26.015-26.025(4604-4606) BasePeak:93.05(27342)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6801 Library:NIST14s.lib

SI:82 Formula:C10H16 CAS:5113-87-1 MolWeight:136 RetIndex:990

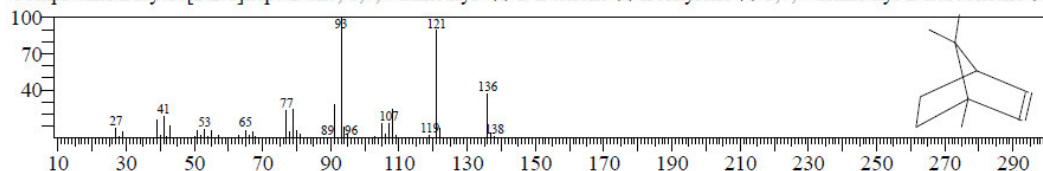
CompName:Cyclohexene, 3-methyl-6-(1-methylethenyl)-, (3R-trans)- \$\$ p-Mentha-2,8-diene, (1R,4R)-(+)- \$\$ (+)-(1R,



Hit#:2 Entry:6858 Library:NIST14s.lib

SI:82 Formula:C10H16 CAS:464-17-5 MolWeight:136 RetIndex:932

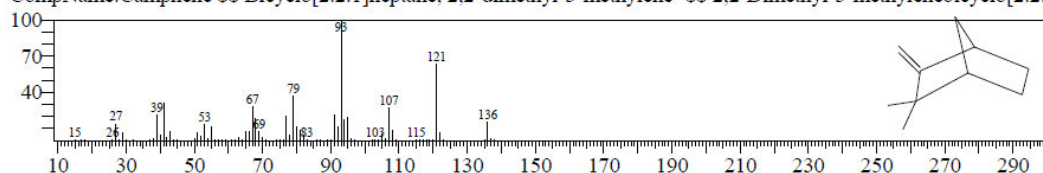
CompName:Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl- \$\$ 2-Bornene \$\$ Bornylene \$\$ 1,7,7-Trimethyl-2-norbomene \$\$



Hit#:3 Entry:6853 Library:NIST14s.lib

SI:81 Formula:C10H16 CAS:79-92-5 MolWeight:136 RetIndex:943

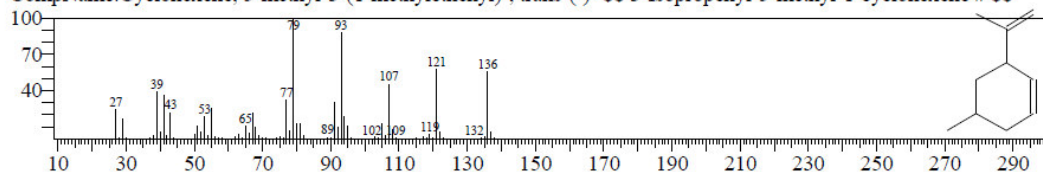
CompName:Camphene \$\$ Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- \$\$ 2,2-Dimethyl-3-methylenebicyclo[2.2.1]



Hit#:4 Entry:6800 Library:NIST14s.lib

SI:81 Formula:C10H16 CAS:56816-08-1 MolWeight:136 RetIndex:990

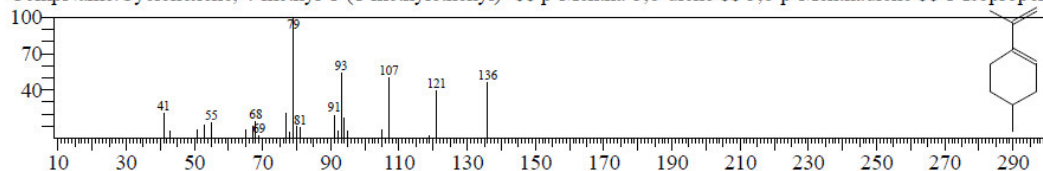
CompName:Cyclohexene, 5-methyl-3-(1-methylethenyl)-, trans-(-)- \$\$ 3-Isopropenyl-5-methyl-1-cyclohexene # \$\$



Hit#:5 Entry:6798 Library:NIST14s.lib

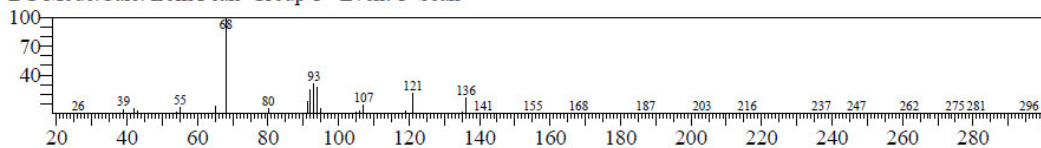
SI:81 Formula:C10H16 CAS:586-67-4 MolWeight:136 RetIndex:1018

CompName:Cyclohexene, 4-methyl-1-(1-methylethenyl)- \$\$ p-Mentha-3,8-diene \$\$ 3,8-p-Menthadiene \$\$ 1-Isopropenyl-

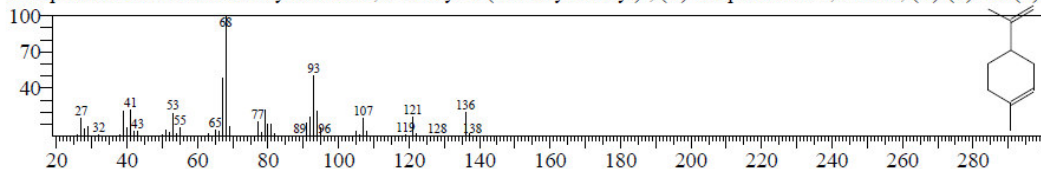


<< Target >>

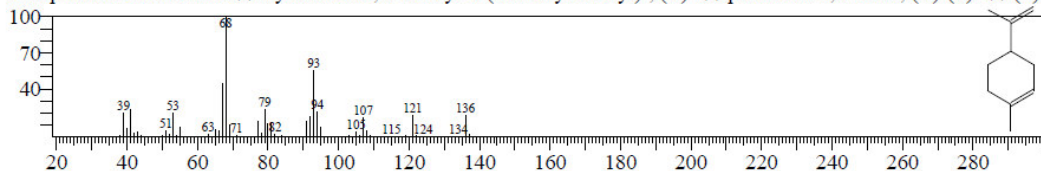
Line#:15 R.Time:26.135(Scan#:4628) MassPeaks:152
RawMode:Averaged 26.130-26.140(4627-4629) BasePeak:68.05(57139)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



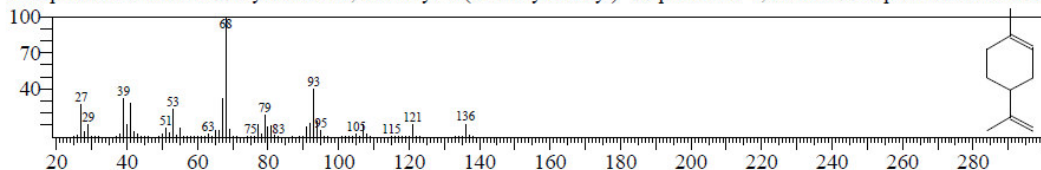
Hit#:1 Entry:6792 Library:NIST14s.lib
SI:71 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



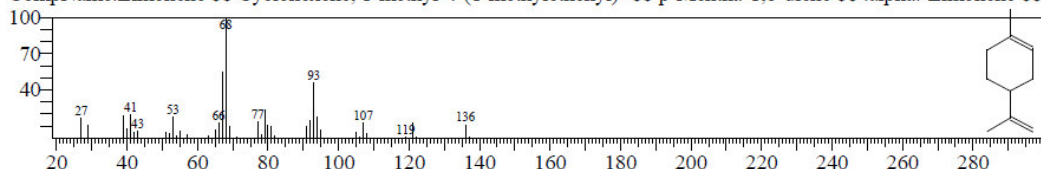
Hit#:2 Entry:6791 Library:NIST14s.lib
SI:71 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



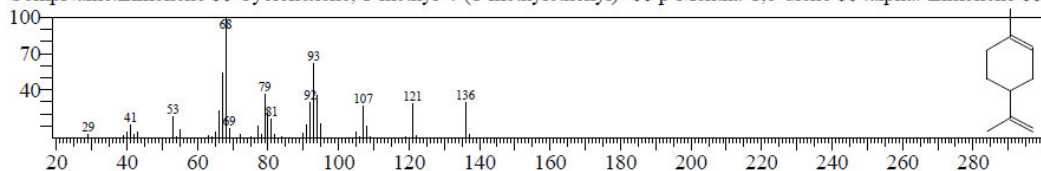
Hit#:3 Entry:6789 Library:NIST14s.lib
SI:70 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



Hit#:4 Entry:6785 Library:NIST14s.lib
SI:69 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

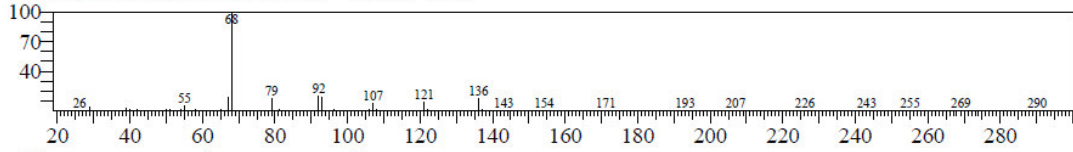


Hit#:5 Entry:6790 Library:NIST14s.lib
SI:69 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

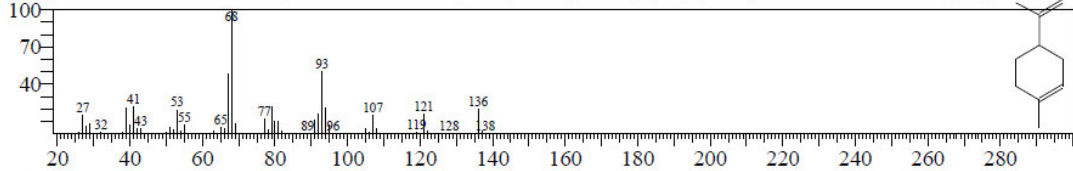


<< Target >>

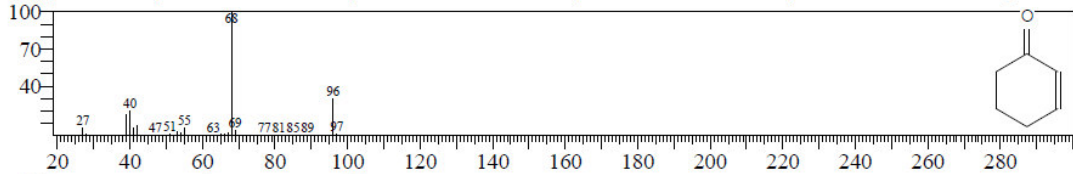
Line#:16 R.Time:26.210(Scan#:4643) MassPeaks:137
RawMode:Averaged 26.205-26.215(4642-4644) BasePeak:68.05(75708)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



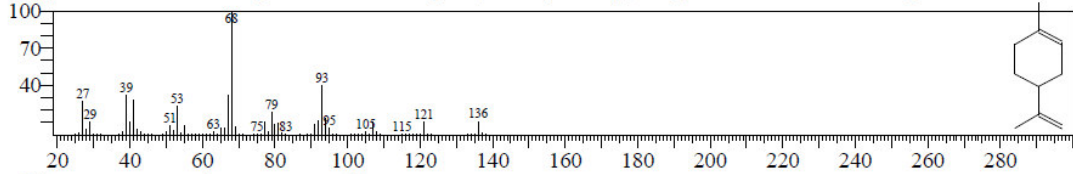
Hit#:1 Entry:6792 Library:NIST14s.lib
SI:69 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



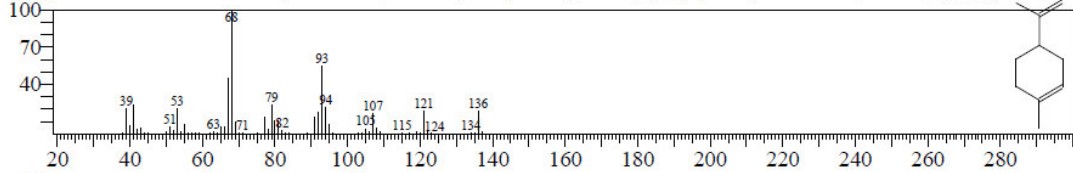
Hit#:2 Entry:1426 Library:NIST14s.lib
SI:69 Formula:C6H8O CAS:930-68-7 MolWeight:96 RetIndex:873
CompName:2-Cyclohexen-1-one \$\$ Cyclohex-2-en-1-one \$\$ Cyclohexen-2-one \$\$ 1-Cyclohexen-3-one \$\$ 2-Cyclohex



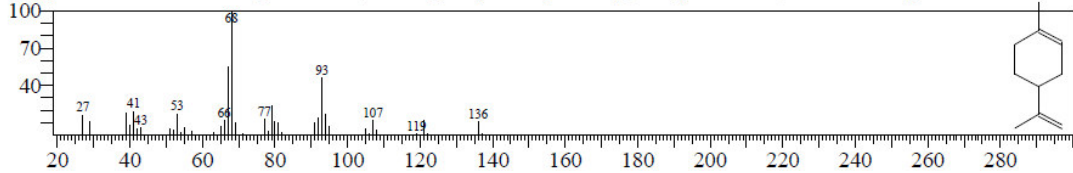
Hit#:3 Entry:6789 Library:NIST14s.lib
SI:69 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



Hit#:4 Entry:6791 Library:NIST14s.lib
SI:68 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

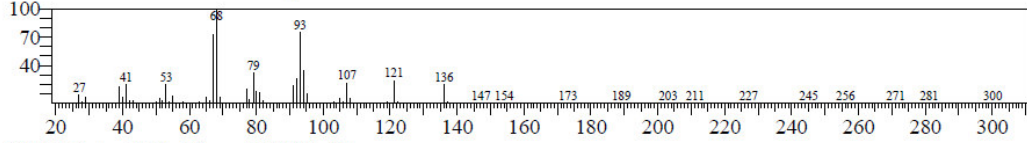


Hit#:5 Entry:6785 Library:NIST14s.lib
SI:68 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

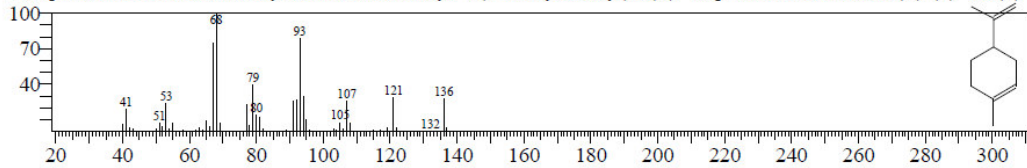


<< Target >>

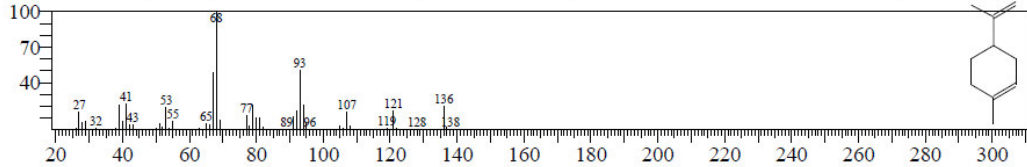
Line#:17 R.Time:26.375(Scan#:4676) MassPeaks:197
RawMode:Averaged 26.370-26.380(4675-4677) BasePeak:68.05(2685521)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



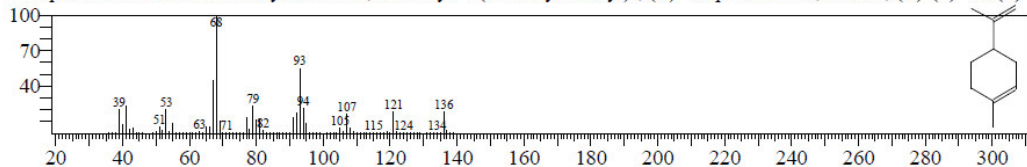
Hit#:1 Entry:6793 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



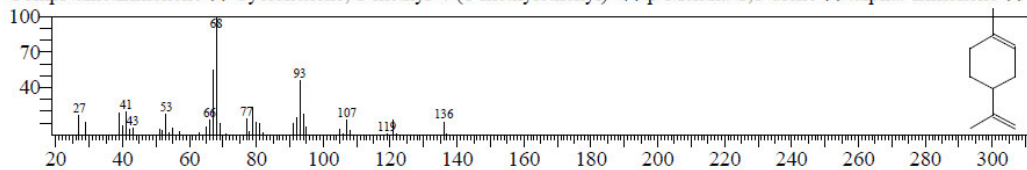
Hit#:2 Entry:6792 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



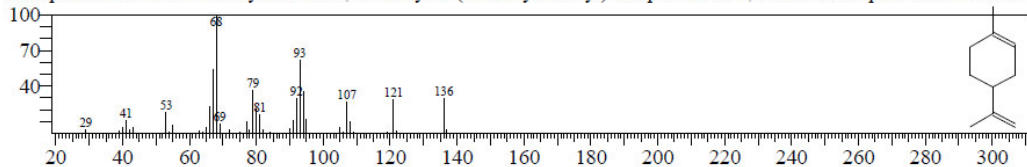
Hit#:3 Entry:6791 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



Hit#:4 Entry:6785 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

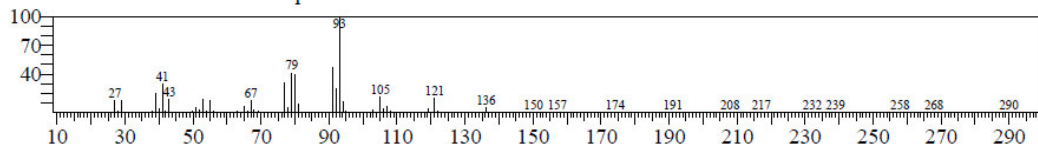


Hit#:5 Entry:6790 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$

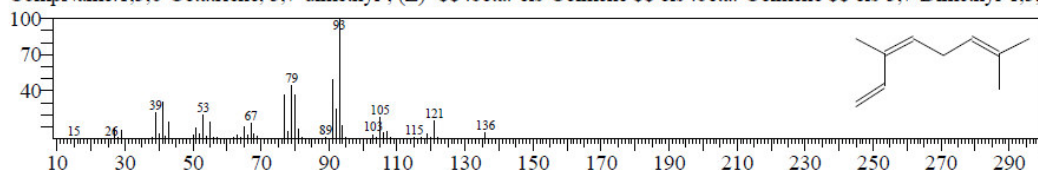


<< Target >>

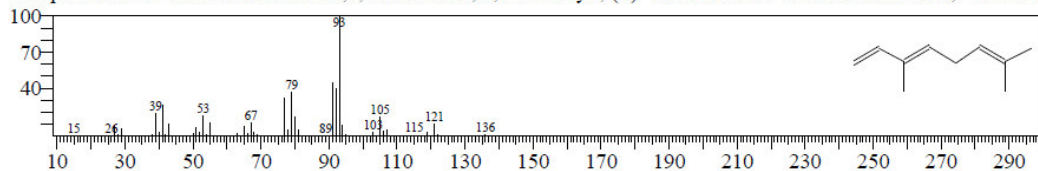
Line#:18 R.Time:30.075(Scan#:5416) MassPeaks:186
RawMode:Averaged 30.070-30.080(5415-5417) BasePeak:93.05(47213)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



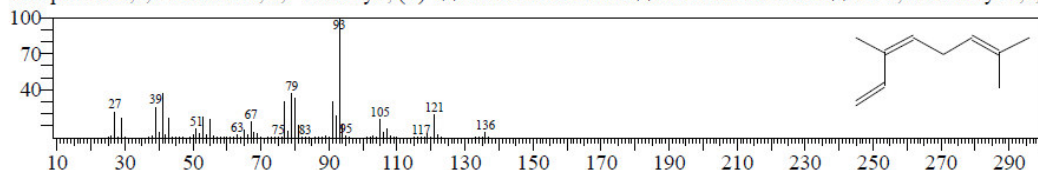
Hit#:1 Entry:6842 Library:NIST14s.lib
SI:97 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6-



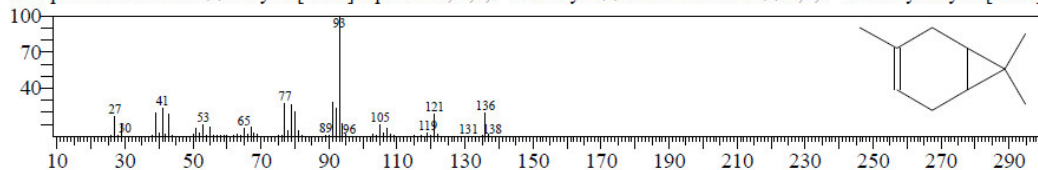
Hit#:2 Entry:6844 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethyl-



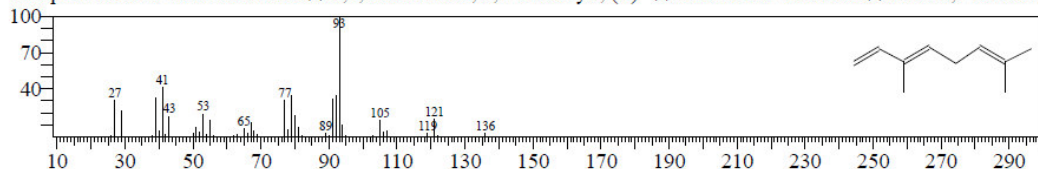
Hit#:3 Entry:6814 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6-



Hit#:4 Entry:6838 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl-, \$\$.delta.-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]

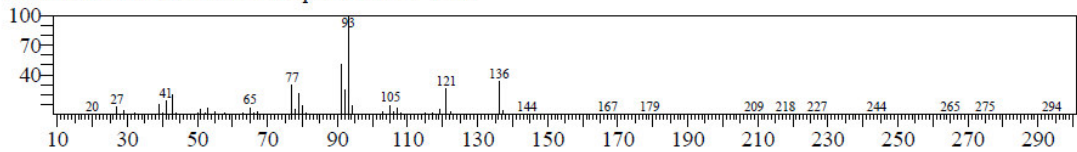


Hit#:5 Entry:6813 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethyl-

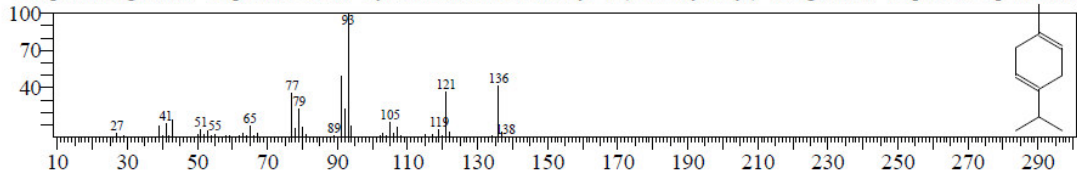


<< Target >>

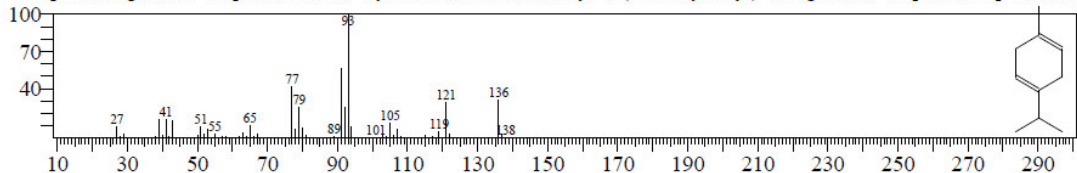
Line#:19 R.Time:31.495(Scan#:5700) MassPeaks:168
RawMode:Averaged 31.490-31.500(5699-5701) BasePeak:93.05(37538)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



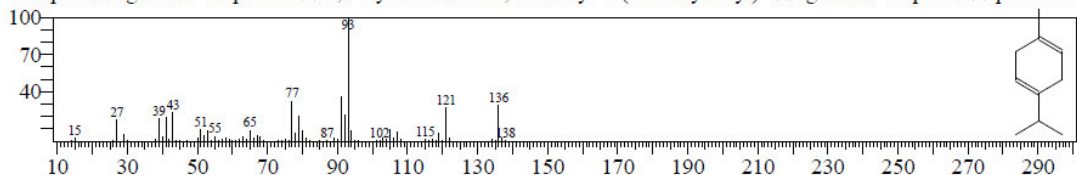
Hit#:1 Entry:6846 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$.gamma.-Terpinen \$\$ p-Mentha



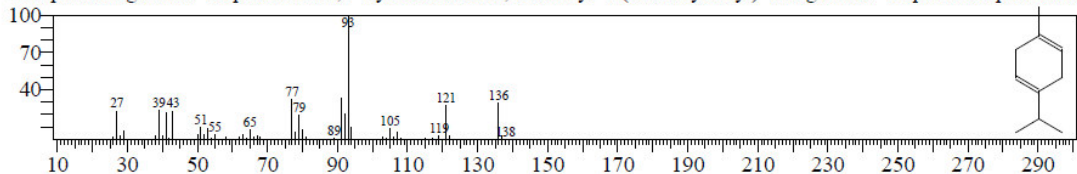
Hit#:2 Entry:6836 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$.gamma.-Terpinen \$\$ p-Mentha



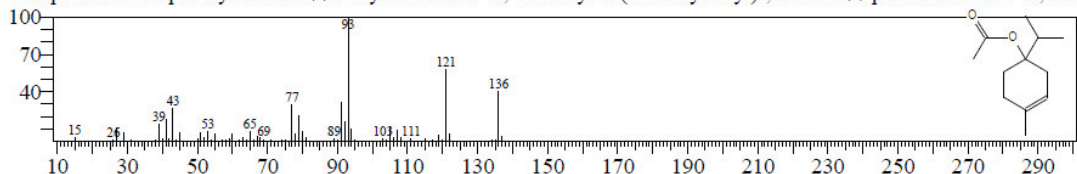
Hit#:3 Entry:6835 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$.gamma.-Terpinen \$\$ p-Mentha



Hit#:4 Entry:6834 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$.gamma.-Terpinen \$\$ p-Mentha

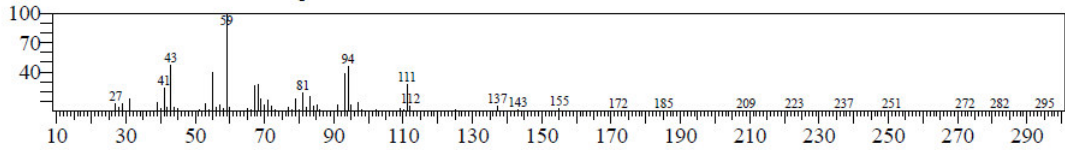


Hit#:5 Entry:17805 Library:NIST14s.lib
SI:91 Formula:C12H20O2 CAS:4821-04-9 MolWeight:196 RetIndex:1327
CompName:4-Terpinenyl acetate \$\$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)-, acetate \$\$ p-Menth-1-en-4-ol, ace

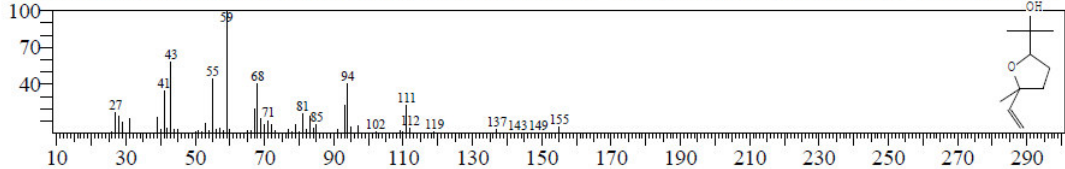


<< Target >>

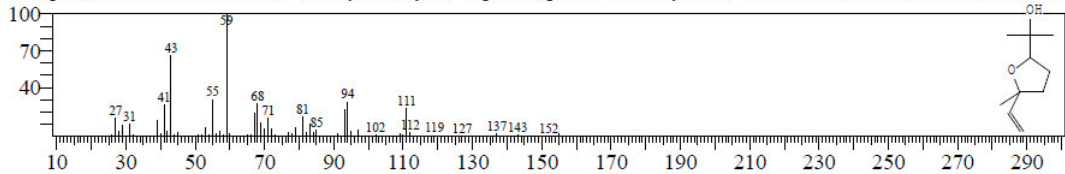
Line#:20 R.Time:33.950(Scan#:6191) MassPeaks:216
RawMode:Averaged 33.945-33.955(6190-6192) BasePeak:59.00(19100)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



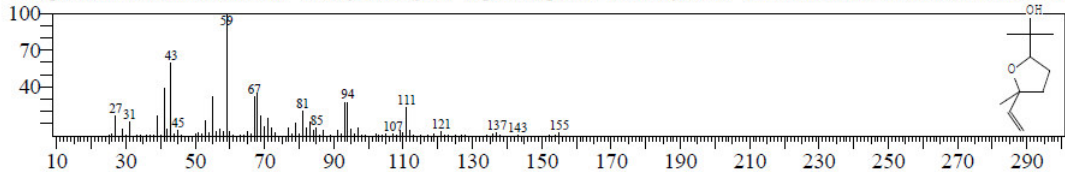
Hit#:1 Entry:13271 Library:NIST14s.lib
SI:94 Formula:C10H18O2 CAS:34995-77-2 MolWeight:170 RetIndex:1164
CompName:trans-Linalool oxide (furanoid) \$\$ 2-Furanmethanol, 5-ethenyltetrahydro-.alpha..alpha..5-trimethyl-, trans-



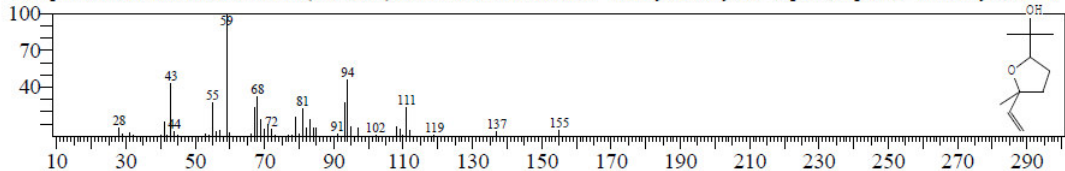
Hit#:2 Entry:13272 Library:NIST14s.lib
SI:93 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha..alpha..5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



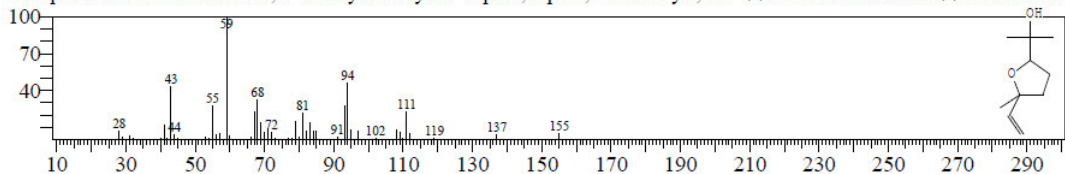
Hit#:3 Entry:13269 Library:NIST14s.lib
SI:92 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha..alpha..5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



Hit#:4 Entry:13273 Library:NIST14s.lib
SI:91 Formula:C10H18O2 CAS:34995-77-2 MolWeight:170 RetIndex:1164
CompName:trans-Linalool oxide (furanoid) \$\$ 2-Furanmethanol, 5-ethenyltetrahydro-.alpha..alpha..5-trimethyl-, trans-

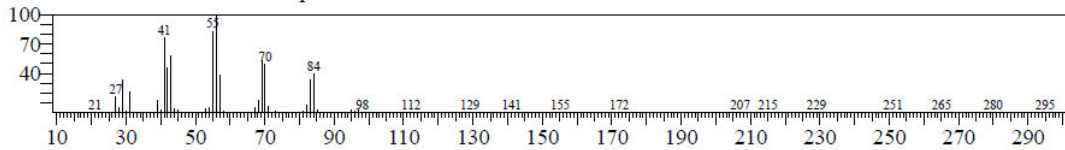


Hit#:5 Entry:13274 Library:NIST14s.lib
SI:91 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha..alpha..5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox

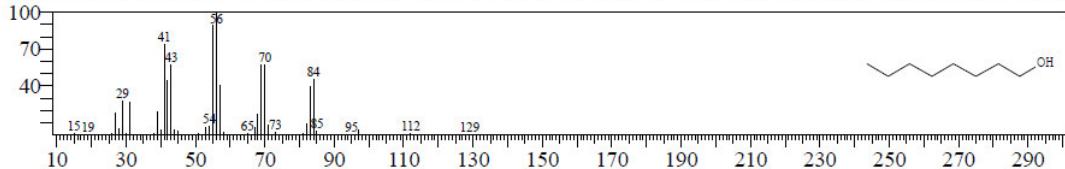


<< Target >>

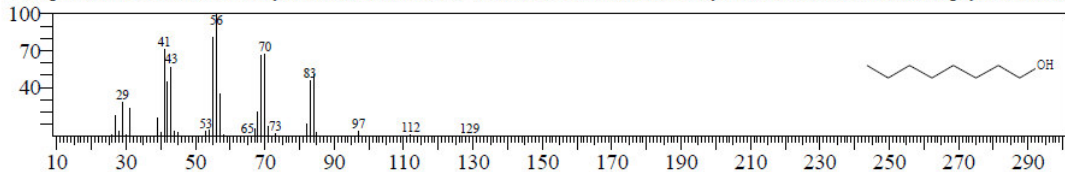
Line#:21 R.Time:34.780(Scan#:6357) MassPeaks:131
RawMode:Averaged 34.775-34.785(6356-6358) BasePeak:56.05(81827)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



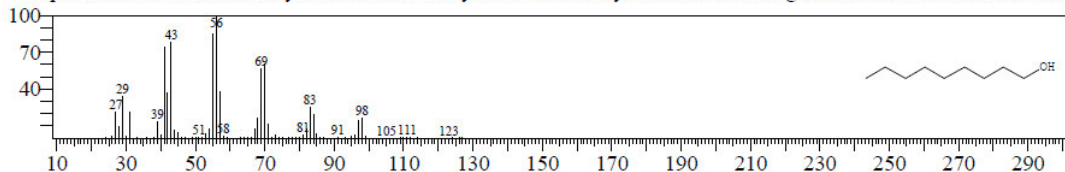
Hit#:1 Entry:5758 Library:NIST14s.lib
SI:97 Formula:C8H18O CAS:111-87-5 MolWeight:130 RetIndex:1059
CompName:1-Octanol \$\$ Octyl alcohol \$\$ n-Octan-1-ol \$\$ n-Octanol \$\$ n-Octyl alcohol \$\$ Alfol 8 \$\$ Caprylic alcohol



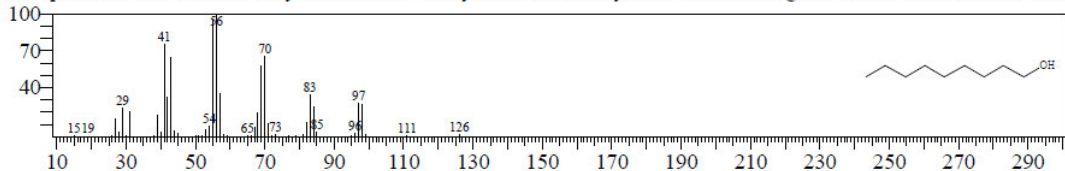
Hit#:2 Entry:5757 Library:NIST14s.lib
SI:97 Formula:C8H18O CAS:111-87-5 MolWeight:130 RetIndex:1059
CompName:1-Octanol \$\$ Octyl alcohol \$\$ n-Octan-1-ol \$\$ n-Octanol \$\$ n-Octyl alcohol \$\$ Alfol 8 \$\$ Caprylic alcohol



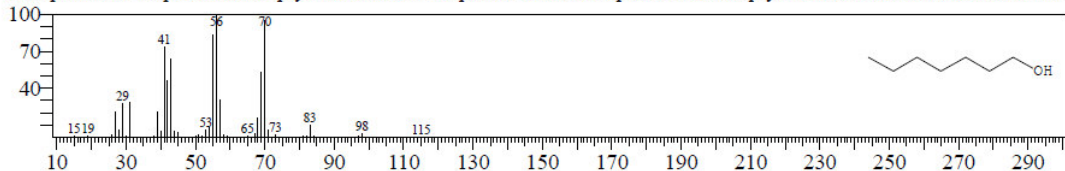
Hit#:3 Entry:8255 Library:NIST14s.lib
SI:95 Formula:C9H20O CAS:143-08-8 MolWeight:144 RetIndex:1159
CompName:1-Nonanol \$\$ Nonyl alcohol \$\$ n-Nonyl alcohol \$\$ Octyl carbinol \$\$ Pelargonic alcohol \$\$ Alcohol C-9 \$



Hit#:4 Entry:8254 Library:NIST14s.lib
SI:94 Formula:C9H20O CAS:143-08-8 MolWeight:144 RetIndex:1159
CompName:1-Nonanol \$\$ Nonyl alcohol \$\$ n-Nonyl alcohol \$\$ Octyl carbinol \$\$ Pelargonic alcohol \$\$ Alcohol C-9 \$

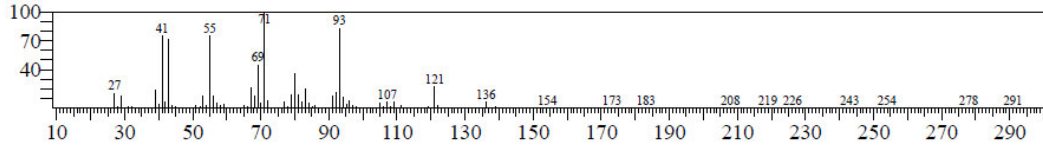


Hit#:5 Entry:3765 Library:NIST14s.lib
SI:93 Formula:C7H16O CAS:111-70-6 MolWeight:116 RetIndex:960
CompName:1-Heptanol \$\$ Heptyl alcohol \$\$ n-Heptan-1-ol \$\$ n-Heptanol \$\$ n-Heptyl alcohol \$\$ Enanthic alcohol \$\$

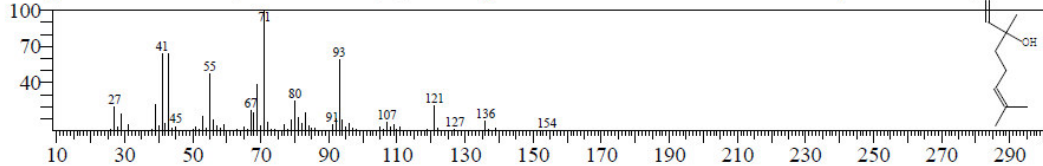


<< Target >>

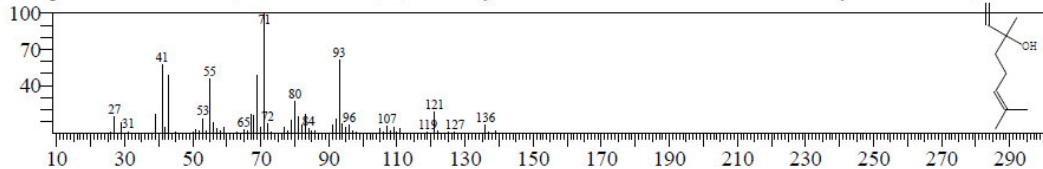
Line#:22 R.Time:37.970(Scan#:6995) MassPeaks:185
RawMode:Averaged 37.965-37.975(6994-6996) BasePeak:71.00(95915)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



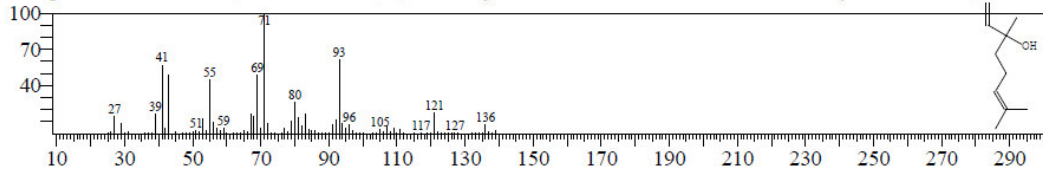
Hit#:1 Entry:10353 Library:NIST14s.lib
SI:94 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



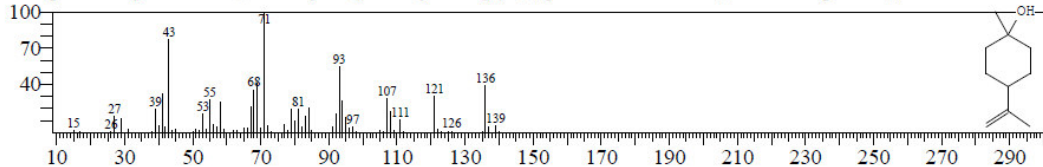
Hit#:2 Entry:10360 Library:NIST14s.lib
SI:93 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



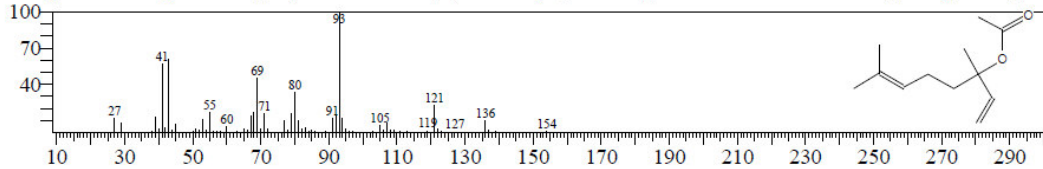
Hit#:3 Entry:10359 Library:NIST14s.lib
SI:93 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



Hit#:4 Entry:10356 Library:NIST14s.lib
SI:87 Formula:C10H18O CAS:138-87-4 MolWeight:154 RetIndex:1158
CompName:Cyclohexanol, 1-methyl-4-(1-methylethenyl)- \$\$ p-Menth-8-en-1-ol \$\$.beta.-Terpineol \$\$ t-Menth-1-en-8-

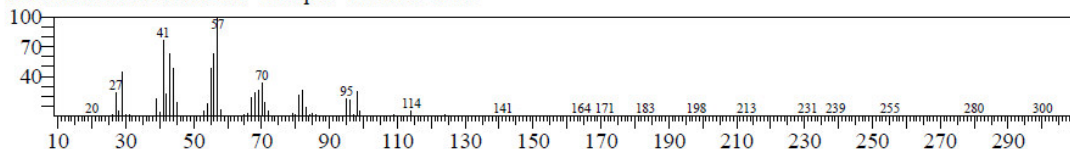


Hit#:5 Entry:17803 Library:NIST14s.lib
SI:86 Formula:C12H20O2 CAS:115-95-7 MolWeight:196 RetIndex:1272
CompName:Linalyl acetate \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl-, acetate \$\$ Acetic acid linalool ester \$\$ Bergamiol \$\$ B

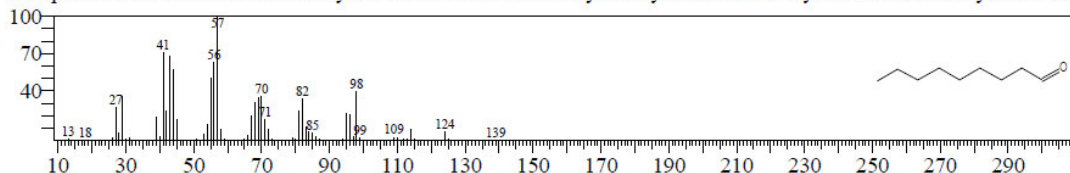


<< Target >>

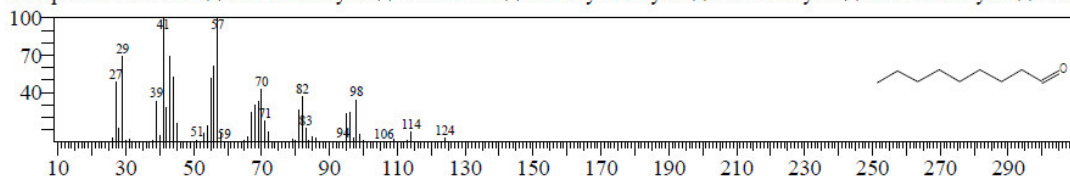
Line#:23 R.Time:38.460(Scan#:7093) MassPeaks:152
RawMode:Averaged 38.455-38.465(7092-7094) BasePeak:57.05(39762)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



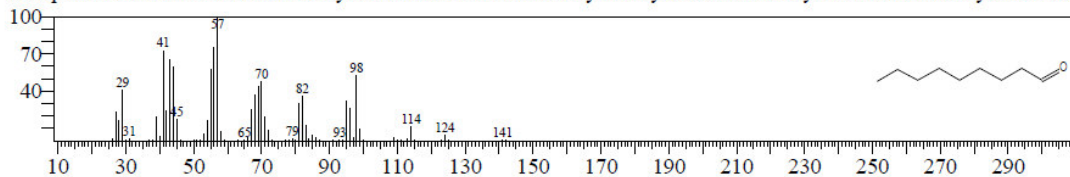
Hit#:1 Entry:7876 Library:NIST14s.lib
SI:96 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$ n-Nonaldehyde \$ n-Nonanal \$ n-Nonylaldehyde \$ Nonaldehyde \$ Nonaldehyde \$ Non



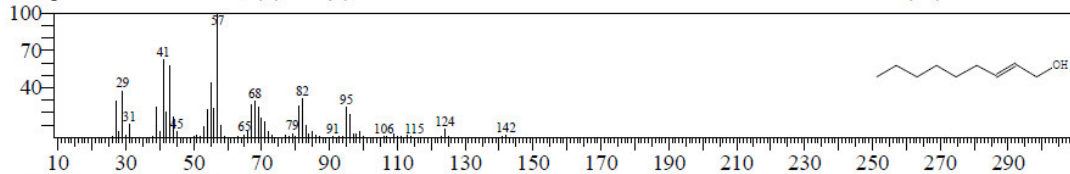
Hit#:2 Entry:7858 Library:NIST14s.lib
SI:94 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$ n-Nonaldehyde \$ n-Nonanal \$ n-Nonylaldehyde \$ Nonaldehyde \$ Nonaldehyde \$ Non



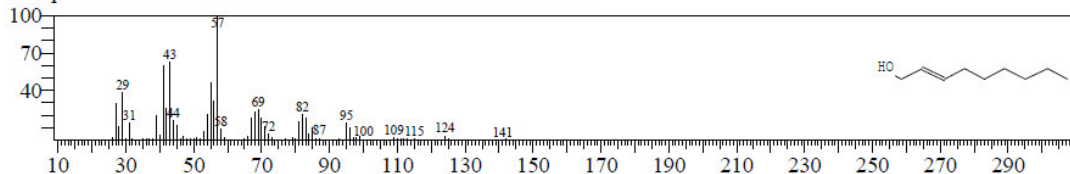
Hit#:3 Entry:7887 Library:NIST14s.lib
SI:94 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$ n-Nonaldehyde \$ n-Nonanal \$ n-Nonylaldehyde \$ Nonaldehyde \$ Nonaldehyde \$ Non



Hit#:4 Entry:7877 Library:NIST14s.lib
SI:92 Formula:C9H18O CAS:31502-14-4 MolWeight:142 RetIndex:1167
CompName:2-Nonen-1-ol, (E)- \$ (E)-2-Nonen-1-ol \$ trans-2-Nonen-1-ol \$ trans-2-Nonenol \$ (2E)-2-Nonen-1-ol

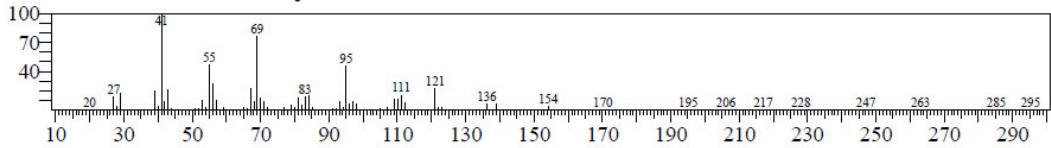


Hit#:5 Entry:7885 Library:NIST14s.lib
SI:92 Formula:C9H18O CAS:22104-79-6 MolWeight:142 RetIndex:1167
CompName:2-Nonen-1-ol \$ Non-2-en-1-ol \$ 2-Nonene-1-ol

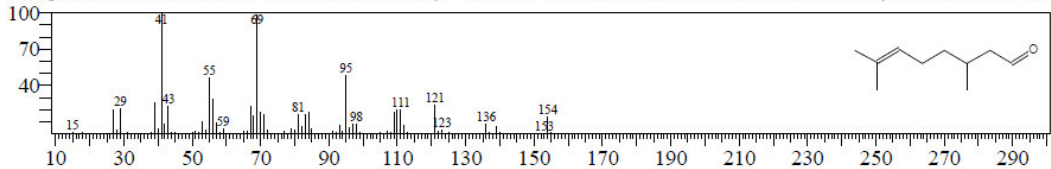


<< Target >>

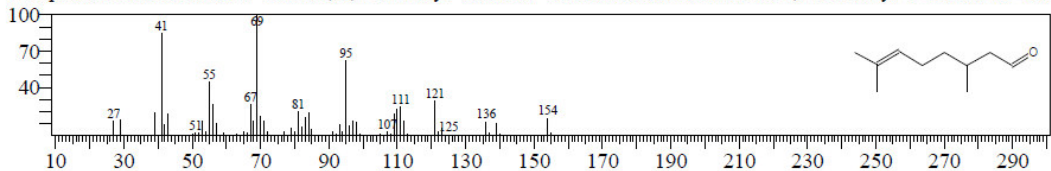
Line#:24 R.Time:42.865(Scan#:7974) MassPeaks:194
RawMode:Averaged 42.860-42.870(7973-7975) BasePeak:41.00(21076)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



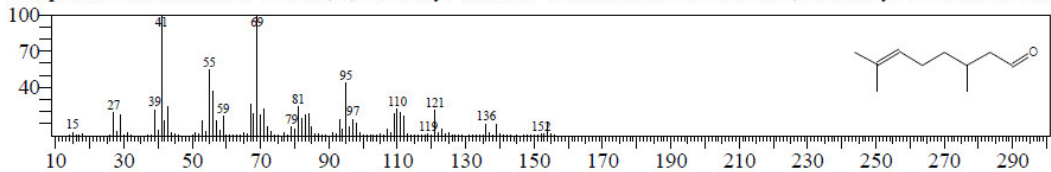
Hit#:1 Entry:10285 Library:NIST14s.lib
SI:96 Formula:C10H18O CAS:106-23-0 MolWeight:154 RetIndex:1125
CompName:Citronellal \$ 6-Octenal, 3,7-dimethyl- \$.beta.-Citronellal \$ Rhodinal \$ 3,7-Dimethyl-6-octenal \$ Cit



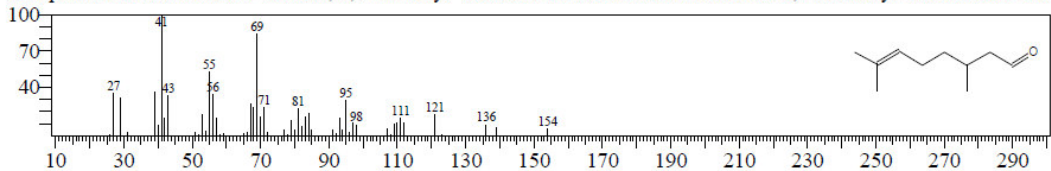
Hit#:2 Entry:10342 Library:NIST14s.lib
SI:93 Formula:C10H18O CAS:106-23-0 MolWeight:154 RetIndex:1125
CompName:Citronellal \$ 6-Octenal, 3,7-dimethyl- \$.beta.-Citronellal \$ Rhodinal \$ 3,7-Dimethyl-6-octenal \$ Cit



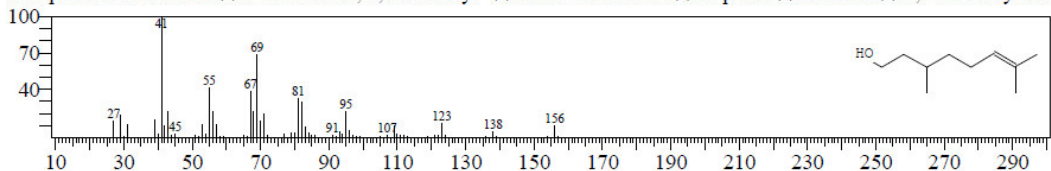
Hit#:3 Entry:10283 Library:NIST14s.lib
SI:92 Formula:C10H18O CAS:106-23-0 MolWeight:154 RetIndex:1125
CompName:Citronellal \$ 6-Octenal, 3,7-dimethyl- \$.beta.-Citronellal \$ Rhodinal \$ 3,7-Dimethyl-6-octenal \$ Cit



Hit#:4 Entry:10282 Library:NIST14s.lib
SI:91 Formula:C10H18O CAS:106-23-0 MolWeight:154 RetIndex:1125
CompName:Citronellal \$ 6-Octenal, 3,7-dimethyl- \$.beta.-Citronellal \$ Rhodinal \$ 3,7-Dimethyl-6-octenal \$ Cit

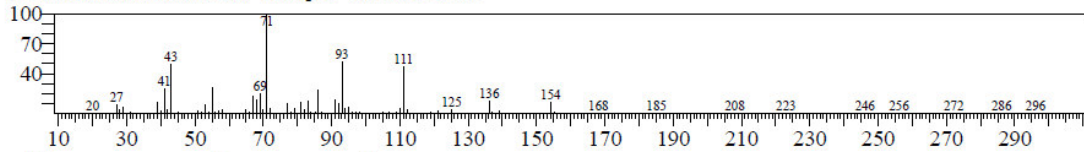


Hit#:5 Entry:10713 Library:NIST14s.lib
SI:87 Formula:C10H20O CAS:106-22-9 MolWeight:156 RetIndex:1179
CompName:Citronellol \$ 6-Octen-1-ol, 3,7-dimethyl- \$.beta.-Citronellol \$ Cephrol \$ Rodinol \$ 3,7-Dimethyl-6-o

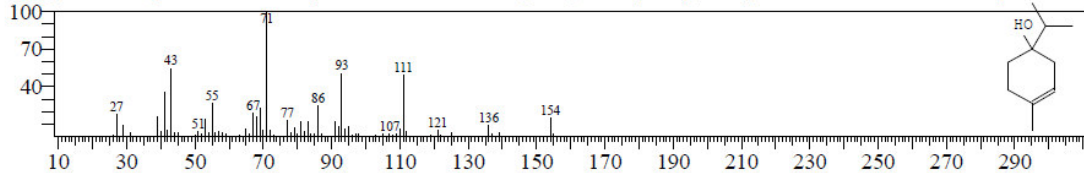


<< Target >>

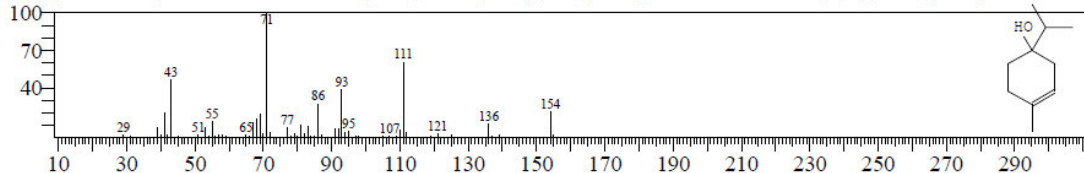
Line#:25 R.Time:44.330(Scan#:8267) MassPeaks:189
RawMode:Averaged 44.325-44.335(8266-8268) BasePeak:71.00(16671)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



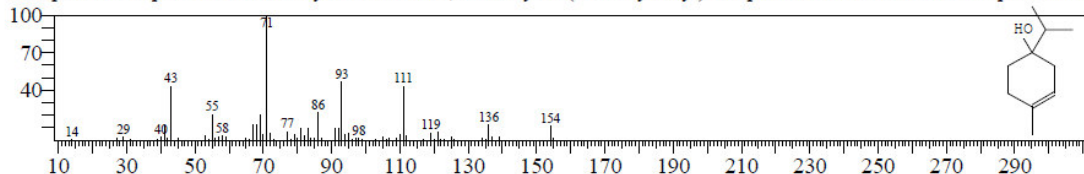
Hit#:1 Entry:10355 Library:NIST14s.lib
SI:95 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol



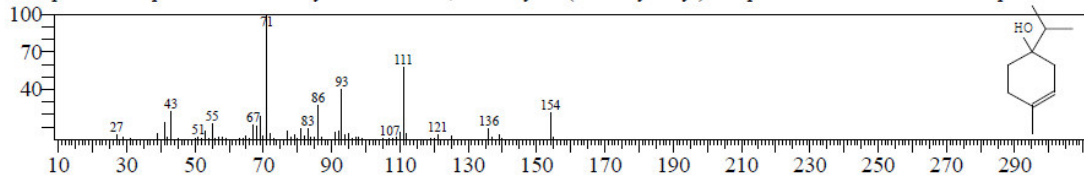
Hit#:2 Entry:10363 Library:NIST14s.lib
SI:93 Formula:C10H18O CAS:20126-76-5 MolWeight:154 RetIndex:1137
CompName:3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)-, (R)- \$ p-Menth-1-en-4-ol, (R)-(-) \$ (-)-Terpinen-4-ol \$



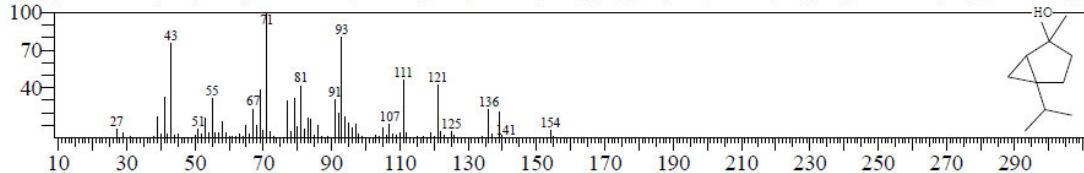
Hit#:3 Entry:10361 Library:NIST14s.lib
SI:92 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol



Hit#:4 Entry:10364 Library:NIST14s.lib
SI:90 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol

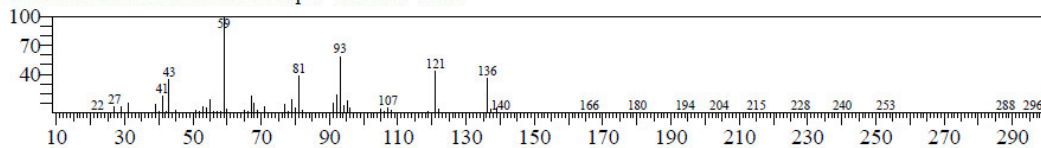


Hit#:5 Entry:10362 Library:NIST14s.lib
SI:83 Formula:C10H18O CAS:15537-55-0 MolWeight:154 RetIndex:1041
CompName:Bicyclo[3.1.0]hexan-2-ol, 2-methyl-5-(1-methylethyl)-, (1.alpha.,2.beta.,5.alpha.)- \$ 5-Isopropyl-2-methyl



<< Target >>

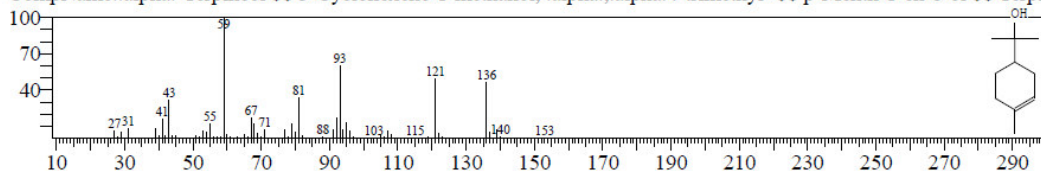
Line#:26 R.Time:45.410(Scan#:8483) MassPeaks:142
RawMode:Averaged 45.405-45.415(8482-8484) BasePeak:59.00(23870)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:10327 Library:NIST14s.lib

SI:97 Formula:C10H18O CAS:98-55-5 MolWeight:154 RetIndex:1143

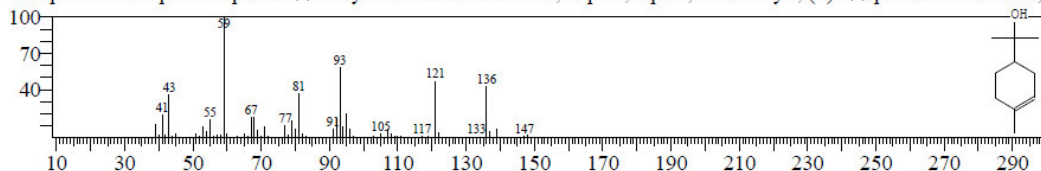
CompName:.alpha.-Terpineol \$\$ 3-Cyclohexene-1-methanol, .alpha...alpha.4-trimethyl- \$\$ p-Menth-1-en-8-ol \$\$ Terpin



Hit#:2 Entry:10326 Library:NIST14s.lib

SI:94 Formula:C10H18O CAS:10482-56-1 MolWeight:154 RetIndex:1143

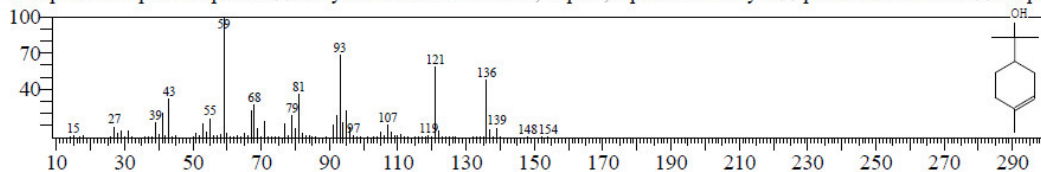
CompName:L-.alpha.-Terpineol \$\$ 3-Cyclohexene-1-methanol, .alpha...alpha.4-trimethyl-, (S)- \$\$ p-Menth-1-en-8-ol, (



Hit#:3 Entry:10328 Library:NIST14s.lib

SI:93 Formula:C10H18O CAS:98-55-5 MolWeight:154 RetIndex:1143

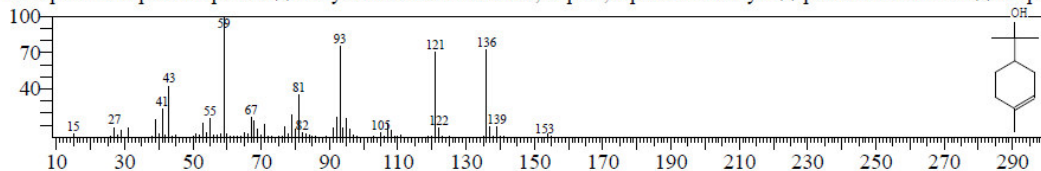
CompName:.alpha.-Terpineol \$\$ 3-Cyclohexene-1-methanol, .alpha...alpha.4-trimethyl- \$\$ p-Menth-1-en-8-ol \$\$ Terpin



Hit#:4 Entry:10329 Library:NIST14s.lib

SI:92 Formula:C10H18O CAS:98-55-5 MolWeight:154 RetIndex:1143

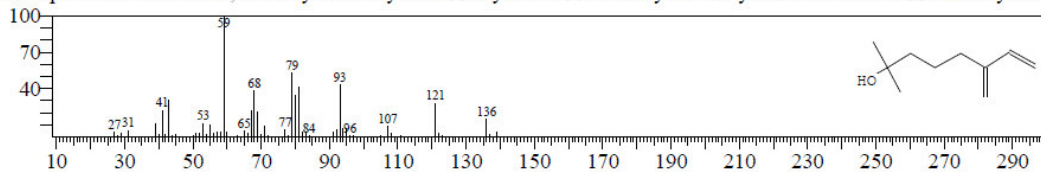
CompName:.alpha.-Terpineol \$\$ 3-Cyclohexene-1-methanol, .alpha...alpha.4-trimethyl- \$\$ p-Menth-1-en-8-ol \$\$ Terpin



Hit#:5 Entry:10325 Library:NIST14s.lib

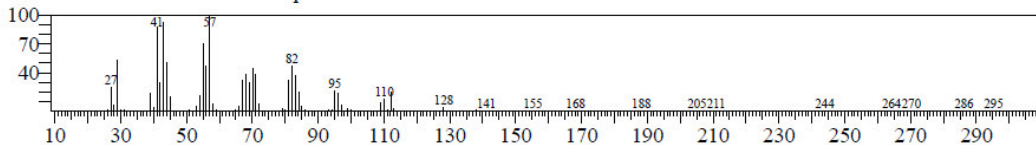
SI:88 Formula:C10H18O CAS:543-39-5 MolWeight:154 RetIndex:1064

CompName:7-Octen-2-ol, 2-methyl-6-methylene- \$\$ Myrcenol \$\$ 2-Methyl-6-methylene-7-octen-2-ol \$\$ 3-Methylene-

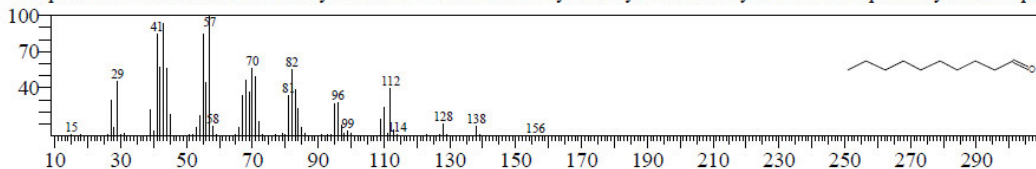


<< Target >>

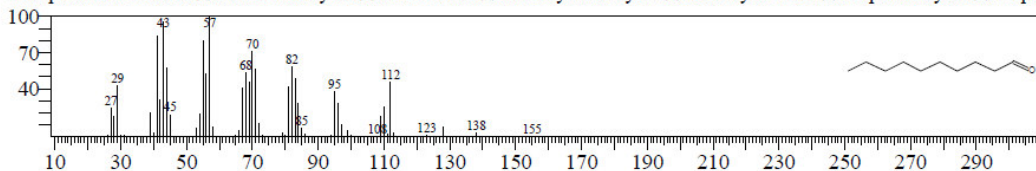
Line#:27 R.Time:46.685(Scan#:8738) MassPeaks:174
RawMode:Averaged 46.680-46.690(8737-8739) BasePeak:57.00(23329)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



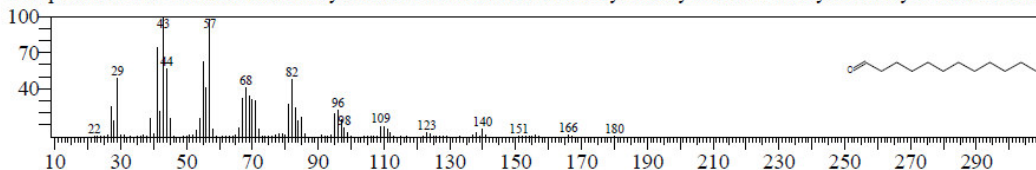
Hit#:1 Entry:10728 Library:NIST14s.lib
SI:95 Formula:C10H20O CAS:112-31-2 MolWeight:156 RetIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri



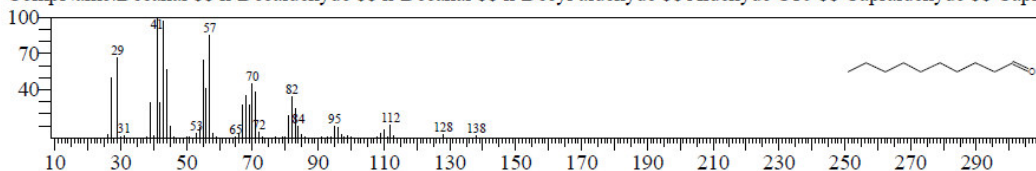
Hit#:2 Entry:10729 Library:NIST14s.lib
SI:94 Formula:C10H20O CAS:112-31-2 MolWeight:156 RetIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri



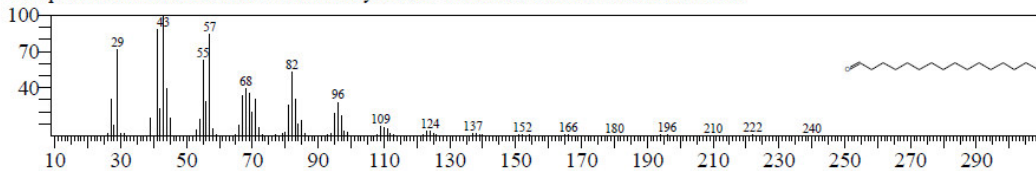
Hit#:3 Entry:15786 Library:NIST14s.lib
SI:94 Formula:C12H24O CAS:112-54-9 MolWeight:184 RetIndex:1402
CompName:Dodecanal \$ Lauraldehyde \$ n-Dodecanal \$ n-Dodecyl aldehyde \$ n-Dodecyl aldehyde \$ n-Laural



Hit#:4 Entry:10710 Library:NIST14s.lib
SI:94 Formula:C10H20O CAS:112-31-2 MolWeight:156 RetIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri

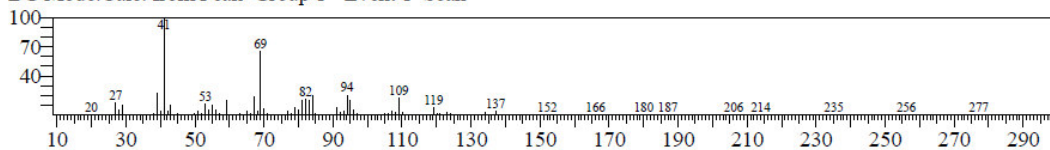


Hit#:5 Entry:23662 Library:NIST14s.lib
SI:93 Formula:C16H32O CAS:629-80-1 MolWeight:240 RetIndex:1800
CompName:Hexadecanal \$ Palmitaldehyde \$ 1-Hexadecanal \$ n-Hexadecanal \$

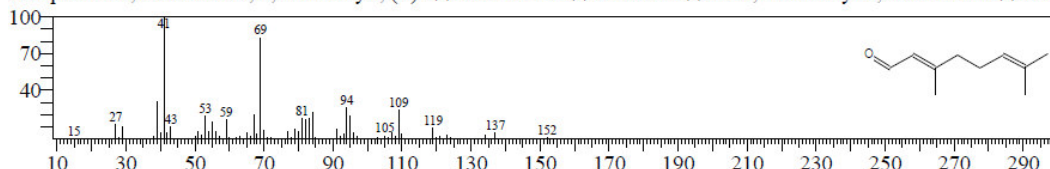


<< Target >>

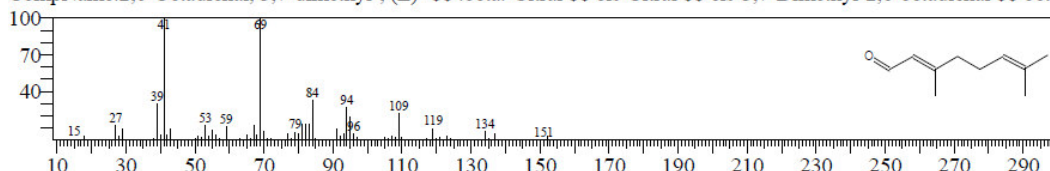
Line#:28 R.Time:48.815(Scan#:9164) MassPeaks:185
RawMode:Averaged 48.810-48.820(9163-9165) BasePeak:41.00(23952)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



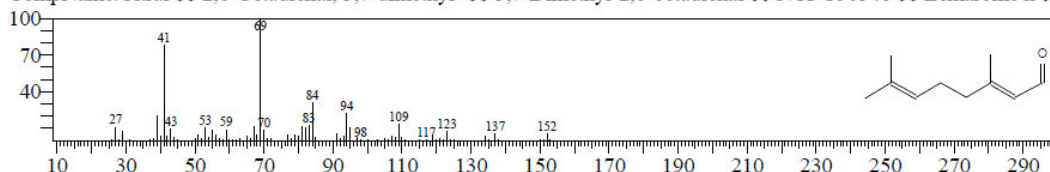
Hit#:1 Entry:9786 Library:NIST14s.lib
SI:95 Formula:C10H16O CAS:106-26-3 MolWeight:152 RetIndex:1174
CompName:2,6-Octadienal, 3,7-dimethyl-, (Z)- .beta.-Citral \$\$ cis-Citral \$\$ cis-3,7-Dimethyl-2,6-octadienal \$\$ beta



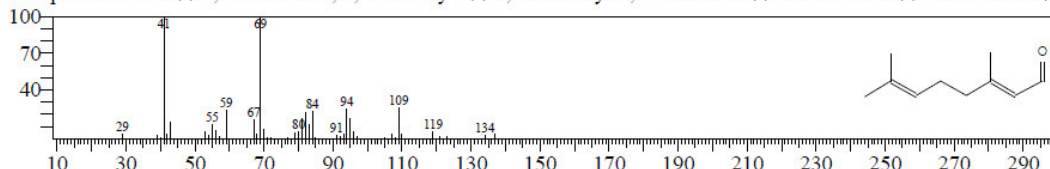
Hit#:2 Entry:9827 Library:NIST14s.lib
SI:94 Formula:C10H16O CAS:106-26-3 MolWeight:152 RetIndex:1174
CompName:2,6-Octadienal, 3,7-dimethyl-, (Z)- .beta.-Citral \$\$ cis-Citral \$\$ cis-3,7-Dimethyl-2,6-octadienal \$\$ beta



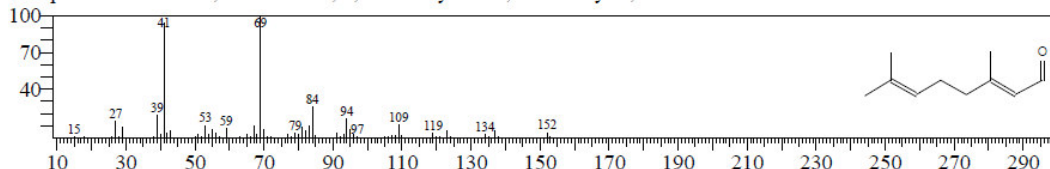
Hit#:3 Entry:9824 Library:NIST14s.lib
SI:91 Formula:C10H16O CAS:5392-40-5 MolWeight:152 RetIndex:1174
CompName:Citral \$\$ 2,6-Octadienal, 3,7-dimethyl- \$\$ 3,7-Dimethyl-2,6-octadienal \$\$ NCI-C56348 \$\$ Lemarome n \$\$



Hit#:4 Entry:9789 Library:NIST14s.lib
SI:90 Formula:C10H16O CAS:5392-40-5 MolWeight:152 RetIndex:1174
CompName:Citral \$\$ 2,6-Octadienal, 3,7-dimethyl- \$\$ 3,7-Dimethyl-2,6-octadienal \$\$ NCI-C56348 \$\$ Lemarome n \$\$

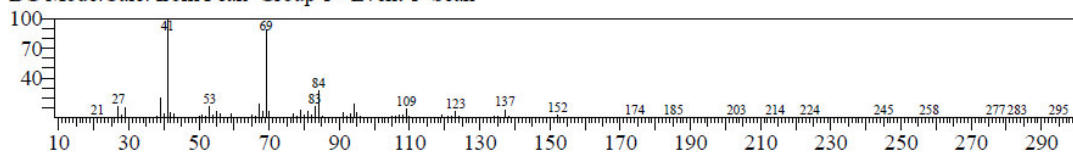


Hit#:5 Entry:9825 Library:NIST14s.lib
SI:90 Formula:C10H16O CAS:5392-40-5 MolWeight:152 RetIndex:1174
CompName:Citral \$\$ 2,6-Octadienal, 3,7-dimethyl- \$\$ 3,7-Dimethyl-2,6-octadienal \$\$ NCI-C56348 \$\$ Lemarome n \$\$

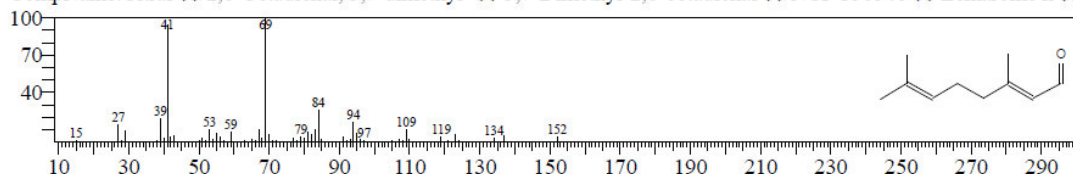


<< Target >>

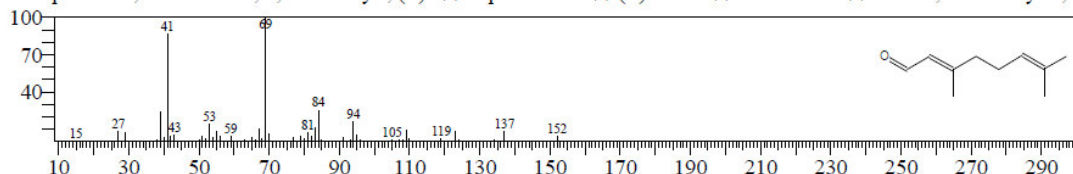
Line#:29 R.Time:50.585(Scan#:9518) MassPeaks:179
RawMode:Averaged 50.580-50.590(9517-9519) BasePeak:41.00(29806)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



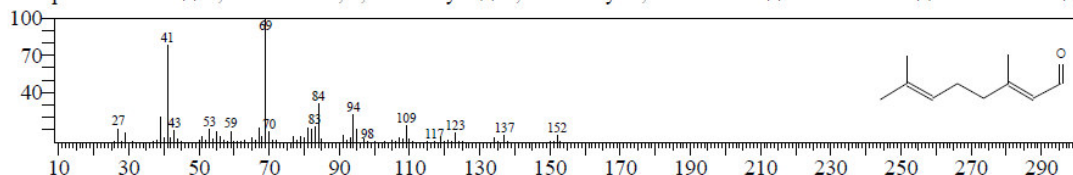
Hit#:1 Entry:9825 Library:NIST14s.lib
SI:95 Formula:C10H16O CAS:5392-40-5 MolWeight:152 RetIndex:1174
CompName:Citral \$\$ 2,6-Octadienal, 3,7-dimethyl- \$\$ 3,7-Dimethyl-2,6-octadienal \$\$ NCI-C56348 \$\$ Lemarome n \$\$



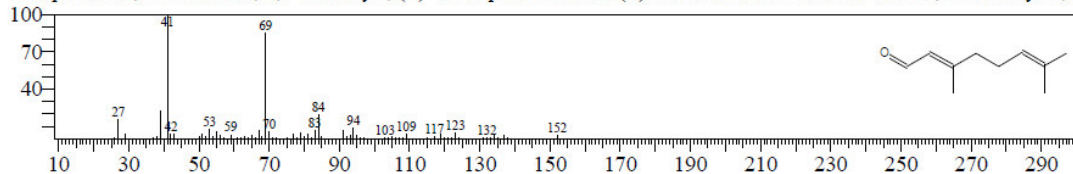
Hit#:2 Entry:9828 Library:NIST14s.lib
SI:94 Formula:C10H16O CAS:141-27-5 MolWeight:152 RetIndex:1174
CompName:2,6-Octadienal, 3,7-dimethyl-, (E)- \$\$.alpha.-Citral \$\$ (E)-Citral \$\$ trans-Citral \$\$ trans-3,7-Dimethyl-2,6-



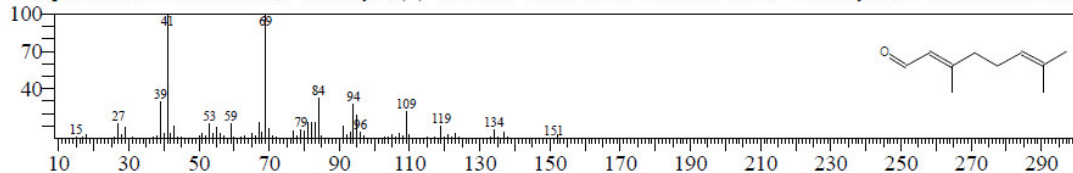
Hit#:3 Entry:9824 Library:NIST14s.lib
SI:91 Formula:C10H16O CAS:5392-40-5 MolWeight:152 RetIndex:1174
CompName:Citral \$\$ 2,6-Octadienal, 3,7-dimethyl- \$\$ 3,7-Dimethyl-2,6-octadienal \$\$ NCI-C56348 \$\$ Lemarome n \$\$



Hit#:4 Entry:9787 Library:NIST14s.lib
SI:91 Formula:C10H16O CAS:141-27-5 MolWeight:152 RetIndex:1174
CompName:2,6-Octadienal, 3,7-dimethyl-, (E)- \$\$.alpha.-Citral \$\$ (E)-Citral \$\$ trans-Citral \$\$ trans-3,7-Dimethyl-2,6-



Hit#:5 Entry:9827 Library:NIST14s.lib
SI:91 Formula:C10H16O CAS:106-26-3 MolWeight:152 RetIndex:1174
CompName:2,6-Octadienal, 3,7-dimethyl-, (Z)- \$\$.beta.-Citral \$\$ cis-Citral \$\$ cis-3,7-Dimethyl-2,6-octadienal \$\$ beta-



ANEXO 6: Resultados del análisis de CG/EM del aceite esencial de las hojas de *Juglans neotropica* Diels.



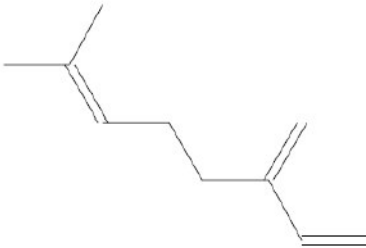
UNIVERSIDAD NACIONAL DE INGENIERÍA
FACULTAD DE CIENCIAS
LABICER (Laboratorio N° 12)
ANÁLISIS QUÍMICO, CONSULTORÍA E INVESTIGACIÓN



INFORME TÉCNICO N° 1278 – 18 – LABICER

- 1. DATOS DEL SOLICITANTE**
 - 1.1 NOMBRES DE LAS SOLICITANTES : JULIO REYNALDO RUIZ QUIROZ
 - 1.2 DNI : 07760326
- 2. CRONOGRAMA DE FECHAS**
 - 2.1 FECHA DE RECEPCIÓN : 24 / 07 / 2018
 - 2.2 FECHA DE ENSAYO : 25 / 07 / 2018
 - 2.3 FECHA DE EMISIÓN : 01 / 08 / 2018
- 3. ANÁLISIS SOLICITADO** : ANÁLISIS DE ACEITE ESENCIAL *Juglans neotropica* Diels
- 4. DATOS REFERENCIALES DE LA MUESTRA SEGÚN SOLICITANTE**
 - 4.1 IDENTIFICACIÓN DE LA MUESTRA : 01 MUESTRA DE ACEITE ESENCIAL DE *Juglans neotropica* Diels
- 5. LUGAR DE RECEPCIÓN** : LABORATORIO LABICER - FACULTAD DE CIENCIAS
- 6. CONDICIONES AMBIENTALES** : Temperatura: 20.1 °C; Humedad relativa: 65%
- 7. DOCUMENTO DE REFERENCIA** : Bilal Gurbuza, *et. al.* Rosemary (*Rosmarinus officinalis* L.) cultivation studies under Ankara ecological conditions. *Industrial Crops and Products* 88 (2016) 12–16.
- 8. EQUIPOS UTILIZADOS**
CROMATÓGRAFO DE GASES. SHIMADZU, GC-2010 Plus.
AUTOMUESTREADOR: SHIMADZU, AOC-6000.
Detector de espectrometría de masas: SHIMADZU, GCMS-QP210 Ultra.
COLUMNA GC: RESTEK. RTX-5MS, 30m x 0.25 mm ID x 0.25 µm df. Serial: 1346249.

9. RESULTADOS

MUESTRA	COMPONENTE PRINCIPAL <i>Análisis de Componentes Volátiles - Inyección por Headspace (HS)</i>	MÉTODO UTILIZADO
Aceite esencial de <i>Juglans neotropica</i> Diels	 <p>Componente mayoritario: Alpha.-Pinene</p>	Cromatografía de gases acoplado a espectrometría de masas

*Ver en Anexos (Tabla N°1) la lista de compuestos de la muestra, obtenido por el software del equipo GCMSsolution de SHIMADZU utilizando la librería NIST.

10. OBSERVACIONES

Se encontraron 36 componentes volátiles en la muestra de aceite esencial, siendo los componentes mayoritarios: alpha.-Pinene (39,88%), Caryophyllene (27,66%) y (-)-beta.-Pinene (11,00%) (Porcentaje relativo calculado de las áreas del cromatograma de la muestra).

11. VALIDEZ DEL INFORME TÉCNICO

Los resultados de este Informe técnico son válido solo para la muestra proporcionada por el solicitante del servicio en las condiciones indicadas del presente informe técnico.

Bach. Jesús Utano Reyes
Analista
LABICER –UNI

MSc Otilia Acha de la Cruz
Responsable de Análisis
Jefa de laboratorio
CQP 202

El Laboratorio no se responsabiliza del muestreo ni de la procedencia de la muestra.

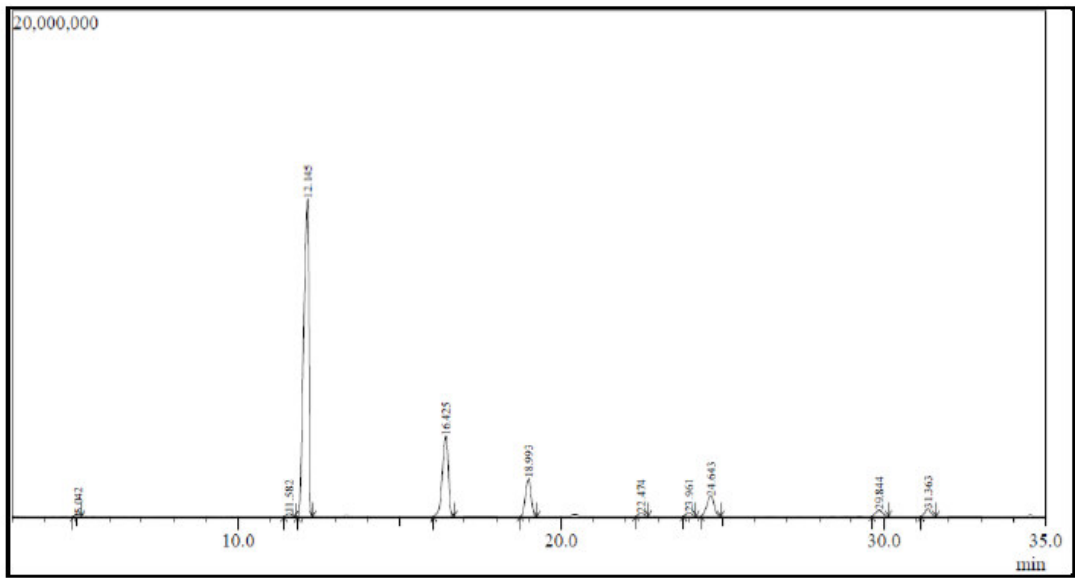


FIGURA N°1: PRIMERA PARTE DEL CROMATOGRAMA DE 3 A 35 MINUTOS

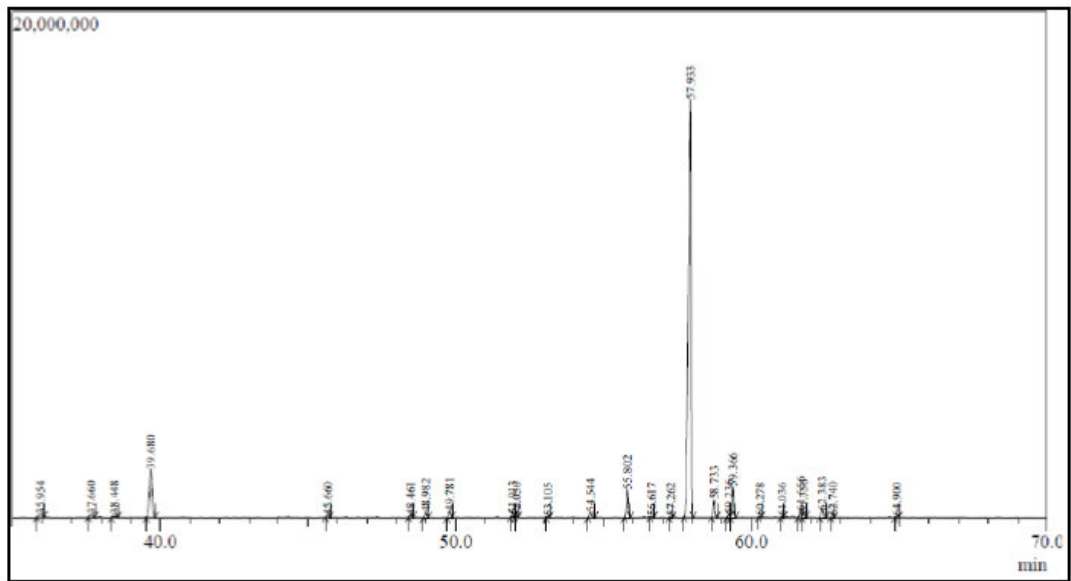


FIGURA N°2: SEGUNDA PARTE DEL CROMATOGRAMA DE 35 A 70 MINUTOS

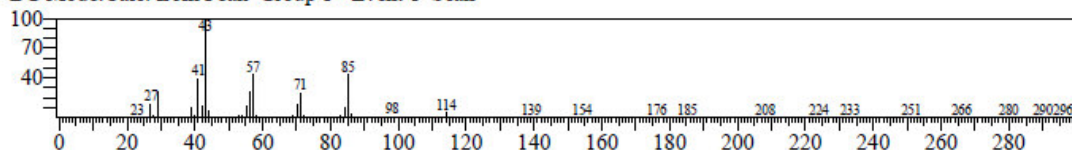
TABLA N°1: RESULTADOS DE COMPOSICIÓN DE ACEITE ESENCIAL DE NOGAL

Peak#	R.Time	Area	Area%	Height	Height%	Name
1	5.042	668284	0.18	67703	0.16	Hexane, 2,4-dimethyl-
2	11.582	1248659	0.34	105716	0.25	Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)-
3	12.145	144572354	39.88	12536746	29.39	alpha.-Pinene
4	16.425	39875398	11.00	3171005	7.43	Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)-
5	18.993	18470284	5.09	1492834	3.50	beta.-Myrcene
6	22.474	1345945	0.37	117160	0.27	1,3-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-
7	23.961	1607922	0.44	131584	0.31	o-Cymene
8	24.643	12596084	3.47	801546	1.88	D-Limonene
9	29.844	3257904	0.90	223264	0.52	1,3,6-Octatriene, 3,7-dimethyl-, (Z)-
10	31.363	3659784	1.01	279185	0.65	gamma.-Terpinene
11	35.954	794261	0.22	101476	0.24	Cyclohexene, 1-methyl-4-(1-methylethylidene)-
12	37.660	712643	0.20	106401	0.25	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-
13	38.448	729512	0.20	116907	0.27	Nonanal
14	39.680	11884386	3.28	1899769	4.45	Geranyl nitrile
15	45.660	376999	0.10	82115	0.19	6-Methyl-3,5-heptadiene-2-one
16	48.461	346816	0.10	84106	0.20	Benzene, 2-methoxy-4-methyl-1-(1-methylethyl)-
17	48.982	795730	0.22	187705	0.44	Benzene, 1-methoxy-4-methyl-2-(1-methylethyl)-
18	49.781	1004105	0.28	243659	0.57	Linalyl acetate
19	51.913	463327	0.13	113412	0.27	Trisulfide, di-2-propenyl
20	52.050	150779	0.04	42876	0.10	Thymol
21	53.105	110032	0.03	29193	0.07	3,9-Dodecadiyne
22	54.544	999360	0.28	210709	0.49	alpha.-Cubebene
23	55.802	4574194	1.26	1094833	2.57	alpha.-Cubebene
24	56.617	115060	0.03	33020	0.08	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethen
25	57.262	157367	0.04	40078	0.09	Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methyle
26	57.933	100264685	27.66	16482679	38.64	Caryophyllene
27	58.733	2723917	0.75	683963	1.60	alpha.-Guaiene
28	59.236	530953	0.15	135238	0.32	alpha.-Cubebene
29	59.366	5071295	1.40	1217908	2.86	Humulene
30	60.278	99453	0.03	29429	0.07	Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1
31	61.036	113537	0.03	31777	0.07	Bicyclo[4.4.0]dec-1-ene, 2-isopropyl-5-methyl-9-methyl
32	61.656	1060011	0.29	256926	0.60	Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-n
33	61.756	590957	0.16	156296	0.37	alpha.-Farnesene
34	62.383	1189613	0.33	256842	0.60	Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1
35	62.740	201499	0.06	53579	0.13	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1
36	64.900	160203	0.04	37842	0.09	Caryophyllene oxide
		362523312	100.00	42655481	100.00	

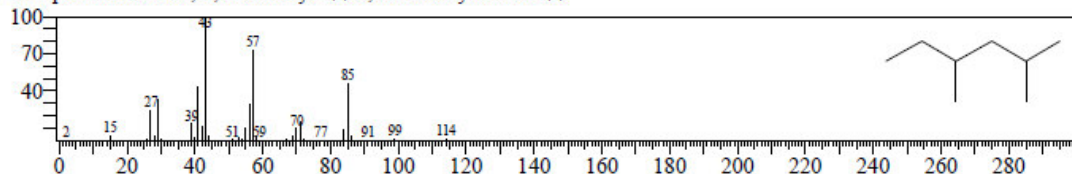
Library

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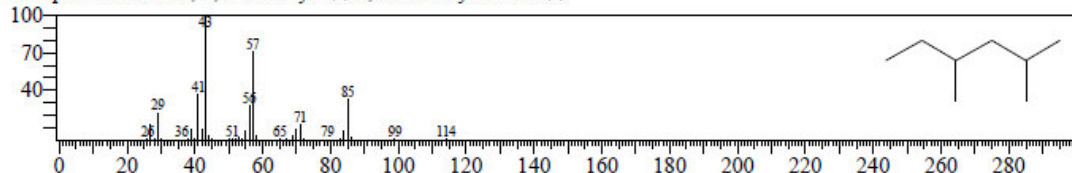
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RawMode:Averaged 5.035-5.045(408-410) BasePeak:43.00(16419)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



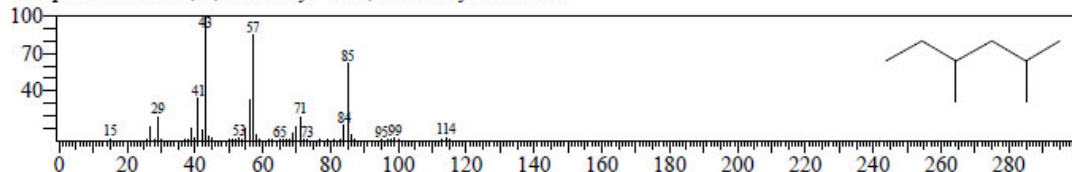
Hit#:1 Entry:3466 Library:NIST14s.lib
SI:94 Formula:C8H18 CAS:589-43-5 MolWeight:114 RefIndex:688
CompName:Hexane, 2,4-dimethyl- \$\$ 2,4-Dimethylhexane \$\$



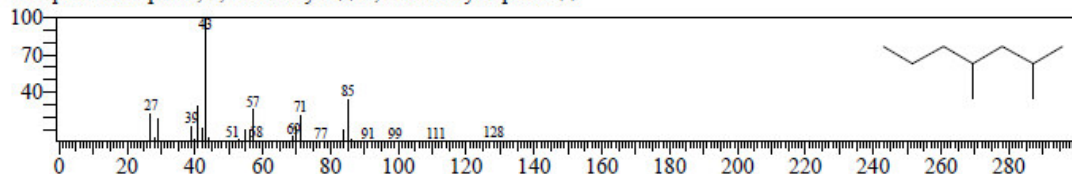
Hit#:2 Entry:3463 Library:NIST14s.lib
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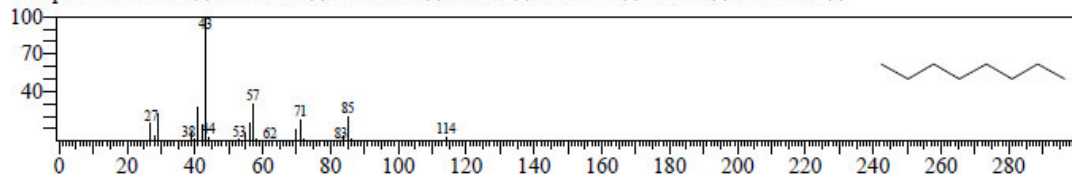
Hit#:3 Entry:3467 Library:NIST14s.lib
SI:93 Formula:C8H18 CAS:589-43-5 MolWeight:114 RefIndex:688
CompName:Hexane, 2,4-dimethyl- \$\$ 2,4-Dimethylhexane \$\$



Hit#:4 Entry:5394 Library:NIST14s.lib
SI:93 Formula:C9H20 CAS:2213-23-2 MolWeight:128 RefIndex:788
CompName:Heptane, 2,4-dimethyl- \$\$ 2,4-Dimethylheptane \$\$

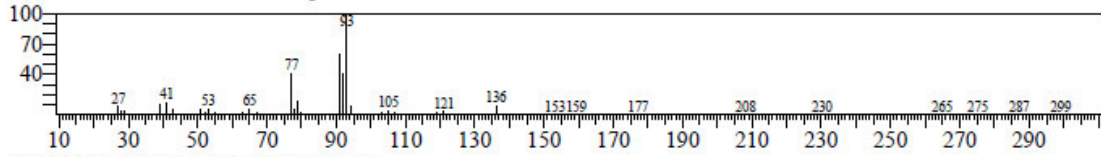


Hit#:5 Entry:3462 Library:NIST14s.lib
SI:92 Formula:C8H18 CAS:111-65-9 MolWeight:114 RefIndex:816
CompName:Octane \$\$ n-Octane \$\$ n-C8H18 \$\$ Oktan \$\$ Oktanen \$\$ Ottani \$\$ UN 1262 \$\$

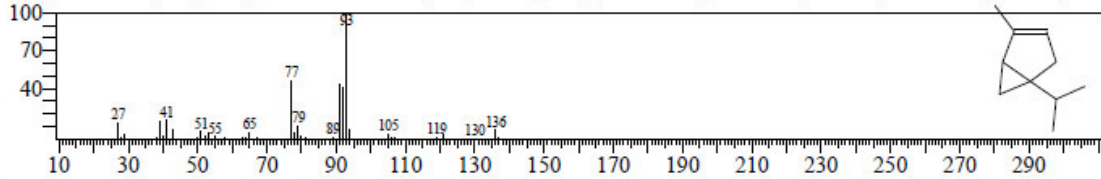


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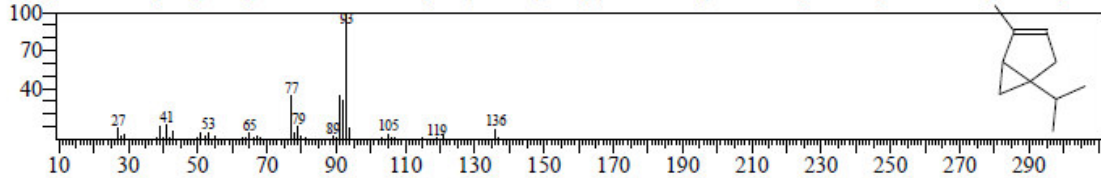
Line#:2 R.Time:11.580(Scan#:1717) MassPeaks:161
RawMode:Averaged 11.575-11.585(1716-1718) BasePeak:93.05(28134)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



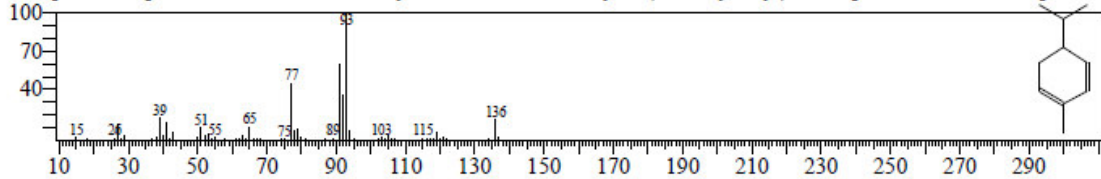
Hit#:1 Entry:6824 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RetIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



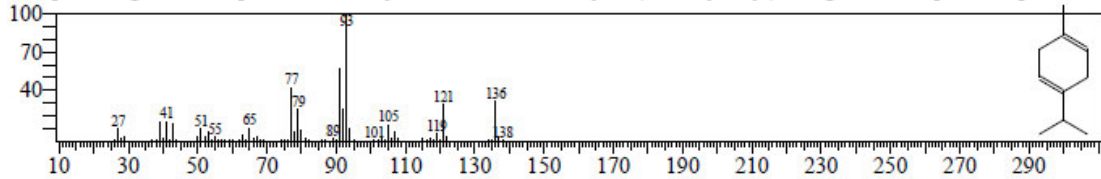
Hit#:2 Entry:6837 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RetIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



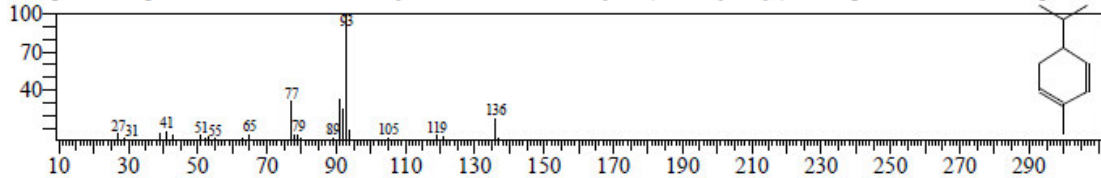
Hit#:3 Entry:6840 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:99-83-2 MolWeight:136 RetIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Mentha



Hit#:4 Entry:6836 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Mentha



Hit#:5 Entry:6839 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:99-83-2 MolWeight:136 RetIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Mentha

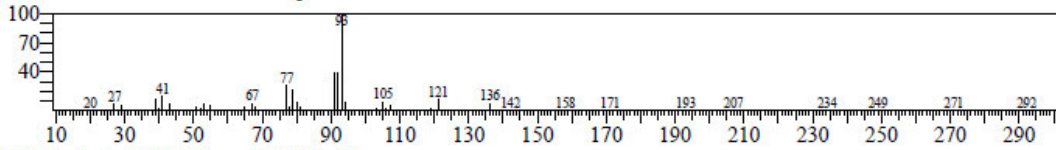


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Line#:3 R Time:12.145(Scan#:1830) MassPeaks:207

RawMode:Averaged 12.140-12.150(1829-1831) BasePeak:93.05(3238263)

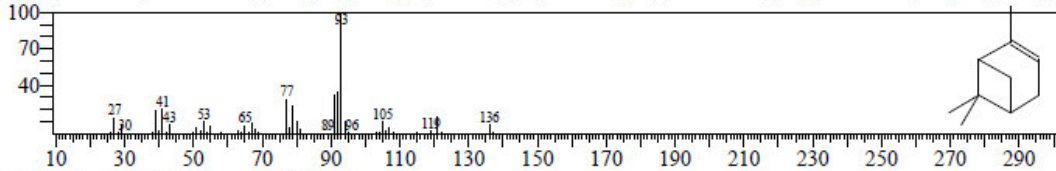
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6850 Library:NIST14s.lib

SI:96 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948

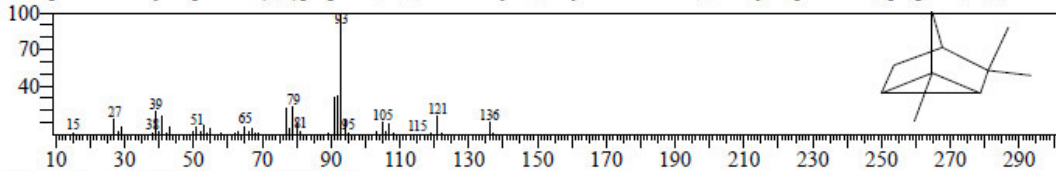
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



Hit#:2 Entry:6848 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729

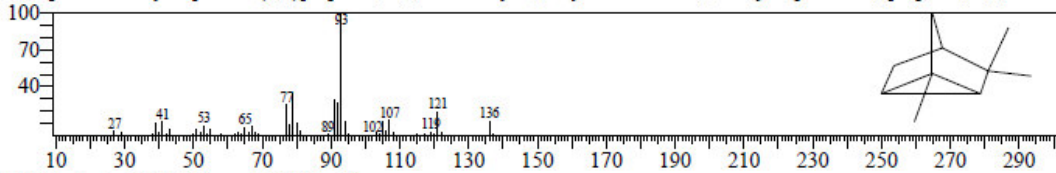
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit#:3 Entry:6828 Library:NIST14s.lib

SI:94 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729

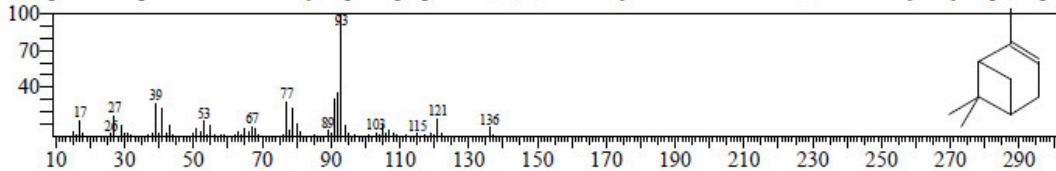
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit#:4 Entry:6849 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948

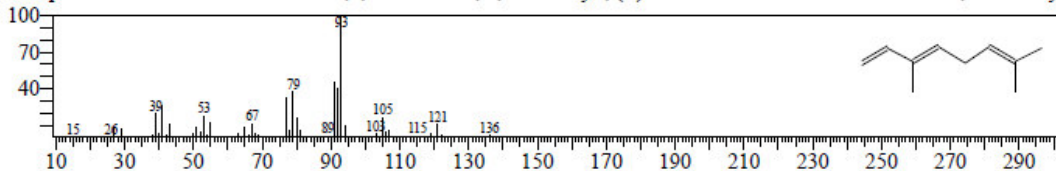
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



Hit#:5 Entry:6844 Library:NIST14s.lib

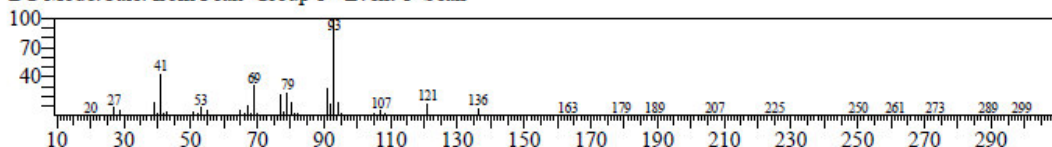
SI:93 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976

CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethy

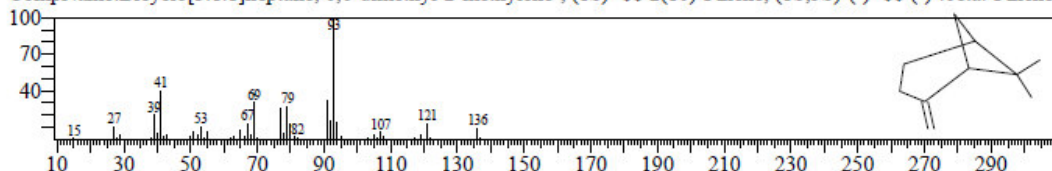


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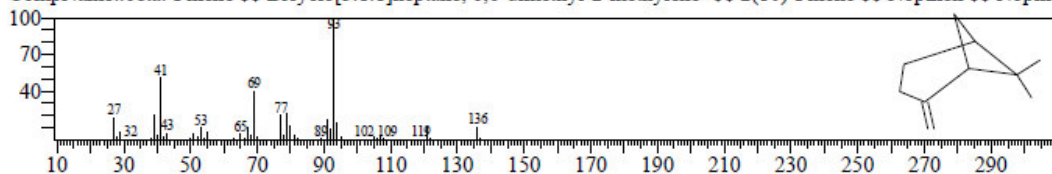
Line#:4 R.Time:16.425(Scan#:2686) MassPeaks:189
RawMode:Averaged 16.420-16.430(2685-2687) BasePeak:93.05(776704)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



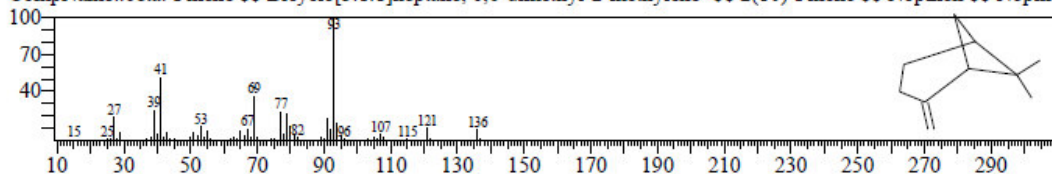
Hit#:1 Entry:6816 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:18172-67-3 MolWeight:136 RetIndex:943
CompName:Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)- \$\$ 2(10)-Pinene, (1S,5S)-(-)- \$\$ (-)-beta.-Pinene !



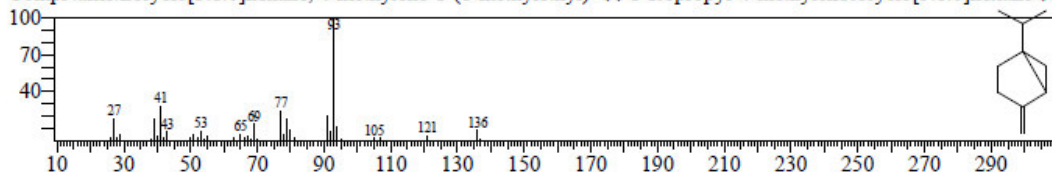
Hit#:2 Entry:6809 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



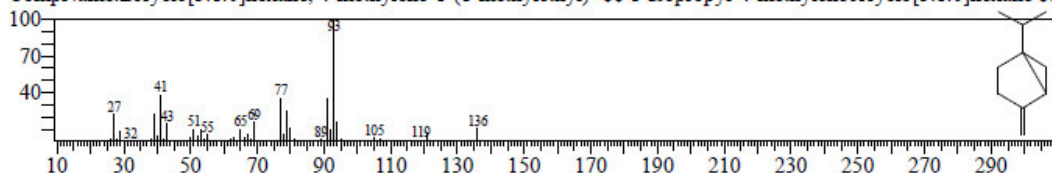
Hit#:3 Entry:6808 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



Hit#:4 Entry:6811 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

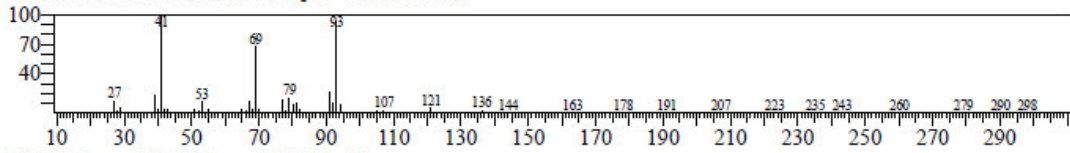


Hit#:5 Entry:6817 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

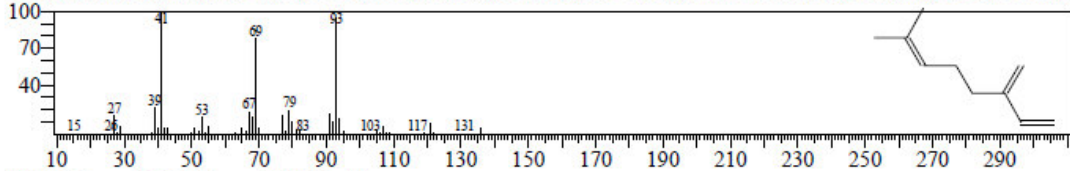


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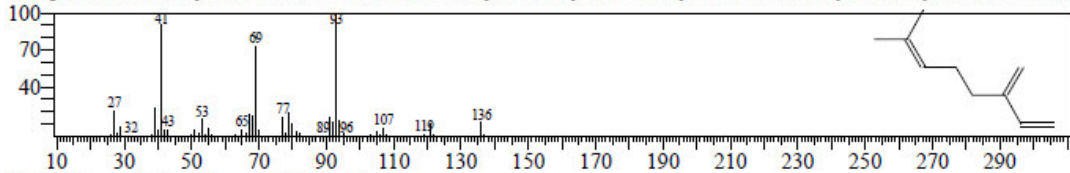
Line#:5 R.Time:18.995(Scan#:3200) MassPeaks:185
RawMode:Averaged 18.990-19.000(3199-3201) BasePeak:41.00(313420)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



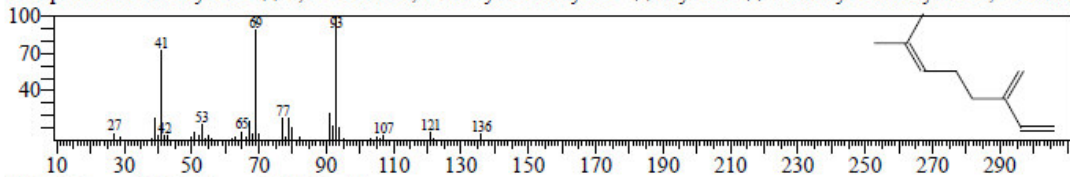
Hit#:1 Entry:6778 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



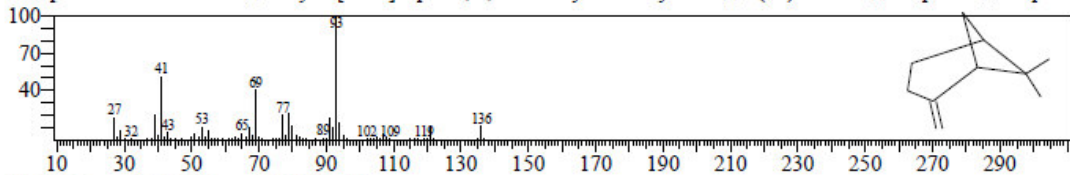
Hit#:2 Entry:6810 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



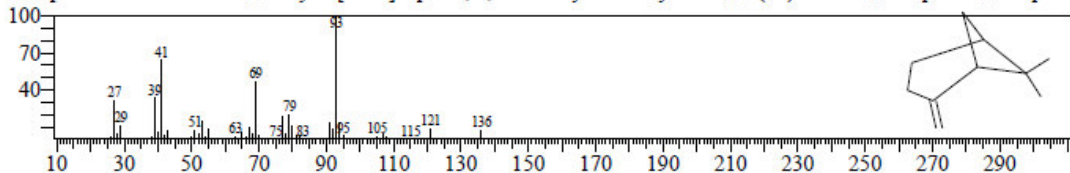
Hit#:3 Entry:6820 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie



Hit#:4 Entry:6809 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

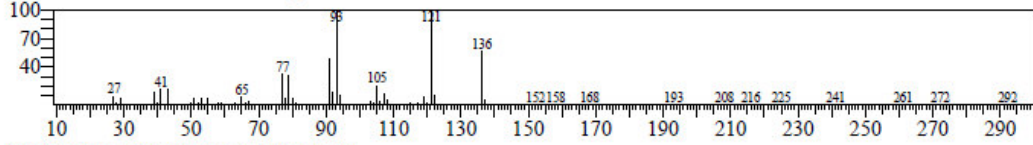


Hit#:5 Entry:6807 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

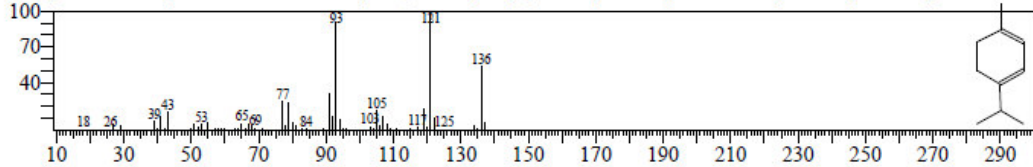


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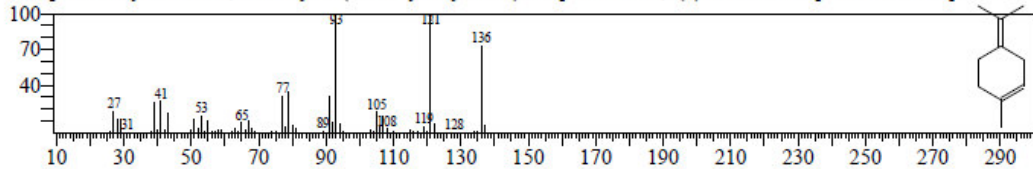
Line#:6 R.Time:22.475(Scan#:3896) MassPeaks:205
RawMode:Averaged 22.470-22.480(3895-3897) BasePeak:93.05(18936)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



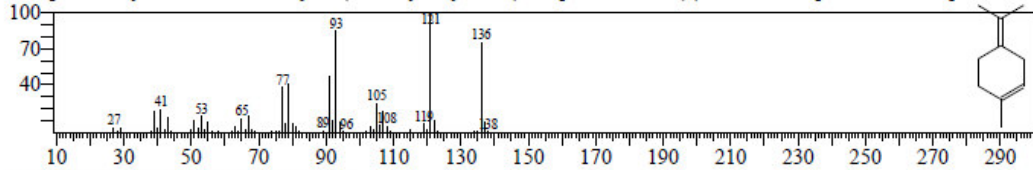
Hit#:1 Entry:6862 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:99-86-5 MolWeight:136 RefIndex:998
CompName:1,3-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.alpha.-Terpinene \$\$.alpha.-Terpinen \$\$ p-Mentha-1,3-



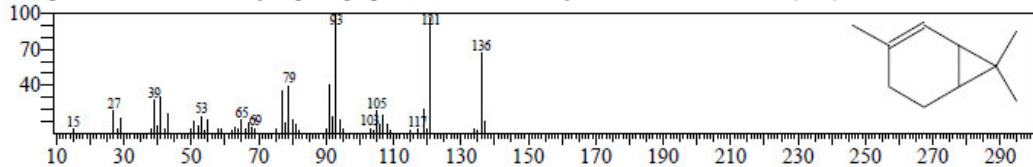
Hit#:2 Entry:6866 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:586-62-9 MolWeight:136 RefIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



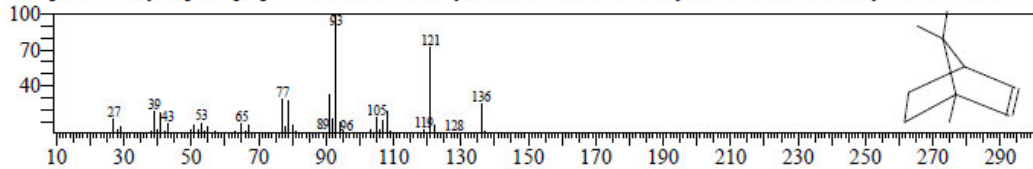
Hit#:3 Entry:6867 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:586-62-9 MolWeight:136 RefIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



Hit#:4 Entry:6859 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:554-61-0 MolWeight:136 RefIndex:948
CompName:2-Carene \$\$ Bicyclo[4.1.0]hept-2-ene, 3,7,7-trimethyl- \$\$.delta.-2-Carene \$\$ (+/-)-2-Carene \$\$ 3,7,7-Tri-



Hit#:5 Entry:6855 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:464-17-5 MolWeight:136 RefIndex:932
CompName:Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl- \$\$ 2-Bornene \$\$ Bornylene \$\$ 1,7,7-Trimethyl-2-norbornene \$\$

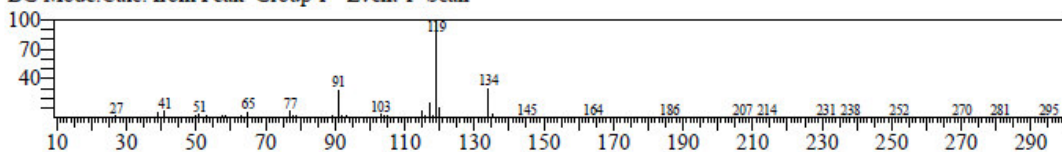


<< Target >>

Line#:7 R.Time:23.960(Scan#:4193) MassPeaks:159

RawMode:Averaged 23.955-23.965(4192-4194) BasePeak:119.05(48819)

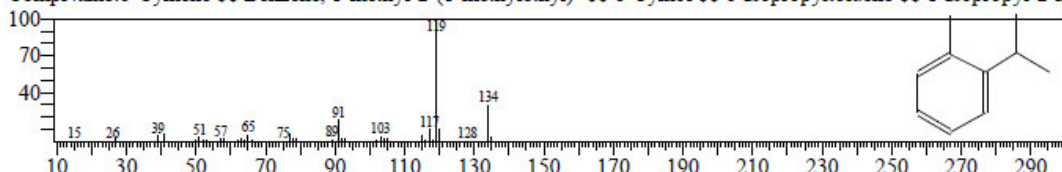
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6391 Library:NIST14s.lib

SI:96 Formula:C10H14 CAS:527-84-4 MolWeight:134 RefIndex:1042

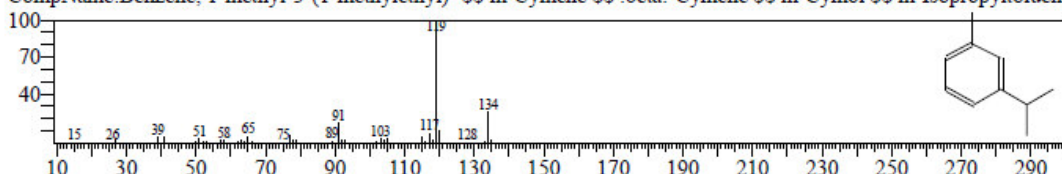
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m



Hit#:2 Entry:6387 Library:NIST14s.lib

SI:96 Formula:C10H14 CAS:535-77-3 MolWeight:134 RefIndex:1042

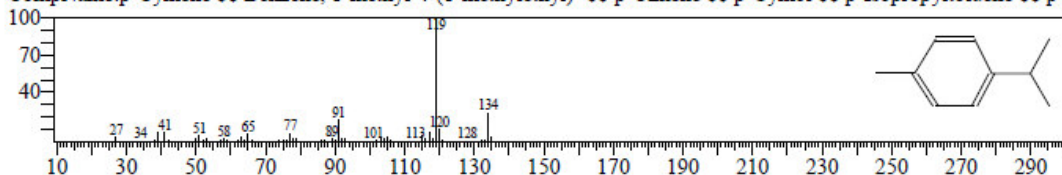
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene



Hit#:3 Entry:6371 Library:NIST14s.lib

SI:95 Formula:C10H14 CAS:99-87-6 MolWeight:134 RefIndex:1042

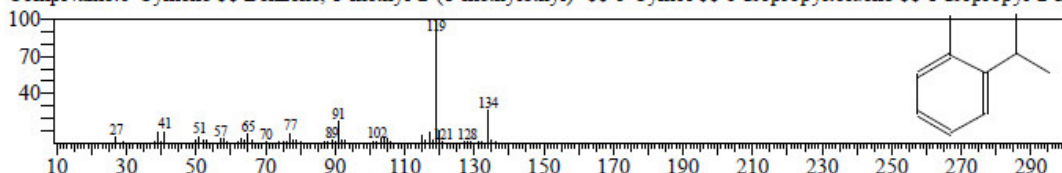
CompName:p-Cymene \$\$ Benzene, 1-methyl-4-(1-methylethyl)- \$\$ p-Cimene \$\$ p-Cymol \$\$ p-Isopropyltoluene \$\$ p-1



Hit#:4 Entry:6390 Library:NIST14s.lib

SI:95 Formula:C10H14 CAS:527-84-4 MolWeight:134 RefIndex:1042

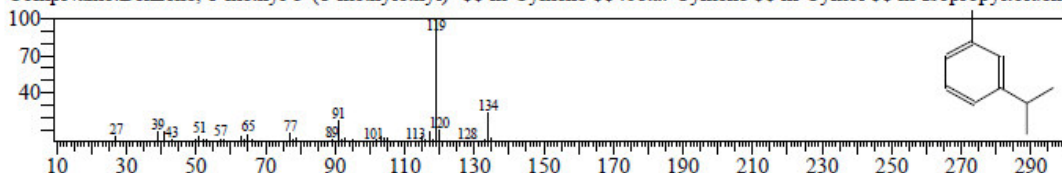
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m



Hit#:5 Entry:6388 Library:NIST14s.lib

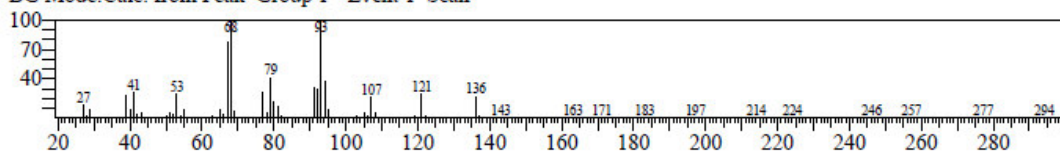
SI:94 Formula:C10H14 CAS:535-77-3 MolWeight:134 RefIndex:1042

CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene

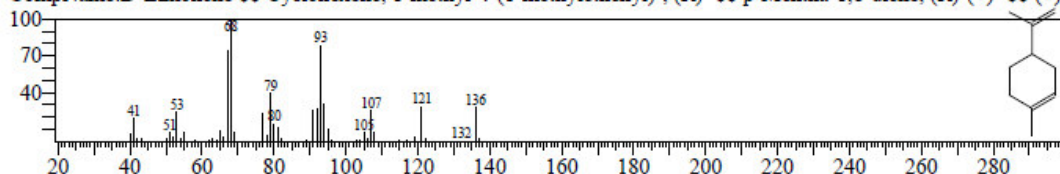


<< Target >>

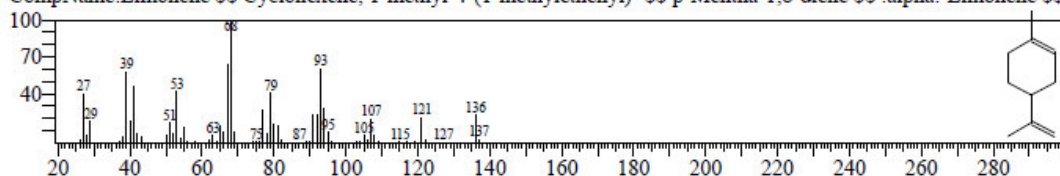
Line#:8 R.Time:24.645(Scan#:4330) MassPeaks:161
RawMode:Averaged 24.640-24.650(4329-4331) BasePeak:68.00(108416)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



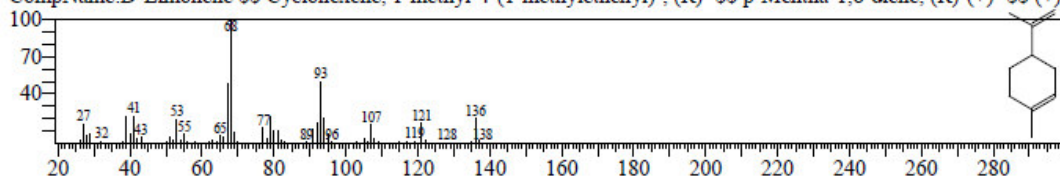
Hit#:1 Entry:6793 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RefIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



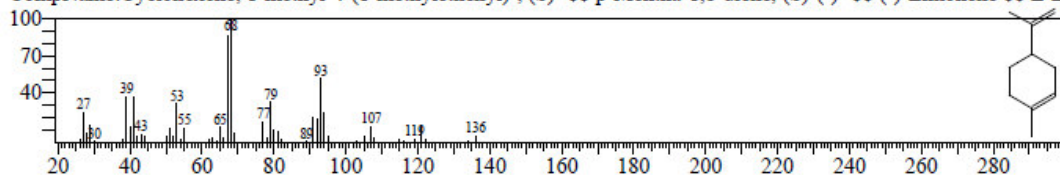
Hit#:2 Entry:6786 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:138-86-3 MolWeight:136 RefIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



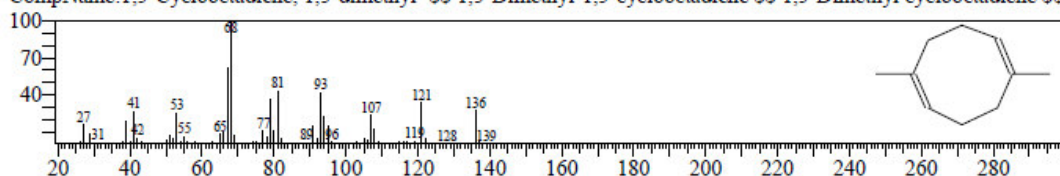
Hit#:3 Entry:6792 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RefIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



Hit#:4 Entry:6787 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:5989-54-8 MolWeight:136 RefIndex:1018
CompName:Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)- \$\$ p-Mentha-1,8-diene, (S)-(-)- \$\$ (-)-Limonene \$\$ L-Li

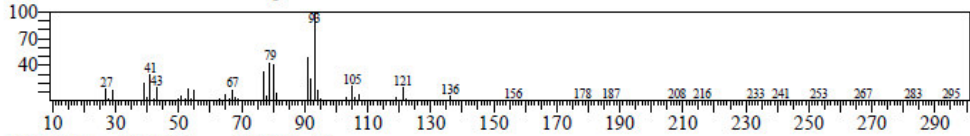


Hit#:5 Entry:6784 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:3760-14-3 MolWeight:136 RefIndex:1103
CompName:1,5-Cyclooctadiene, 1,5-dimethyl- \$\$ 1,5-Dimethyl-1,5-cyclooctadiene \$\$ 1,5-Dimethyl cyclooctadiene \$\$



<< Target >>

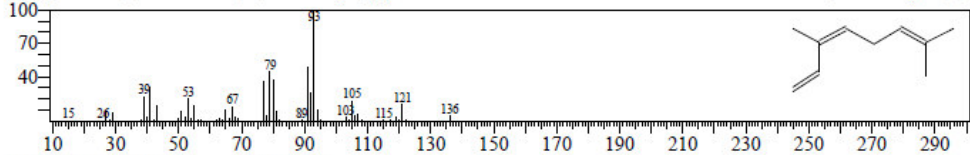
Line#:9 R.Time:29.845(Scan#:5370) MassPeaks:146
RawMode:Averaged 29.840-29.850(5369-5371) BasePeak:93.05(41256)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6842 Library:NIST14s.lib

SI:97 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976

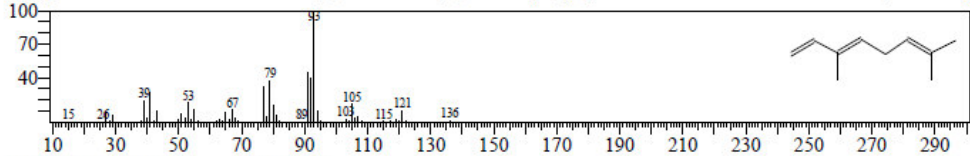
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6



Hit#:2 Entry:6844 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976

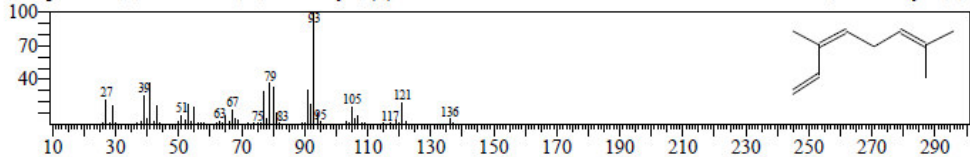
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethy



Hit#:3 Entry:6814 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976

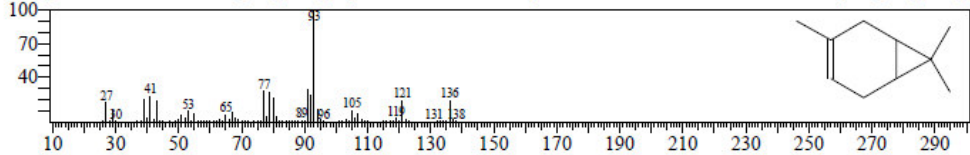
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6



Hit#:4 Entry:6838 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948

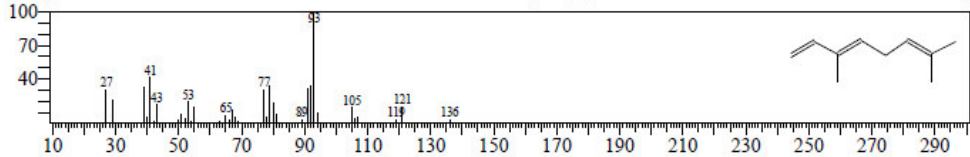
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]



Hit#:5 Entry:6813 Library:NIST14s.lib

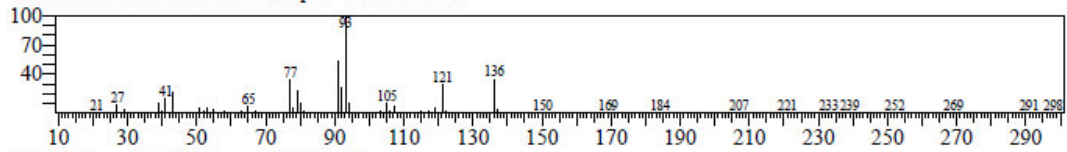
SI:92 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976

CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethy

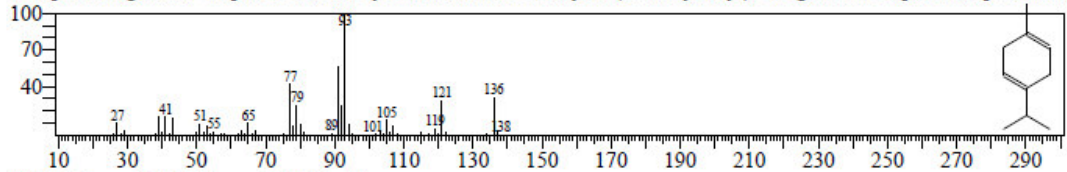


<< Target >>

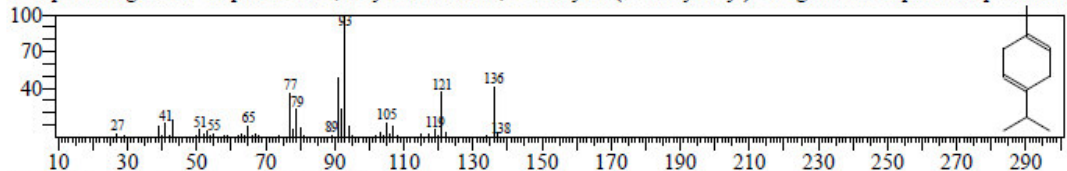
Line#:10 R.Time:31.360(Scan#:5673) MassPeaks:198
RawMode:Averaged 31.355-31.365(5672-5674) BasePeak:93.05(58941)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



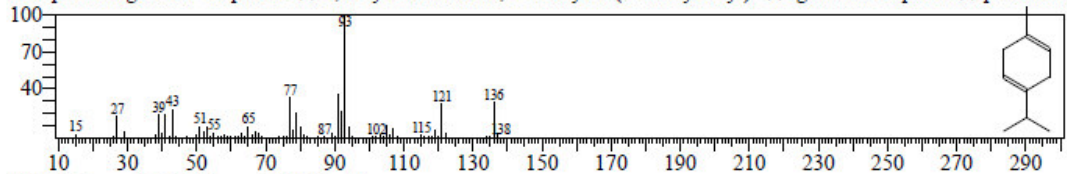
Hit#:1 Entry:6836 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:99-85-4 MolWeight:136 RefIndex:998
CompName:..gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Mentha



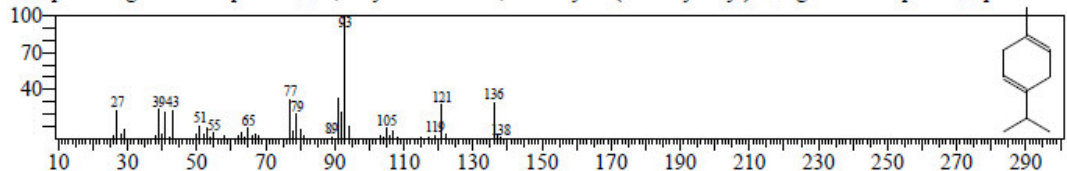
Hit#:2 Entry:6846 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:99-85-4 MolWeight:136 RefIndex:998
CompName:..gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Mentha



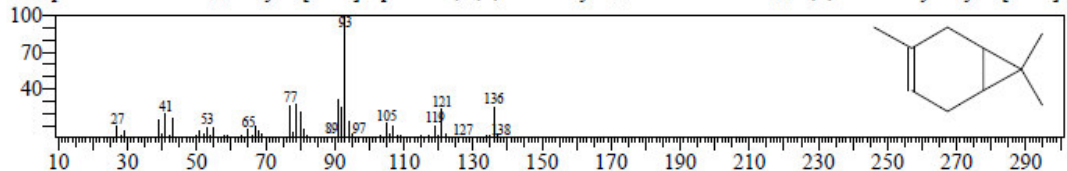
Hit#:3 Entry:6835 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:99-85-4 MolWeight:136 RefIndex:998
CompName:..gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Mentha



Hit#:4 Entry:6834 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:99-85-4 MolWeight:136 RefIndex:998
CompName:..gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Mentha

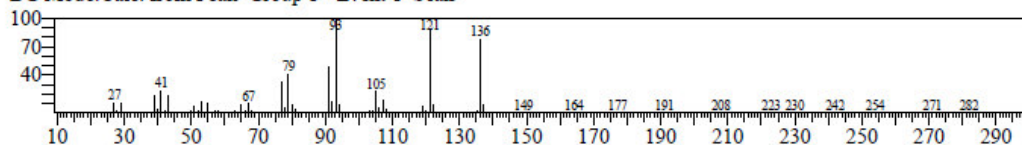


Hit#:5 Entry:6843 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RefIndex:948
CompName:..3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$.delta.-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]

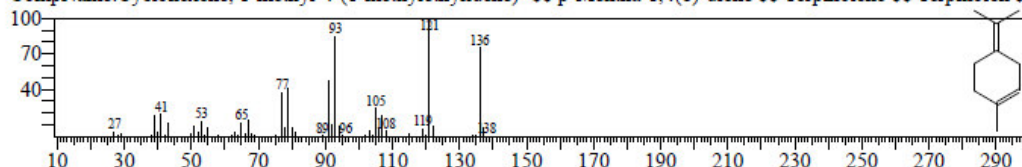


<< Target >>

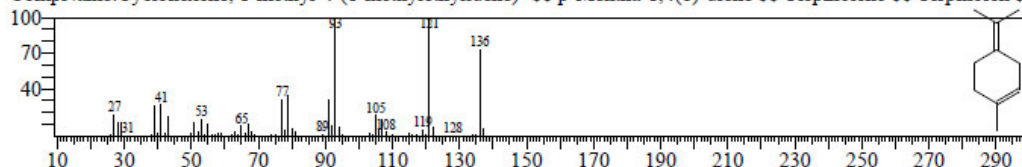
Line#:11 R.Time:35.955(Scan#:6592) MassPeaks:154
RawMode:Averaged 35.950-35.960(6591-6593) BasePeak:93.05(15333)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



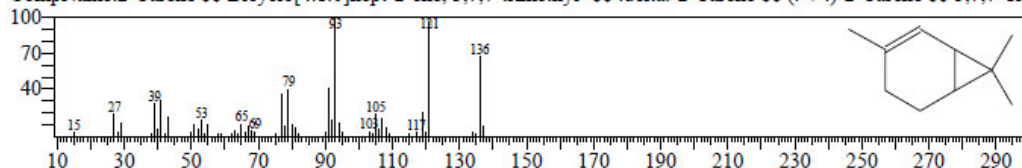
Hit#:1 Entry:6867 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



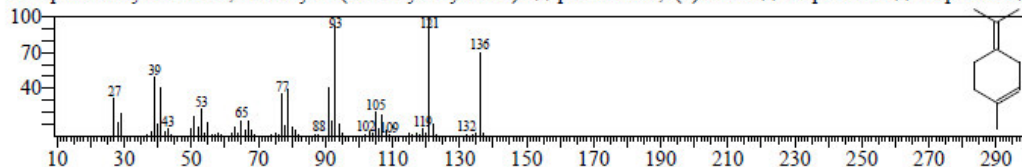
Hit#:2 Entry:6866 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



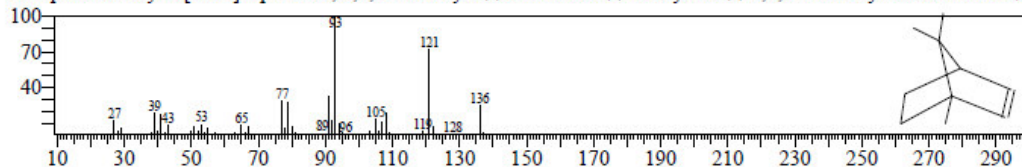
Hit#:3 Entry:6859 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:554-61-0 MolWeight:136 RetIndex:948
CompName:2-Carene \$\$ Bicyclo[4.1.0]hept-2-ene, 3,7,7-trimethyl- \$\$.delta.-2-Carene \$\$ (+/-)-2-Carene \$\$ 3,7,7-Tri



Hit#:4 Entry:6865 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$

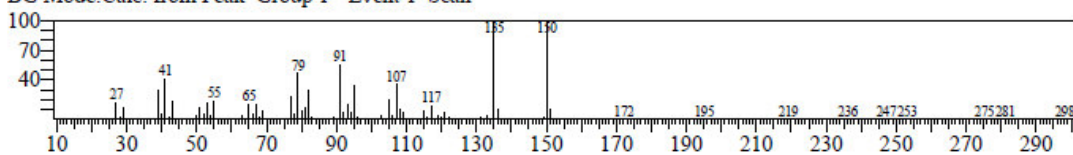


Hit#:5 Entry:6855 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:464-17-5 MolWeight:136 RetIndex:932
CompName:Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl- \$\$ 2-Bornene \$\$ Bornylene \$\$ 1,7,7-Trimethyl-2-norbornene \$\$



<< Target >>

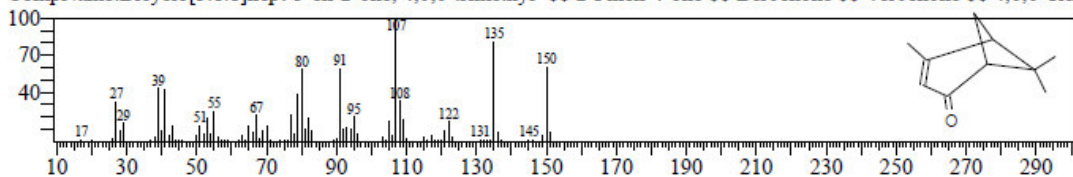
Line#:12 R.Time:37.660(Scan#:6933) MassPeaks:151
RawMode:Averaged 37.655-37.665(6932-6934) BasePeak:150.10(12792)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:9327 Library:NIST14s.lib

SI:87 Formula:C10H14O CAS:80-57-9 MolWeight:150 RetIndex:1119

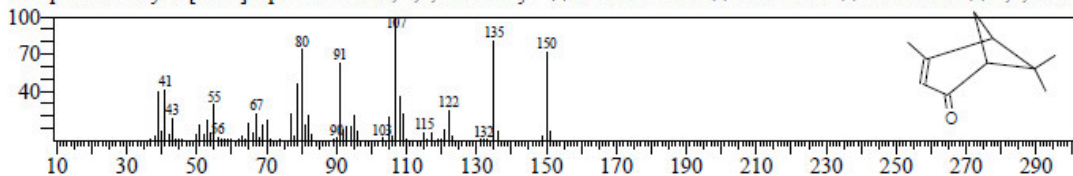
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl- \$\$ 2-Pinen-4-one \$\$ Berbenone \$\$ Verbenone \$\$ 4,6,6-Tri



Hit#:2 Entry:9325 Library:NIST14s.lib

SI:86 Formula:C10H14O CAS:80-57-9 MolWeight:150 RetIndex:1119

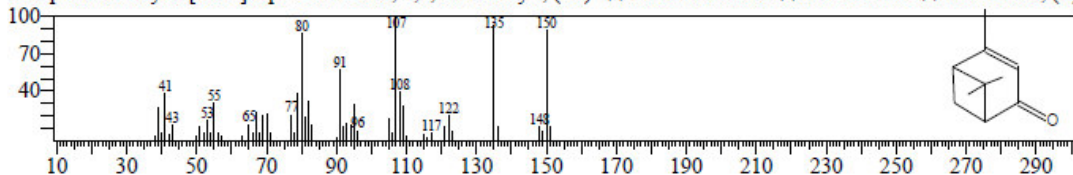
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl- \$\$ 2-Pinen-4-one \$\$ Berbenone \$\$ Verbenone \$\$ 4,6,6-Tri



Hit#:3 Entry:9328 Library:NIST14s.lib

SI:85 Formula:C10H14O CAS:1196-01-6 MolWeight:150 RetIndex:1119

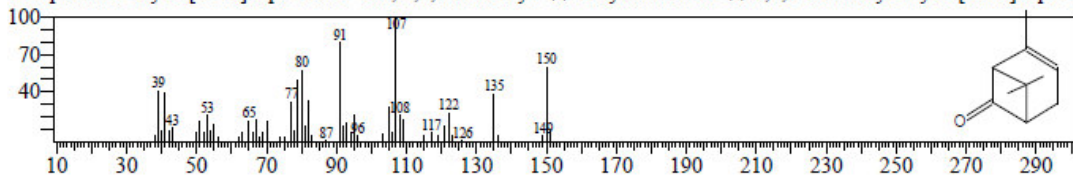
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)- \$\$ Levoverbenone \$\$ 1-Verbenone \$\$ Verbenone, (L)



Hit#:4 Entry:9324 Library:NIST14s.lib

SI:84 Formula:C10H14O CAS:473-06-3 MolWeight:150 RetIndex:1119

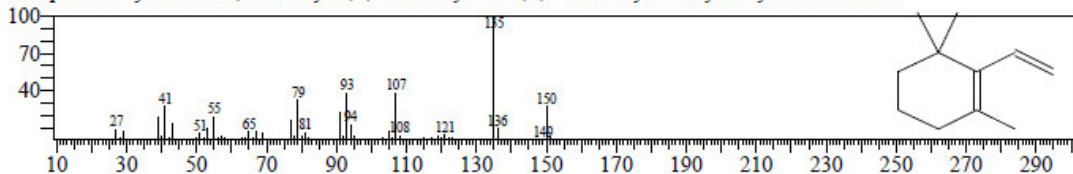
CompName:Bicyclo[3.1.1]hept-2-en-6-one, 2,7,7-trimethyl- \$\$ Chrysanthenone \$\$ 2,7,7-Trimethylbicyclo[3.1.1]hept-2-



Hit#:5 Entry:9373 Library:NIST14s.lib

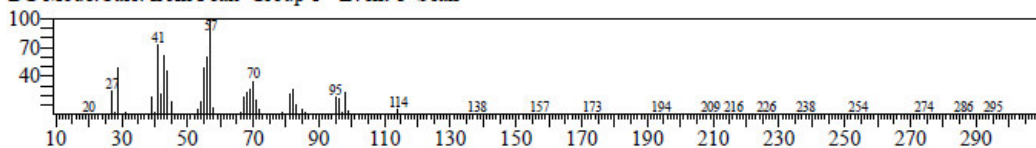
SI:83 Formula:C11H18 CAS:5293-90-3 MolWeight:150 RetIndex:1105

CompName:Cyclohexene, 2-ethenyl-1,3,3-trimethyl- \$\$ 1,3,3-Trimethyl-2-vinyl-1-cyclohexene # \$\$

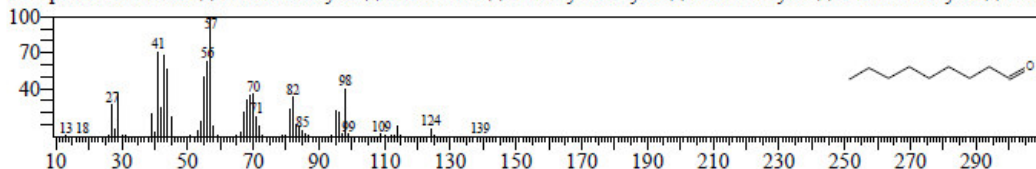


<< Target >>

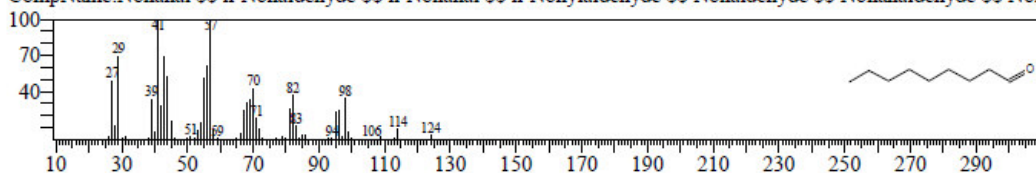
Line#:13 R.Time:38.450(Scan#:7091) MassPeaks:171
RawMode:Averaged 38.445-38.455(7090-7092) BasePeak:57.00(14192)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



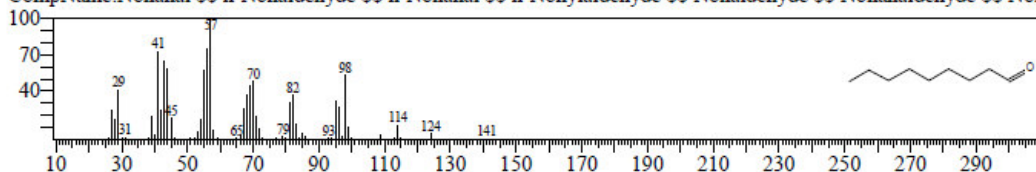
Hit#1 Entry:7876 Library:NIST14s.lib
SI:96 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$\$ n-Nonaldehyde \$\$ n-Nonanal \$\$ n-Nonylaldehyde \$\$ Nonaldehyde \$\$ Nonanaldehyde \$\$ Non



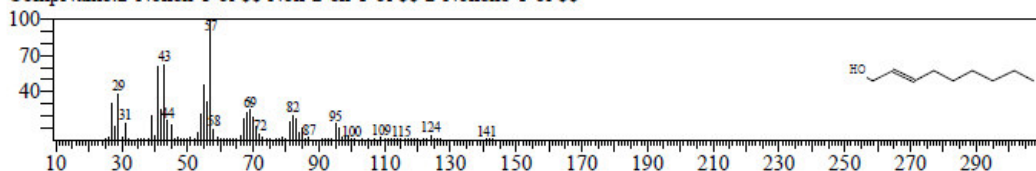
Hit#2 Entry:7858 Library:NIST14s.lib
SI:94 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$\$ n-Nonaldehyde \$\$ n-Nonanal \$\$ n-Nonylaldehyde \$\$ Nonaldehyde \$\$ Nonanaldehyde \$\$ Non



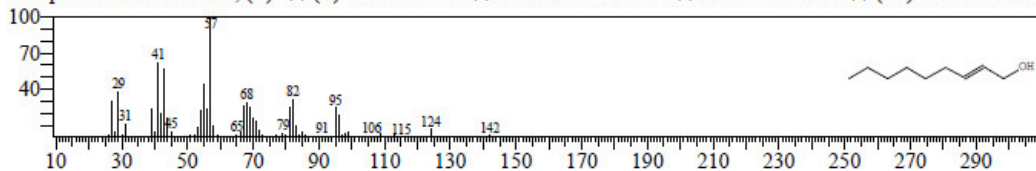
Hit#3 Entry:7887 Library:NIST14s.lib
SI:94 Formula:C9H18O CAS:124-19-6 MolWeight:142 RetIndex:1104
CompName:Nonanal \$\$ n-Nonaldehyde \$\$ n-Nonanal \$\$ n-Nonylaldehyde \$\$ Nonaldehyde \$\$ Nonanaldehyde \$\$ Non



Hit#4 Entry:7885 Library:NIST14s.lib
SI:92 Formula:C9H18O CAS:22104-79-6 MolWeight:142 RetIndex:1167
CompName:2-Nonen-1-ol \$\$ Non-2-en-1-ol \$\$ 2-Nonene-1-ol \$\$

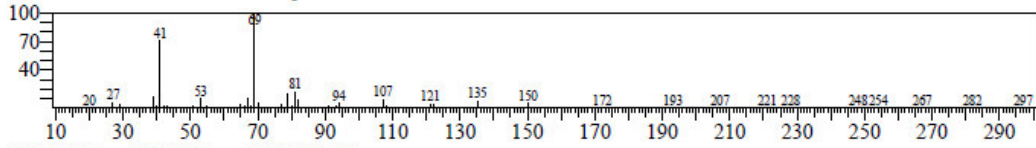


Hit#5 Entry:7877 Library:NIST14s.lib
SI:92 Formula:C9H18O CAS:31502-14-4 MolWeight:142 RetIndex:1167
CompName:2-Nonen-1-ol, (E)- \$\$ (E)-2-Nonen-1-ol \$\$ trans-2-Nonen-1-ol \$\$ trans-2-Nonenol \$\$ (2E)-2-Nonen-1-ol :

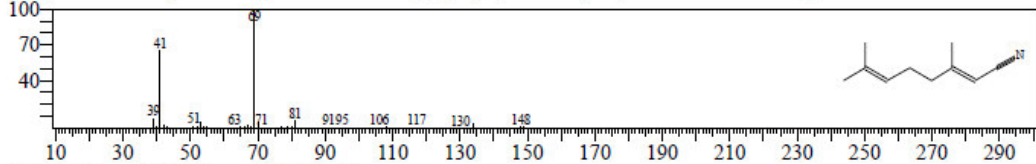


<< Target >>

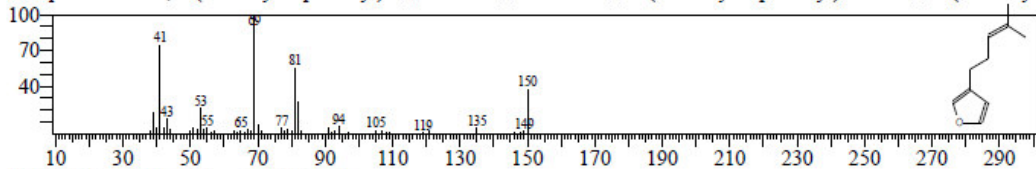
Line#:14 R.Time:39.680(Scan#:7337) MassPeaks:177
RawMode:Averaged 39.675-39.685(7336-7338) BasePeak:69.05(558520)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



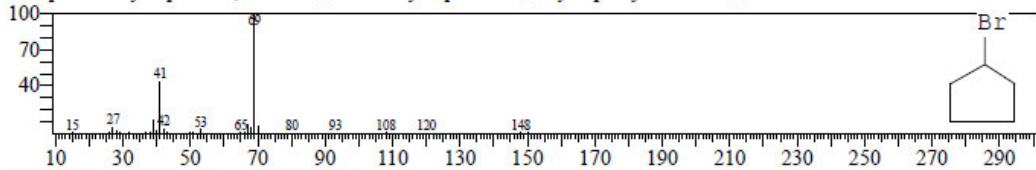
Hit#:1 Entry:9007 Library:NIST14s.lib
SI:86 Formula:C10H15N CAS:101660-61-1 MolWeight:149 RetIndex:1231
CompName:Geranyl nitrile \$\$ Gerano nitrile 1 \$\$ (2E)-3,7-Dimethyl-2,6-octadienenitrile # \$\$



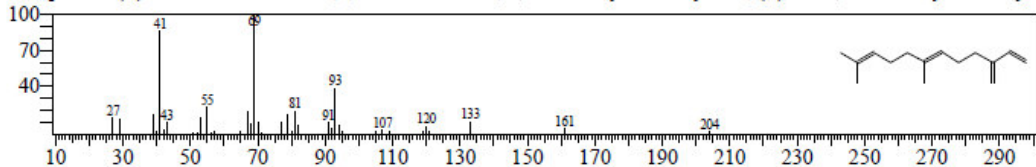
Hit#:2 Entry:9278 Library:NIST14s.lib
SI:84 Formula:C10H14O CAS:539-52-6 MolWeight:150 RetIndex:1125
CompName:Furan, 3-(4-methyl-3-pentenyl)- \$\$ Perillene \$\$ Perillene \$\$ 3-(4-Methyl-3-pentenyl)furan # \$\$ 3-(4-Methyl



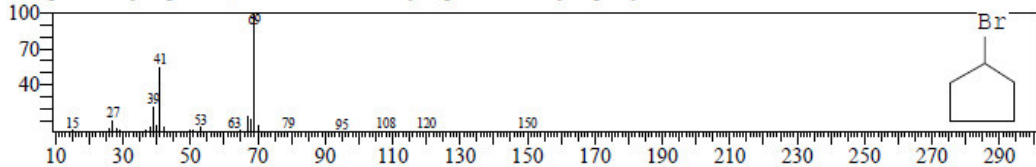
Hit#:3 Entry:8711 Library:NIST14s.lib
SI:84 Formula:C5H9Br CAS:137-43-9 MolWeight:148 RetIndex:857
CompName:Cyclopentane, bromo- \$\$ Bromocyclopentane \$\$ Cyclopentyl bromide \$\$



Hit#:4 Entry:19061 Library:NIST14s.lib
SI:83 Formula:C15H24 CAS:18794-84-8 MolWeight:204 RetIndex:1440
CompName:(E)-.beta.-Famesene \$\$ 1,6,10-Dodecatriene, 7,11-dimethyl-3-methylene-, (E)- \$\$ 7,11-Dimethyl-3-methyle

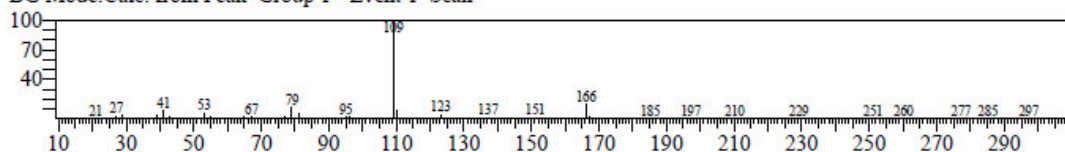


Hit#:5 Entry:8710 Library:NIST14s.lib
SI:83 Formula:C5H9Br CAS:137-43-9 MolWeight:148 RetIndex:857
CompName:Cyclopentane, bromo- \$\$ Bromocyclopentane \$\$ Cyclopentyl bromide \$\$

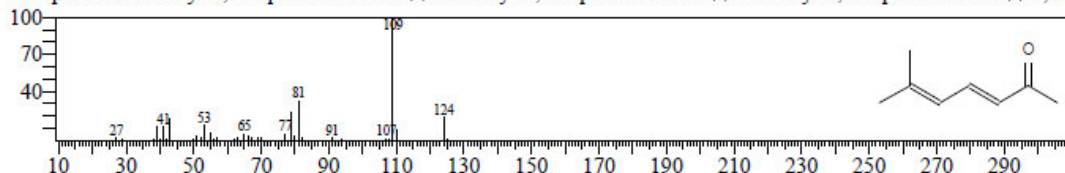


<< Target >>

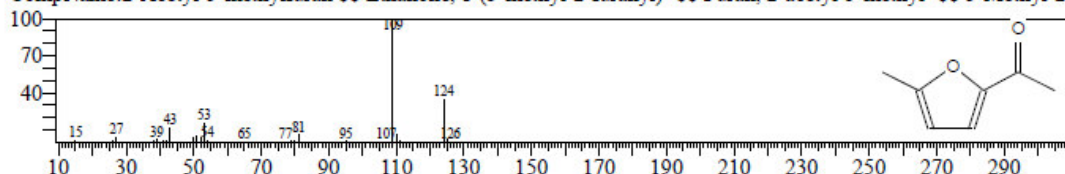
Line#:15 R.Time:45.660(Scan#:8533) MassPeaks:187
RawMode:Averaged 45.655-45.665(8532-8534) BasePeak:109.05(40989)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



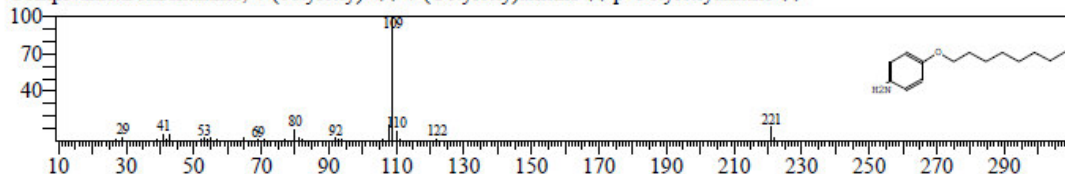
Hit#:1 Entry:4686 Library:NIST14s.lib
SI:80 Formula:C8H12O CAS:1604-28-0 MolWeight:124 RetIndex:946
CompName:6-Methyl-3,5-heptadiene-2-one \$\$ 6-Methyl-3,5-heptadien-2-one \$\$ 6-Methyl-3,5-heptadienone-2 \$\$ 3,5-F



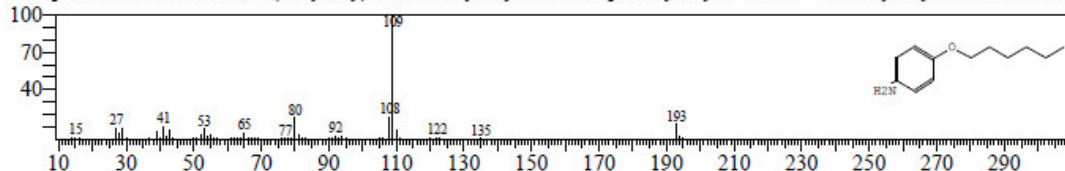
Hit#:2 Entry:4618 Library:NIST14s.lib
SI:79 Formula:C7H8O2 CAS:1193-79-9 MolWeight:124 RetIndex:967
CompName:2-Acetyl-5-methylfuran \$\$ Ethanone, 1-(5-methyl-2-furanyl)- \$\$ Furan, 2-acetyl-5-methyl- \$\$ 5-Methyl-2-



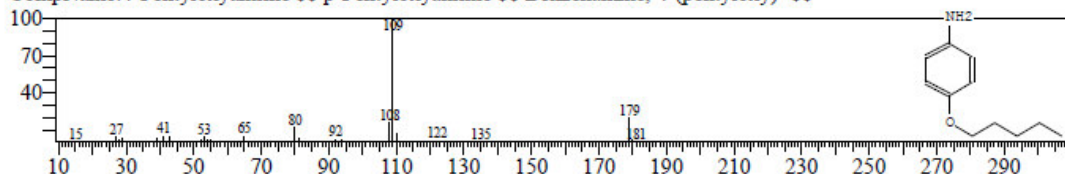
Hit#:3 Entry:21442 Library:NIST14s.lib
SI:79 Formula:C14H23NO CAS:39905-45-8 MolWeight:221 RetIndex:1877
CompName:Benzenamine, 4-(octyloxy)- \$\$ 4-(Octyloxy)aniline \$\$ p-Octyloxyaniline \$\$



Hit#:4 Entry:17146 Library:NIST14s.lib
SI:78 Formula:C12H19NO CAS:39905-57-2 MolWeight:193 RetIndex:1678
CompName:Benzenamine, 4-(hexyloxy)- \$\$ 4-Hexyloxyaniline \$\$ p-Hexyloxyaniline \$\$ Anilic

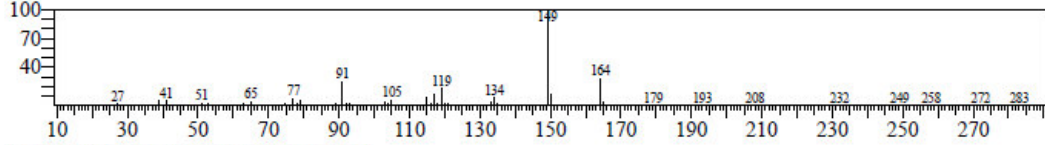


Hit#:5 Entry:14824 Library:NIST14s.lib
SI:78 Formula:C11H17NO CAS:39905-50-5 MolWeight:179 RetIndex:1579
CompName:4-Pentyloxyaniline \$\$ p-Pentyloxyaniline \$\$ Benzenamine, 4-(pentyloxy)- \$\$

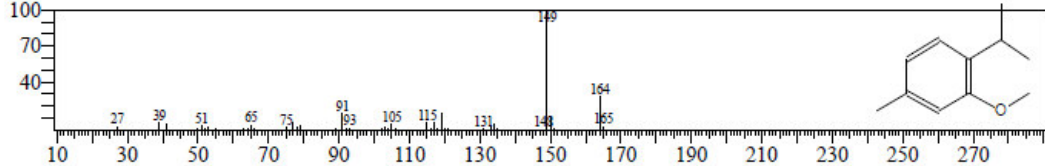


<< Target >>

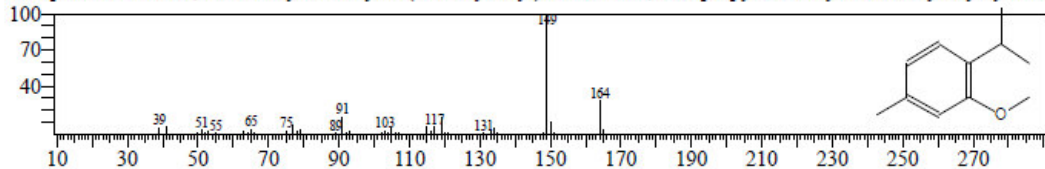
Line#:16 R.Time:48.460(Scan#:9093) MassPeaks:138
RawMode:Averaged 48.455-48.465(9092-9094) BasePeak:149.10(27819)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



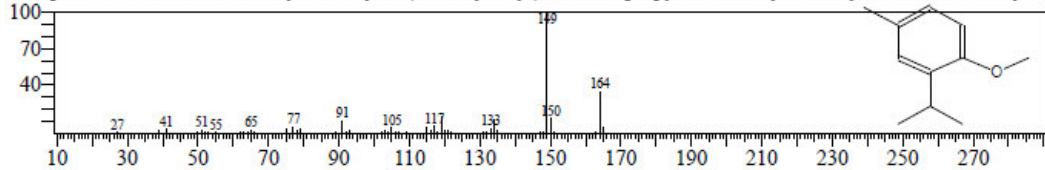
Hit#:1 Entry:12194 Library:NIST14s.lib
SI:95 Formula:C11H16O CAS:1076-56-8 MolWeight:164 RetIndex:1231
CompName:Benzene, 2-methoxy-4-methyl-1-(1-methylethyl)- \$\$ Anisole, 2-isopropyl-5-methyl- \$\$ Methyl thymyl ethe



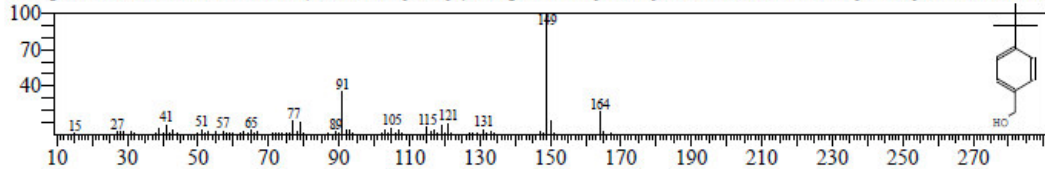
Hit#:2 Entry:12193 Library:NIST14s.lib
SI:95 Formula:C11H16O CAS:1076-56-8 MolWeight:164 RetIndex:1231
CompName:Benzene, 2-methoxy-4-methyl-1-(1-methylethyl)- \$\$ Anisole, 2-isopropyl-5-methyl- \$\$ Methyl thymyl ethe



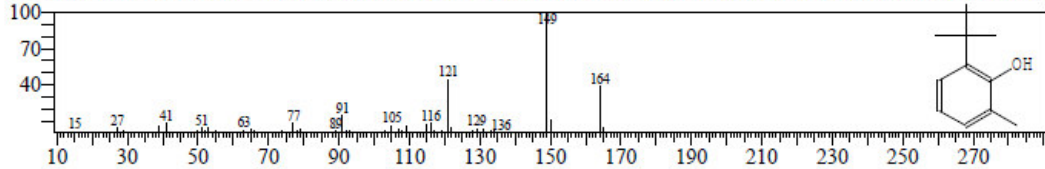
Hit#:3 Entry:12195 Library:NIST14s.lib
SI:93 Formula:C11H16O CAS:31574-44-4 MolWeight:164 RetIndex:1231
CompName:Benzene, 1-methoxy-4-methyl-2-(1-methylethyl)- \$\$ 2-Isopropyl-1-methoxy-4-methylbenzene \$\$ Isothymo



Hit#:4 Entry:12187 Library:NIST14s.lib
SI:88 Formula:C11H16O CAS:877-65-6 MolWeight:164 RetIndex:1363
CompName:Benzenemethanol, 4-(1,1-dimethylethyl)- \$\$ p-tert-Butylbenzyl alcohol \$\$ 4-tert-Butylbenzyl alcohol \$\$ 4(

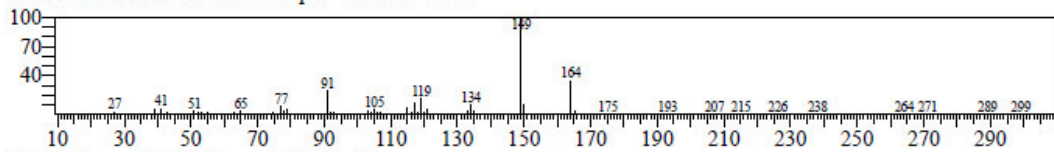


Hit#:5 Entry:12190 Library:NIST14s.lib
SI:85 Formula:C11H16O CAS:2219-82-1 MolWeight:164 RetIndex:1341
CompName:Phenol, 2-(1,1-dimethylethyl)-6-methyl- \$\$ o-Cresol, 6-tert-butyl- \$\$ o-tert-Butyl-o-cresol \$\$ 2-tert-Butyl-6-

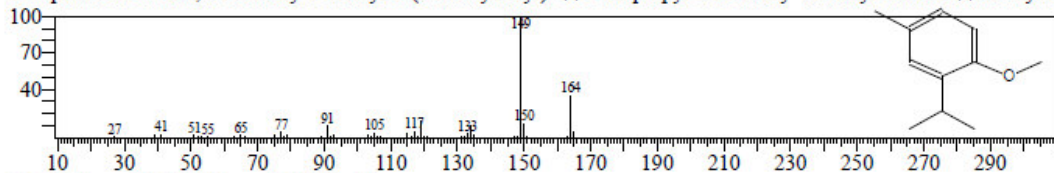


<< Target >>

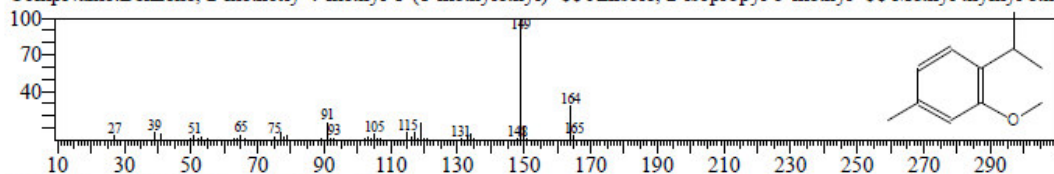
Line#:17 R.Time:48.980(Scan#:9197) MassPeaks:178
RawMode:Averaged 48.975-48.985(9196-9198) BasePeak:149.10(55665)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



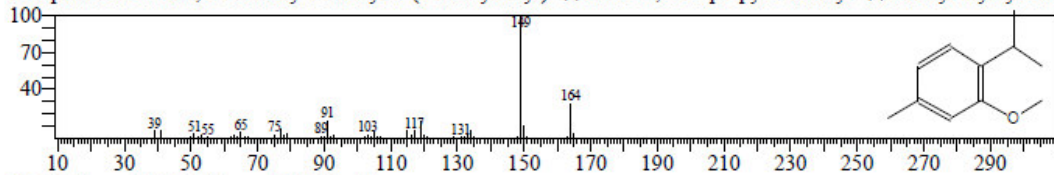
Hit#:1 Entry:12195 Library:NIST14s.lib
SI:92 Formula:C11H16O CAS:31574-44-4 MolWeight:164 RetIndex:1231
CompName:Benzen, 1-methoxy-4-methyl-2-(1-methylethyl)- \$\$ 2-Isopropyl-1-methoxy-4-methylbenzene \$\$ Isothymo



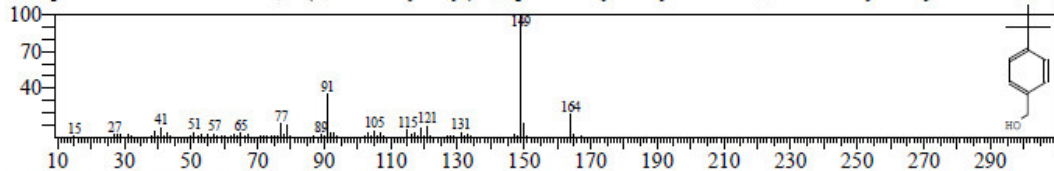
Hit#:2 Entry:12194 Library:NIST14s.lib
SI:92 Formula:C11H16O CAS:1076-56-8 MolWeight:164 RetIndex:1231
CompName:Benzen, 2-methoxy-4-methyl-1-(1-methylethyl)- \$\$ Anisole, 2-isopropyl-5-methyl- \$\$ Methyl thymyl ethe



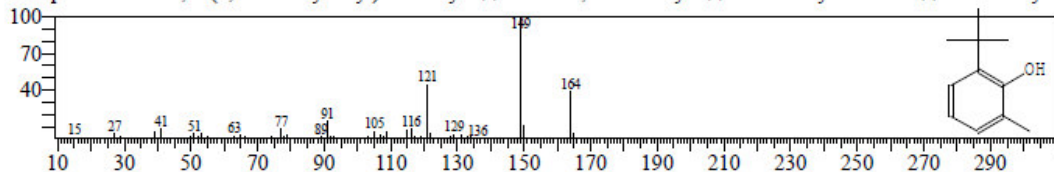
Hit#:3 Entry:12193 Library:NIST14s.lib
SI:92 Formula:C11H16O CAS:1076-56-8 MolWeight:164 RetIndex:1231
CompName:Benzen, 2-methoxy-4-methyl-1-(1-methylethyl)- \$\$ Anisole, 2-isopropyl-5-methyl- \$\$ Methyl thymyl ethe



Hit#:4 Entry:12187 Library:NIST14s.lib
SI:87 Formula:C11H16O CAS:877-65-6 MolWeight:164 RetIndex:1363
CompName:Benzenemethanol, 4-(1,1-dimethylethyl)- \$\$ p-tert-Butylbenzyl alcohol \$\$ 4-tert-Butylbenzyl alcohol \$\$ 4(

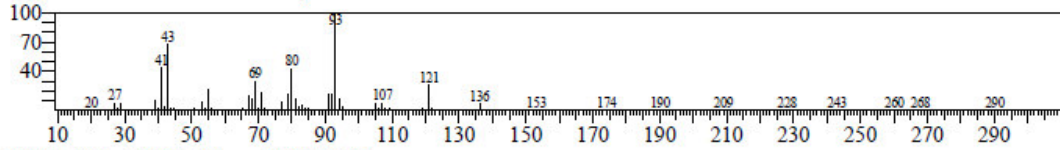


Hit#:5 Entry:12190 Library:NIST14s.lib
SI:87 Formula:C11H16O CAS:2219-82-1 MolWeight:164 RetIndex:1341
CompName:Phenol, 2-(1,1-dimethylethyl)-6-methyl- \$\$ o-Cresol, 6-tert-butyl- \$\$ o-tert-Butyl-o-cresol \$\$ 2-tert-Butyl-6

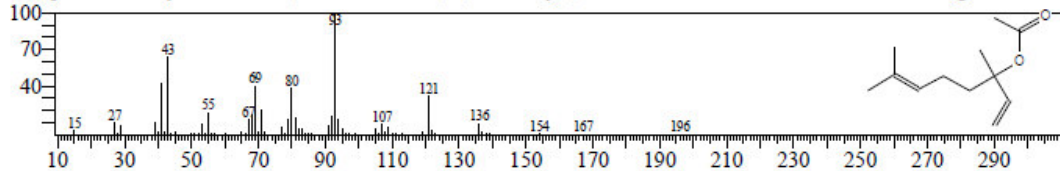


<< Target >>

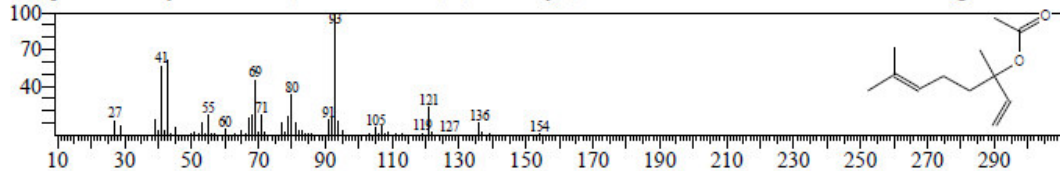
Line#:18 R.Time:49.780(Scan#:9357) MassPeaks:174
RawMode:Averaged 49.775-49.785(9356-9358) BasePeak:93.05(42106)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



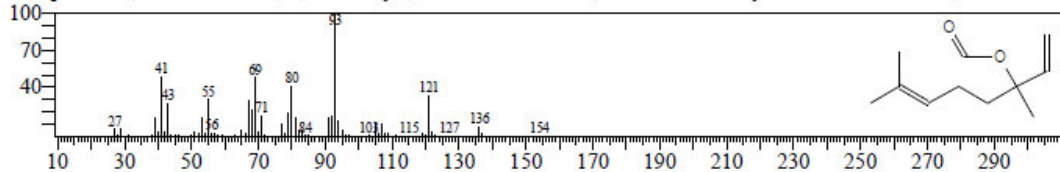
Hit#:1 Entry:17804 Library:NIST14s.lib
SI:96 Formula:C12H20O2 CAS:115-95-7 MolWeight:196 RetIndex:1272
CompName:Linalyl acetate \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl-, acetate \$\$ Acetic acid linalool ester \$\$ Bergamiol \$\$ B



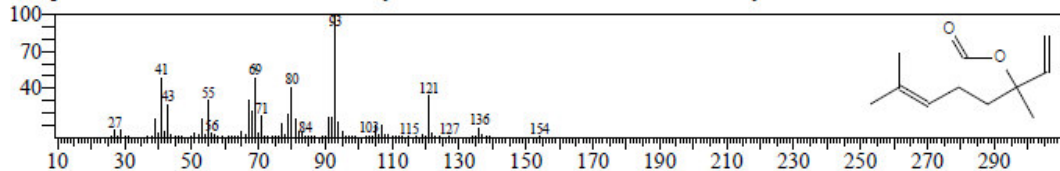
Hit#:2 Entry:17803 Library:NIST14s.lib
SI:95 Formula:C12H20O2 CAS:115-95-7 MolWeight:196 RetIndex:1272
CompName:Linalyl acetate \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl-, acetate \$\$ Acetic acid linalool ester \$\$ Bergamiol \$\$ B



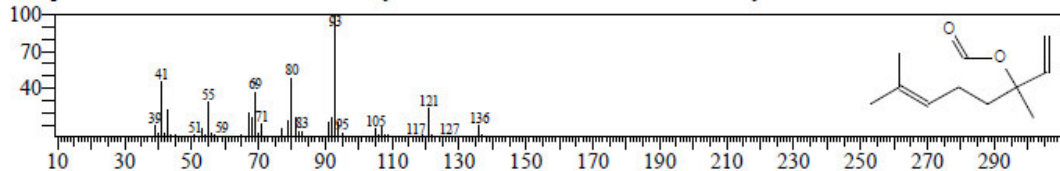
Hit#:3 Entry:15403 Library:NIST14s.lib
SI:93 Formula:C11H18O2 CAS:115-99-1 MolWeight:182 RetIndex:1270
CompName:1,6-Octadien-3-ol, 3,7-dimethyl-, formate \$\$ Linalool, formate \$\$ Linalyl formate \$\$ Linolool, formate \$\$



Hit#:4 Entry:15402 Library:NIST14s.lib
SI:93 Formula:C11H18O2 CAS:115-99-1 MolWeight:182 RetIndex:1270
CompName:1,6-Octadien-3-ol, 3,7-dimethyl-, formate \$\$ Linalool, formate \$\$ Linalyl formate \$\$ Linolool, formate \$\$

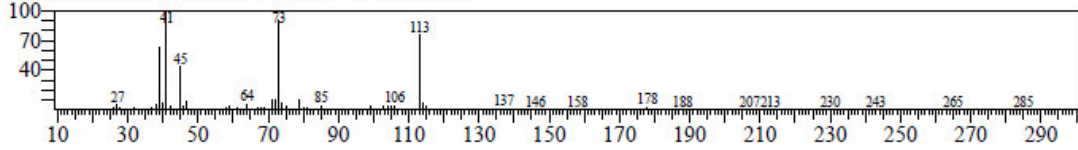


Hit#:5 Entry:15404 Library:NIST14s.lib
SI:93 Formula:C11H18O2 CAS:115-99-1 MolWeight:182 RetIndex:1270
CompName:1,6-Octadien-3-ol, 3,7-dimethyl-, formate \$\$ Linalool, formate \$\$ Linalyl formate \$\$ Linolool, formate \$\$

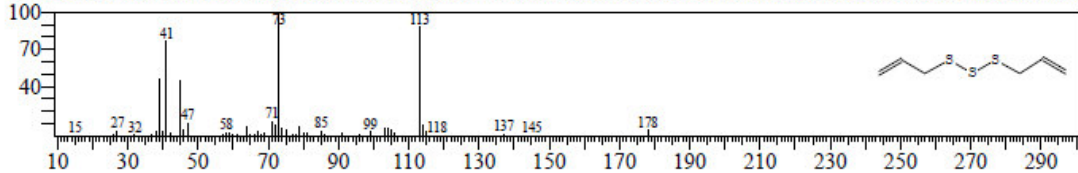


<< Target >>

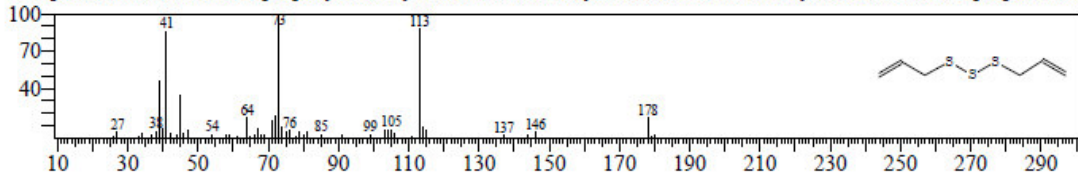
Line#:19 R.Time:51.915(Scan#:9784) MassPeaks:183
RawMode:Averaged 51.910-51.920(9783-9785) BasePeak:41.00(21490)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



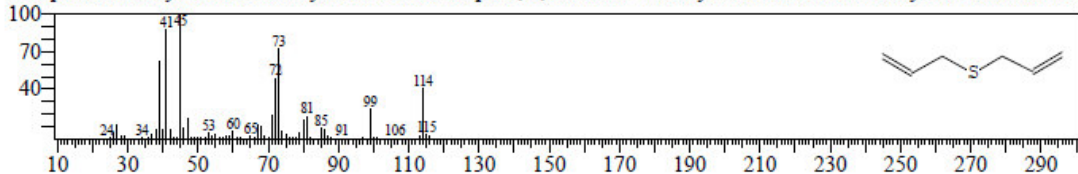
Hit#:1 Entry:14492 Library:NIST14s.lib
SI:94 Formula:C6H10S3 CAS:2050-87-5 MolWeight:178 RetIndex:1350
CompName:Trisulfide, di-2-propenyl \$\$ Allyl trisulfide \$\$ Diallyl trisulfide \$\$ 1,3-Diallyltrisulfane # \$\$ Diprop-2-en-1



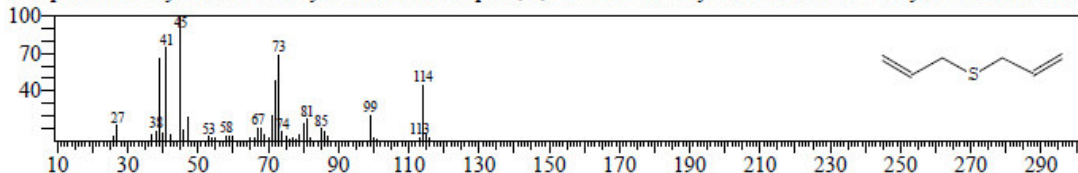
Hit#:2 Entry:14491 Library:NIST14s.lib
SI:90 Formula:C6H10S3 CAS:2050-87-5 MolWeight:178 RetIndex:1350
CompName:Trisulfide, di-2-propenyl \$\$ Allyl trisulfide \$\$ Diallyl trisulfide \$\$ 1,3-Diallyltrisulfane # \$\$ Diprop-2-en-1



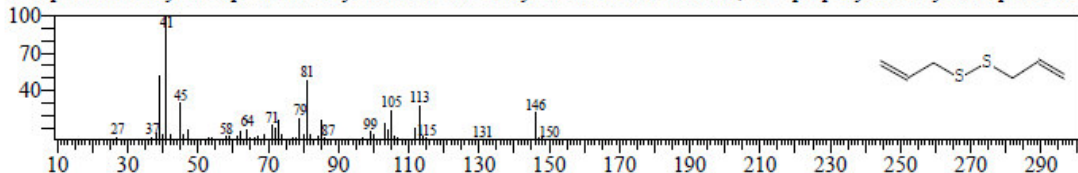
Hit#:3 Entry:3355 Library:NIST14s.lib
SI:80 Formula:C6H10S CAS:592-88-1 MolWeight:114 RetIndex:849
CompName:Diallyl sulfide \$\$ Allyl sulfide \$\$ 1-Propene, 3,3'-thiobis- \$\$ Allyl monosulfide \$\$ Diallyl monosulfide \$\$ 1



Hit#:4 Entry:3356 Library:NIST14s.lib
SI:79 Formula:C6H10S CAS:592-88-1 MolWeight:114 RetIndex:849
CompName:Diallyl sulfide \$\$ Allyl sulfide \$\$ 1-Propene, 3,3'-thiobis- \$\$ Allyl monosulfide \$\$ Diallyl monosulfide \$\$ 1

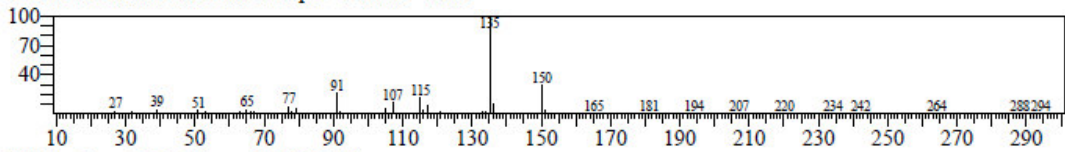


Hit#:5 Entry:8419 Library:NIST14s.lib
SI:79 Formula:C6H10S2 CAS:2179-57-9 MolWeight:146 RetIndex:1099
CompName:Diallyl disulphide \$\$ Allyl disulfide \$\$ Diallyl disulfide \$\$ Disulfide, di-2-propenyl \$\$ Allyl disulphide \$\$

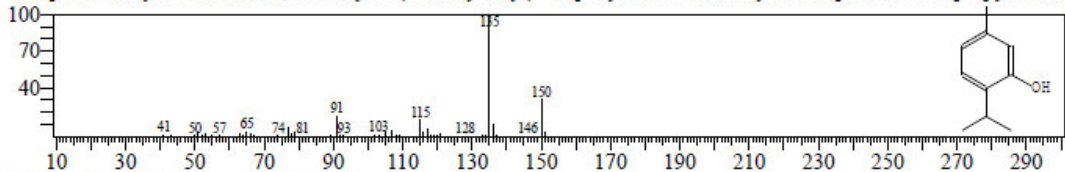


<< Target >>

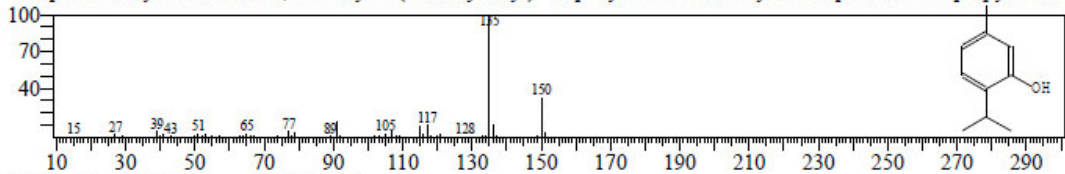
Line#:20 R.Time:52.050(Scan#:9811) MassPeaks:181
RawMode:Averaged 52.045-52.055(9810-9812) BasePeak:135.10(15558)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



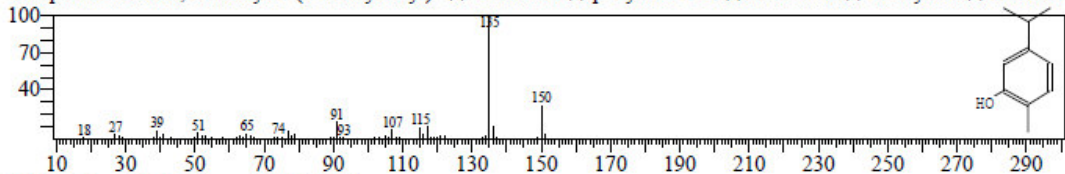
Hit#:1 Entry:9358 Library:NIST14s.lib
SI:94 Formula:C10H14O CAS:89-83-8 MolWeight:150 RetIndex:1262
CompName:Thymol \$\$ Phenol, 5-methyl-2-(1-methylethyl)- \$\$ p-Cymen-3-ol \$\$ Thyme camphor \$\$ 2-Isopropyl-5-me



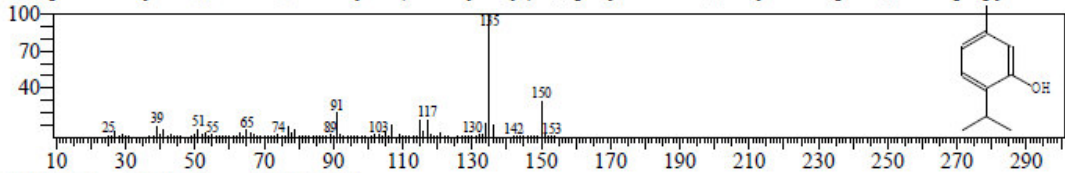
Hit#:2 Entry:9357 Library:NIST14s.lib
SI:93 Formula:C10H14O CAS:89-83-8 MolWeight:150 RetIndex:1262
CompName:Thymol \$\$ Phenol, 5-methyl-2-(1-methylethyl)- \$\$ p-Cymen-3-ol \$\$ Thyme camphor \$\$ 2-Isopropyl-5-me



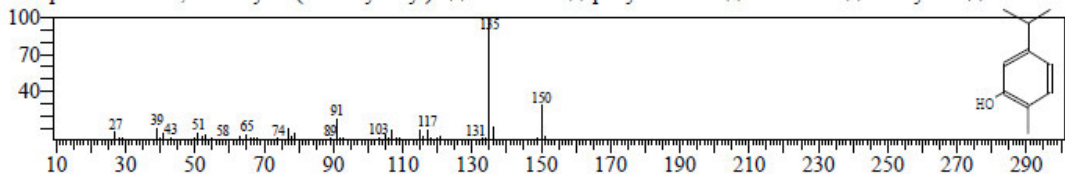
Hit#:3 Entry:9353 Library:NIST14s.lib
SI:93 Formula:C10H14O CAS:499-75-2 MolWeight:150 RetIndex:1262
CompName:Phenol, 2-methyl-5-(1-methylethyl)- \$\$ Carvacrol \$\$ p-Cymen-2-ol \$\$ Antioxine \$\$ Isothymol \$\$ Karvakra



Hit#:4 Entry:9356 Library:NIST14s.lib
SI:92 Formula:C10H14O CAS:89-83-8 MolWeight:150 RetIndex:1262
CompName:Thymol \$\$ Phenol, 5-methyl-2-(1-methylethyl)- \$\$ p-Cymen-3-ol \$\$ Thyme camphor \$\$ 2-Isopropyl-5-me

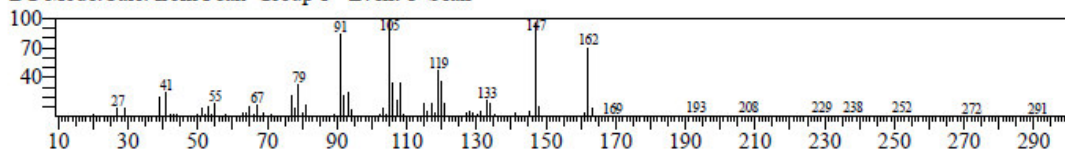


Hit#:5 Entry:9354 Library:NIST14s.lib
SI:92 Formula:C10H14O CAS:499-75-2 MolWeight:150 RetIndex:1262
CompName:Phenol, 2-methyl-5-(1-methylethyl)- \$\$ Carvacrol \$\$ p-Cymen-2-ol \$\$ Antioxine \$\$ Isothymol \$\$ Karvakra

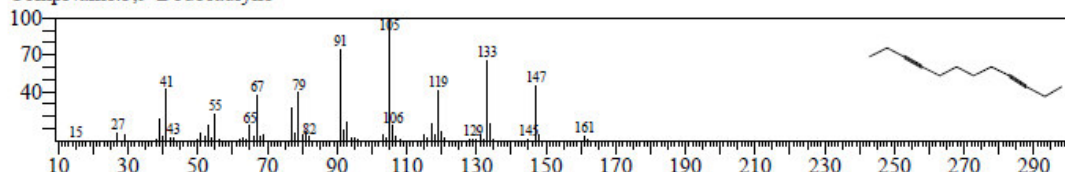


<< Target >>

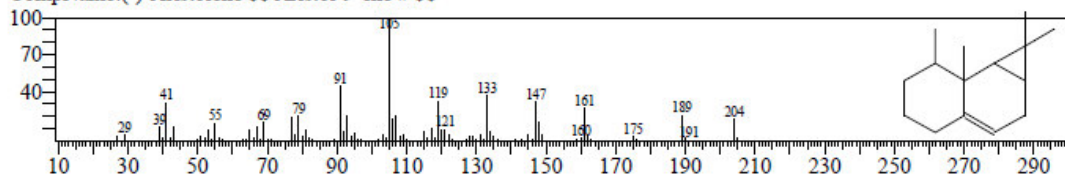
Line#:21 R.Time:53.105(Scan#:10022) MassPeaks:169
RawMode:Averaged 53.100-53.110(10021-10023) BasePeak:105.05(3106)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



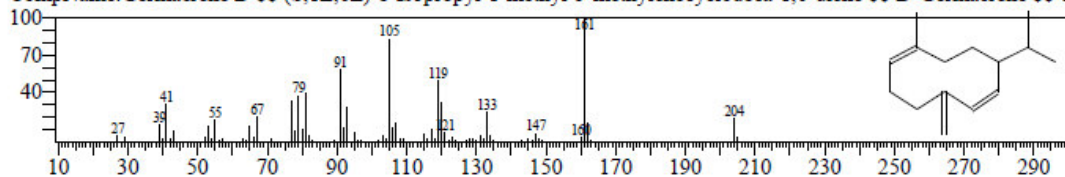
Hit#:1 Entry:11757 Library:NIST14s.lib
SI:81 Formula:C12H18 CAS:61827-89-2 MolWeight:162 RetIndex:1249
CompName:3,9-Dodecadiyne



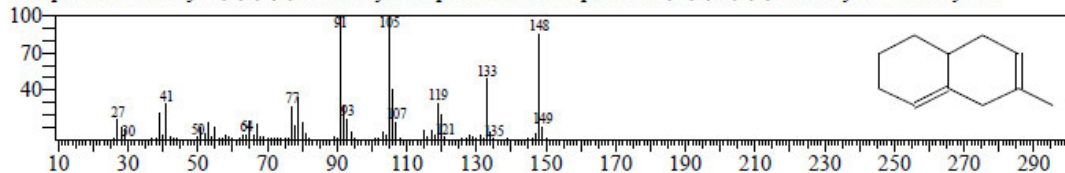
Hit#:2 Entry:19107 Library:NIST14s.lib
SI:80 Formula:C15H24 CAS:6831-16-9 MolWeight:204 RetIndex:1403
CompName:(-)-Aristolene \$\$ Aristol-9-ene # \$\$



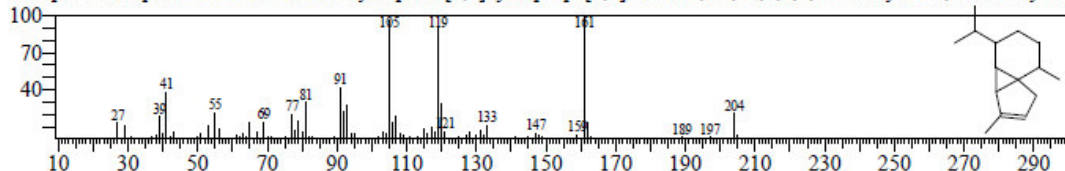
Hit#:3 Entry:19185 Library:NIST14s.lib
SI:79 Formula:C15H24 CAS:23986-74-5 MolWeight:204 RetIndex:1515
CompName:Germacrene D \$\$ (S,1Z,6Z)-8-Isopropyl-1-methyl-5-methylenecyclodeca-1,6-diene \$\$ D-Germacrene \$\$ 1



Hit#:4 Entry:8865 Library:NIST14s.lib
SI:79 Formula:C11H16 CAS:107914-86-3 MolWeight:148 RetIndex:1184
CompName:6-Methyl-1,2,3,5,8,8a-hexahydronaphthalene \$\$ Naphthalene, 1,4,4a,5,6,7-hexahydro-2-methyl- \$\$

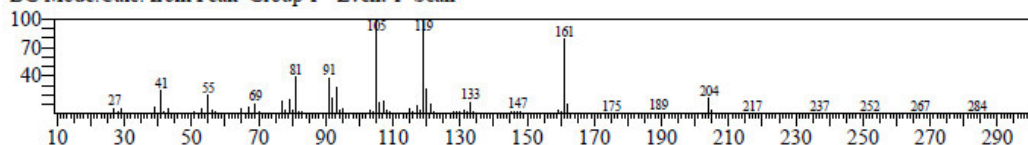


Hit#:5 Entry:19191 Library:NIST14s.lib
SI:79 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:alpha-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-

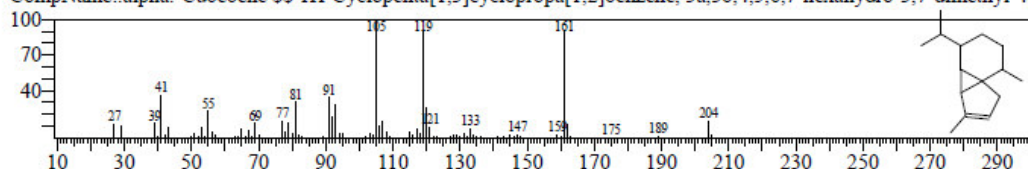


<< Target >>

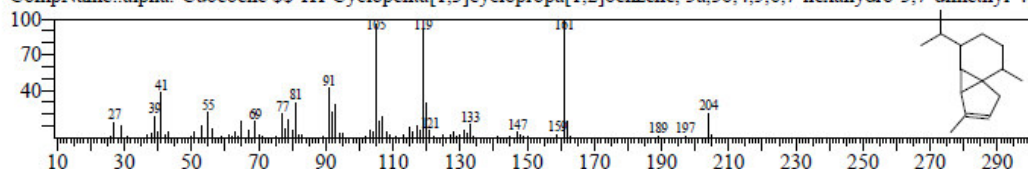
Line#:22 R.Time:54.545(Scan#:10310) MassPeaks:218
RawMode:Averaged 54.540-54.550(10309-10311) BasePeak:105.05(27740)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



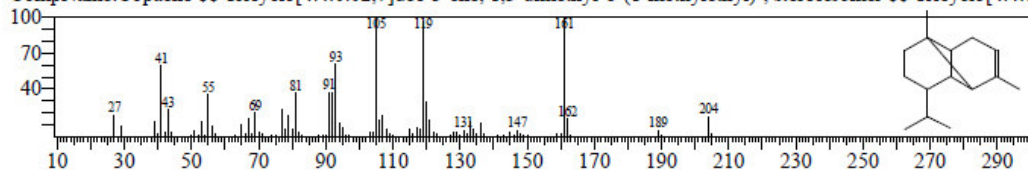
Hit#:1 Entry:19121 Library:NIST14s.lib
SI:96 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-



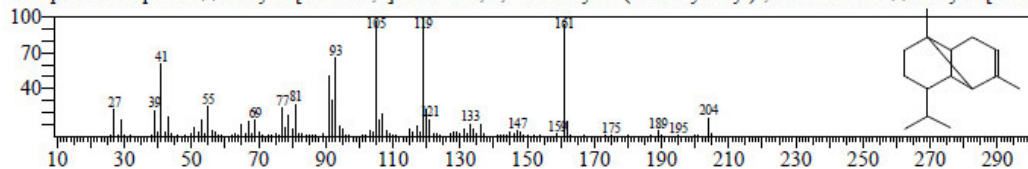
Hit#:2 Entry:19191 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-



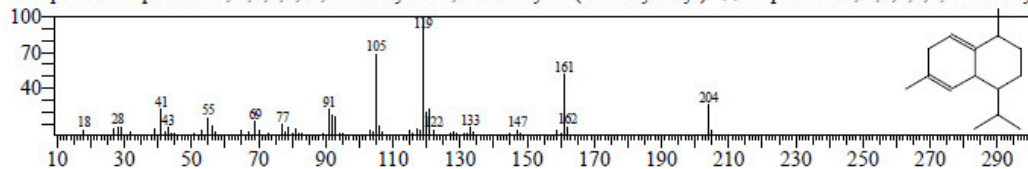
Hit#:3 Entry:19192 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:3856-25-5 MolWeight:204 RetIndex:1221
CompName:Copaene \$\$ Tricyclo[4.4.0.0.2,7]dec-3-ene, 1,3-dimethyl-8-(1-methylethyl)-, stereoisomer \$\$ Tricyclo[4.4.0



Hit#:4 Entry:19149 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:3856-25-5 MolWeight:204 RetIndex:1221
CompName:Copaene \$\$ Tricyclo[4.4.0.0.2,7]dec-3-ene, 1,3-dimethyl-8-(1-methylethyl)-, stereoisomer \$\$ Tricyclo[4.4.0

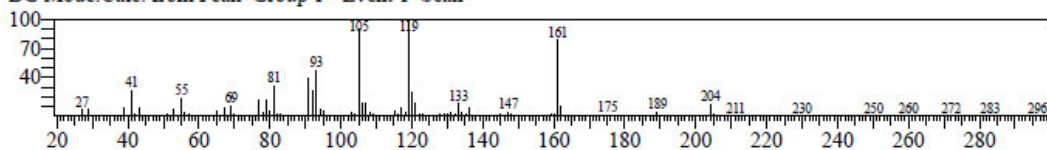


Hit#:5 Entry:19150 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:16728-99-7 MolWeight:204 RetIndex:1440
CompName:Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methylethyl)- \$\$ Naphthalene, 1,2,3,4,6,8a-hexahy

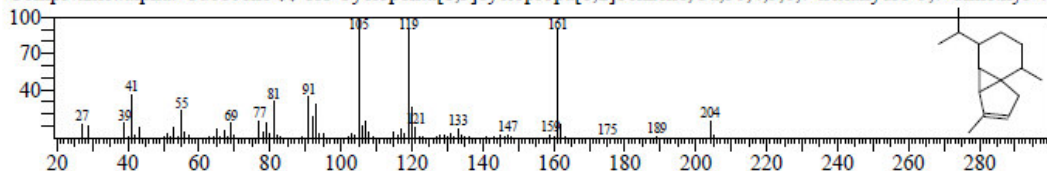


<< Target >>

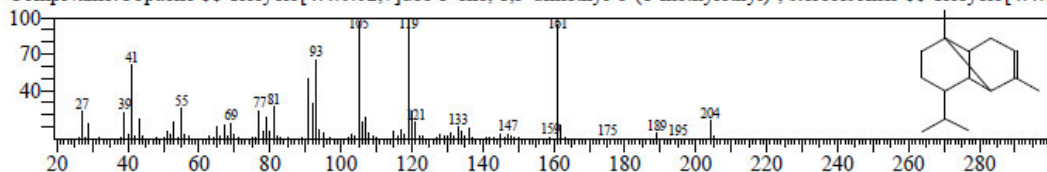
Line#:23 R.Time:55.800(Scan#:10561) MassPeaks:203
RawMode:Averaged 55.795-55.805(10560-10562) BasePeak:119.05(137124)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



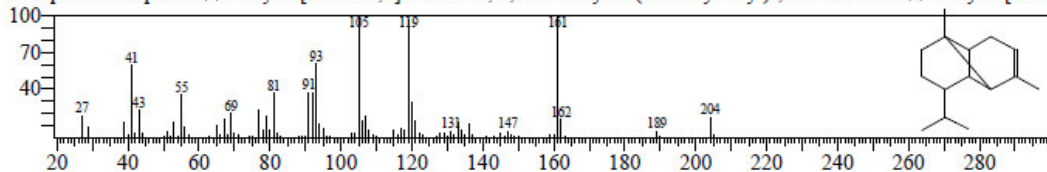
Hit#:1 Entry:19121 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropano[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-



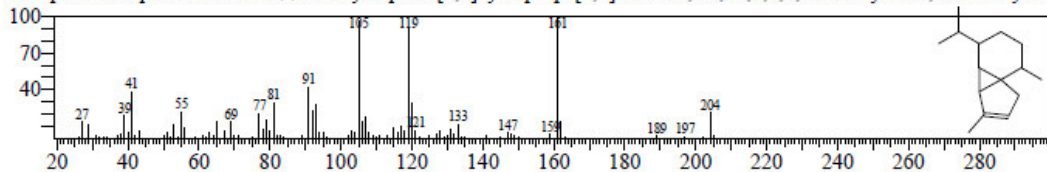
Hit#:2 Entry:19149 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:3856-25-5 MolWeight:204 RetIndex:1221
CompName:Copaene \$\$ Tricyclo[4.4.0.0,2,7]dec-3-ene, 1,3-dimethyl-8-(1-methylethyl)-, stereoisomer \$\$ Tricyclo[4.4.0



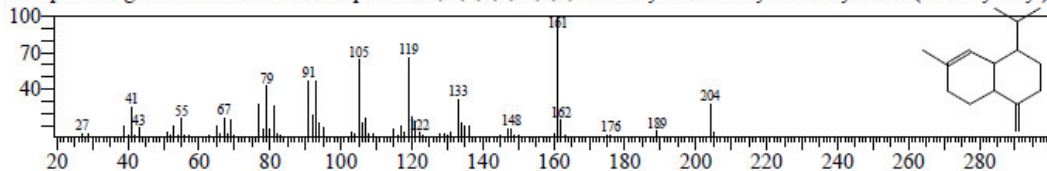
Hit#:3 Entry:19192 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:3856-25-5 MolWeight:204 RetIndex:1221
CompName:Copaene \$\$ Tricyclo[4.4.0.0,2,7]dec-3-ene, 1,3-dimethyl-8-(1-methylethyl)-, stereoisomer \$\$ Tricyclo[4.4.0



Hit#:4 Entry:19191 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropano[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-

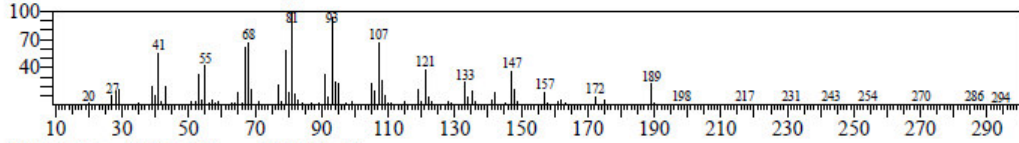


Hit#:5 Entry:19197 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RetIndex:1435
CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-

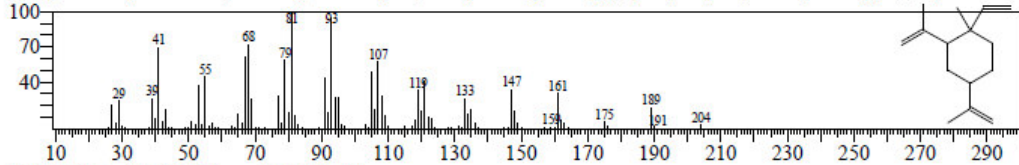


<< Target >>

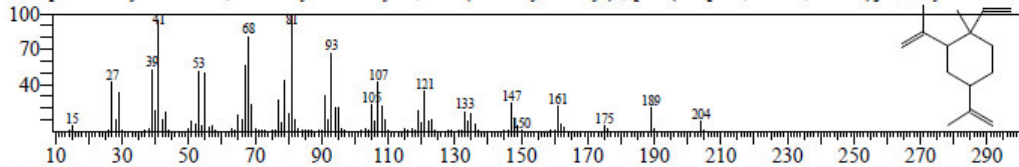
Line#:24 R.Time:56.615(Scan#:10724) MassPeaks:194
RawMode:Averaged 56.610-56.620(10723-10725) BasePeak:81.05(2534)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



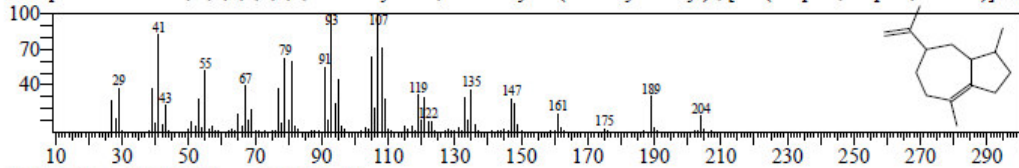
Hit#:1 Entry:19071 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:515-13-9 MolWeight:204 RetIndex:1398
CompName:Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-, [1S-(1.alpha.,2.beta.,4.beta.)]-



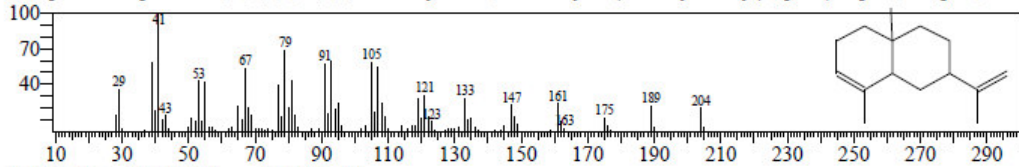
Hit#:2 Entry:19067 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:515-13-9 MolWeight:204 RetIndex:1398
CompName:Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-, [1S-(1.alpha.,2.beta.,4.beta.)]-



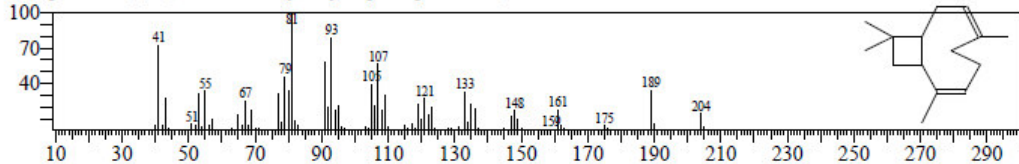
Hit#:3 Entry:19126 Library:NIST14s.lib
SI:85 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-



Hit#:4 Entry:19037 Library:NIST14s.lib
SI:84 Formula:C15H24 CAS:473-13-2 MolWeight:204 RetIndex:1474
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-4a,8-dimethyl-2-(1-methylethenyl)-, [2R-(2.alpha.,4a.alpha.,8a.be

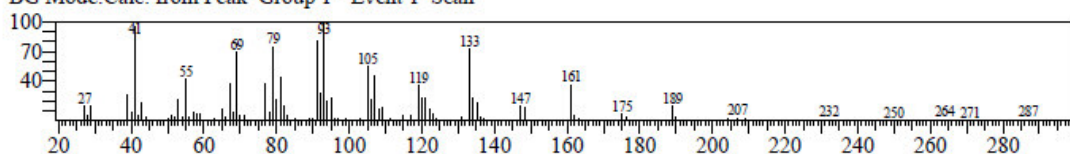


Hit#:5 Entry:19070 Library:NIST14s.lib
SI:83 Formula:C15H24 CAS:136296-37-2 MolWeight:204 RetIndex:1499
CompName:2,6,10,10-Tetramethylbicyclo[7.2.0]undeca-2,6-diene

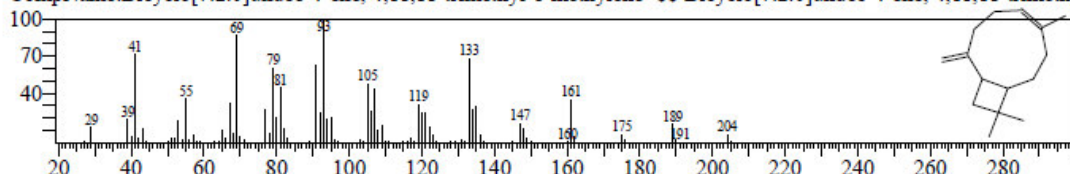


<< Target >>

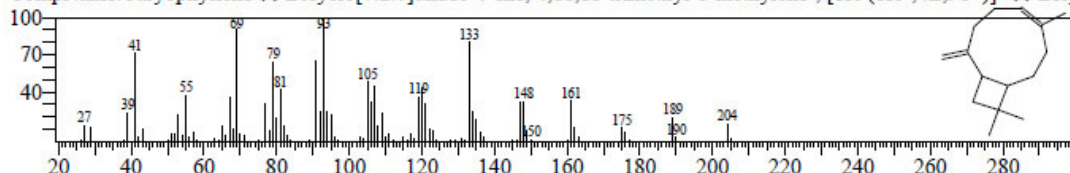
Line#:25 R.Time:57.260(Scan#:10853) MassPeaks:178
RawMode:Averaged 57.255-57.265(10852-10854) BasePeak:93.05(2795)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



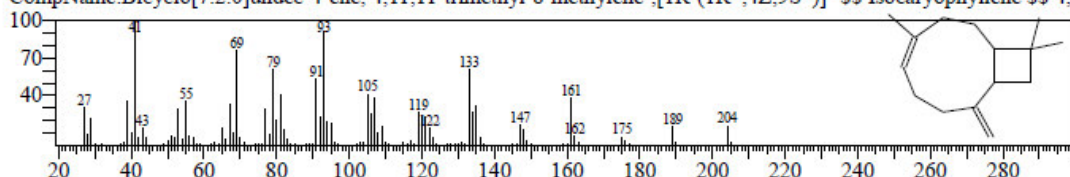
Hit#:1 Entry:19086 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:13877-93-5 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene- \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethy



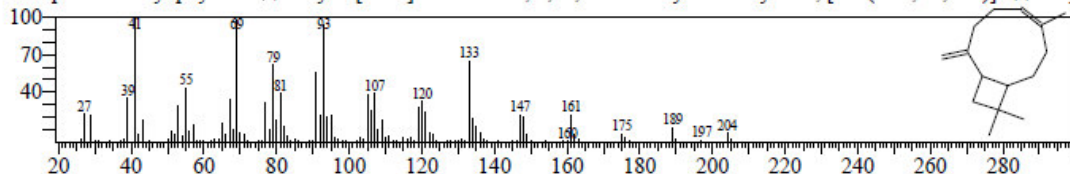
Hit#:2 Entry:19087 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



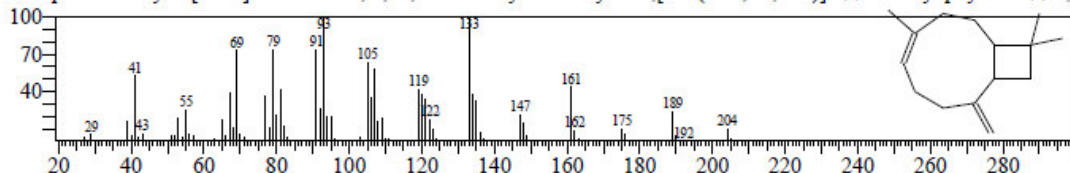
Hit#:3 Entry:19044 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1



Hit#:4 Entry:19033 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy

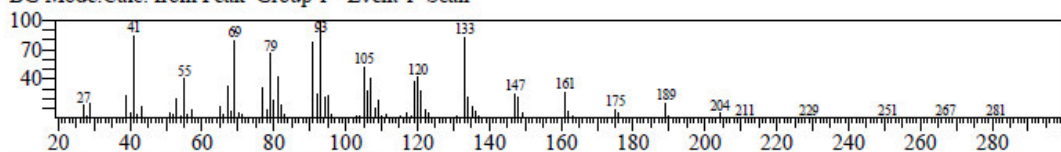


Hit#:5 Entry:19094 Library:NIST14s.lib
SI:91 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1

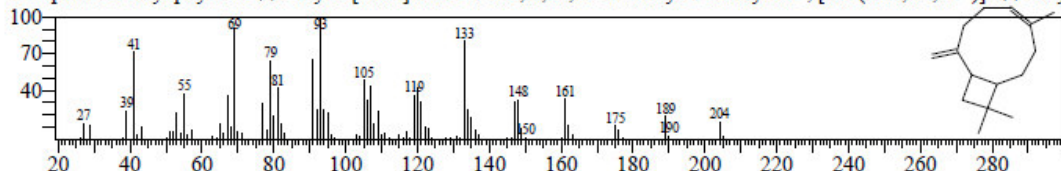


<< Target >>

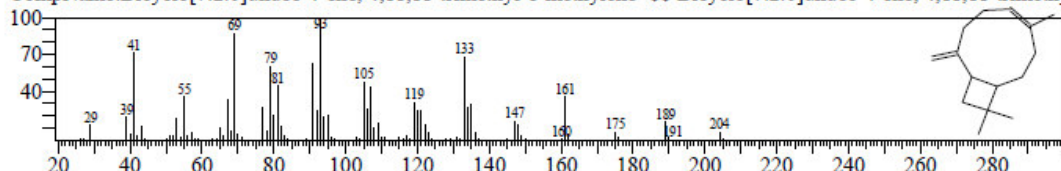
Line#:26 R.Time:57.935(Scan#:10988) MassPeaks:217
RawMode:Averaged 57.930-57.940(10987-10989) BasePeak:93.05(1184025)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



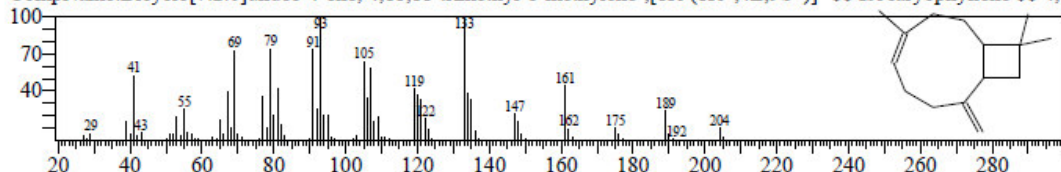
Hit#:1 Entry:19087 Library:NIST14s.lib
SI:97 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



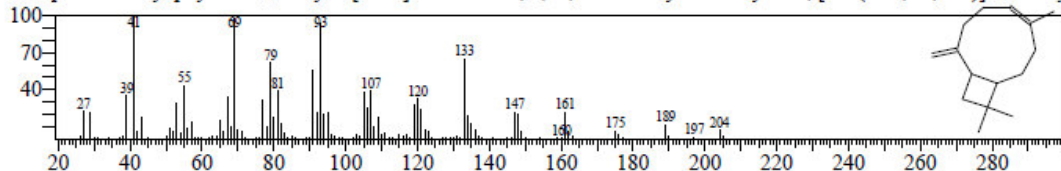
Hit#:2 Entry:19086 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:13877-93-5 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene- \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethy



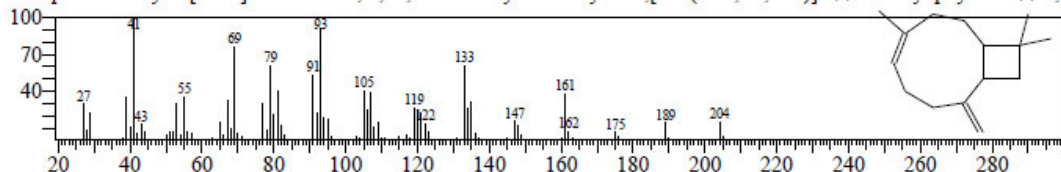
Hit#:3 Entry:19094 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1



Hit#:4 Entry:19033 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy

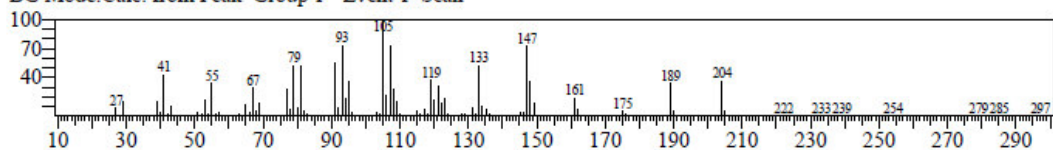


Hit#:5 Entry:19044 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1

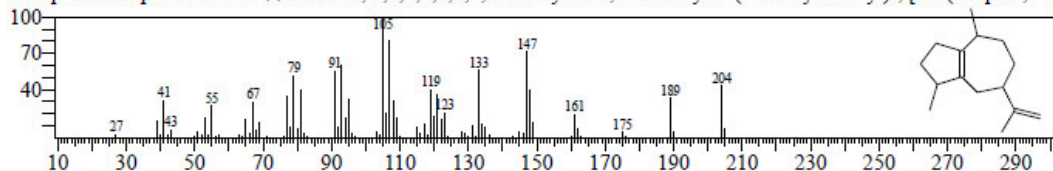


<< Target >>

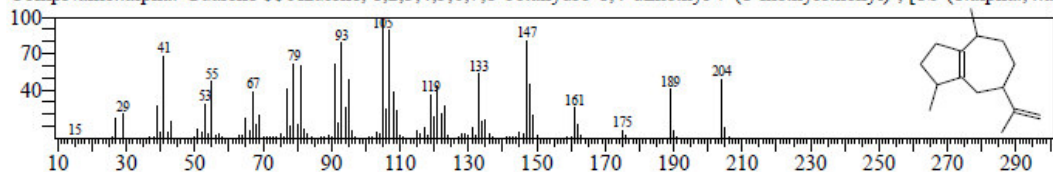
Line#:27 R.Time:58.735(Scan#:11148) MassPeaks:206
RawMode:Averaged 58.730-58.740(11147-11149) BasePeak:105.05(51932)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



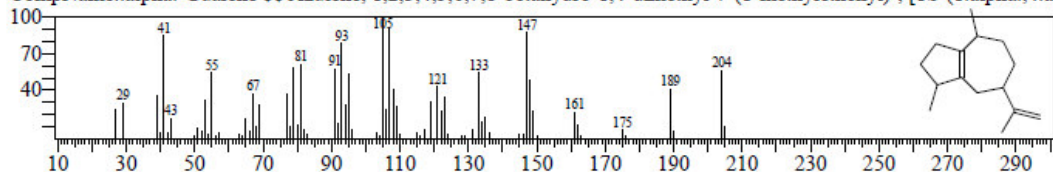
Hit#:1 Entry:19116 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:3691-12-1 MolWeight:204 RetIndex:1490
CompName:alpha-Guaiene \$\$ Azulene, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,4.alpha.)]



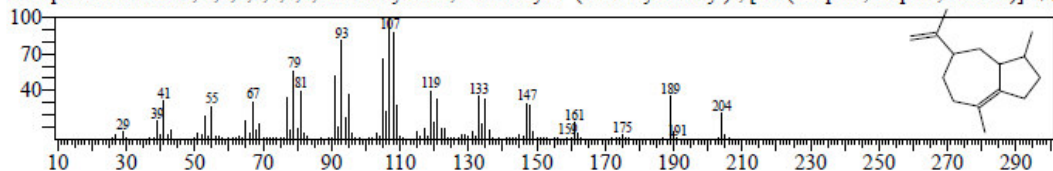
Hit#:2 Entry:19114 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:3691-12-1 MolWeight:204 RetIndex:1490
CompName:alpha-Guaiene \$\$ Azulene, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,4.alpha.)]



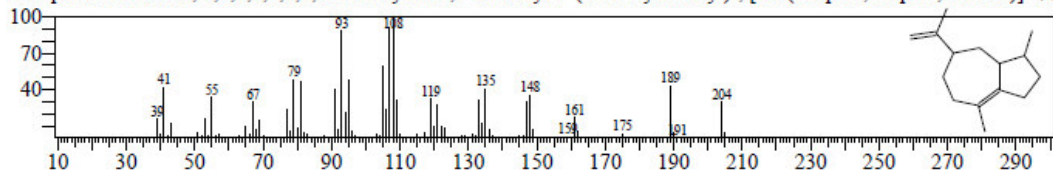
Hit#:3 Entry:19115 Library:NIST14s.lib
SI:91 Formula:C15H24 CAS:3691-12-1 MolWeight:204 RetIndex:1490
CompName:alpha-Guaiene \$\$ Azulene, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,4.alpha.)]



Hit#:4 Entry:19130 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]- \$\$

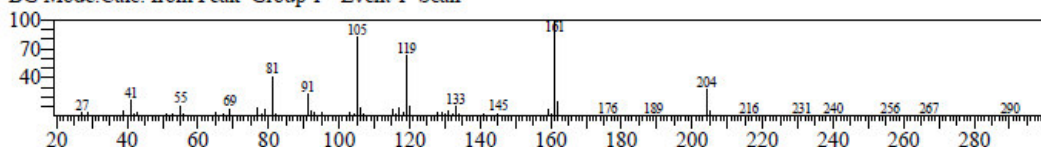


Hit#:5 Entry:19135 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]- \$\$

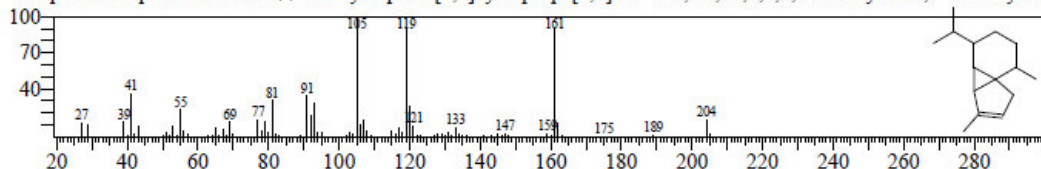


<< Target >>

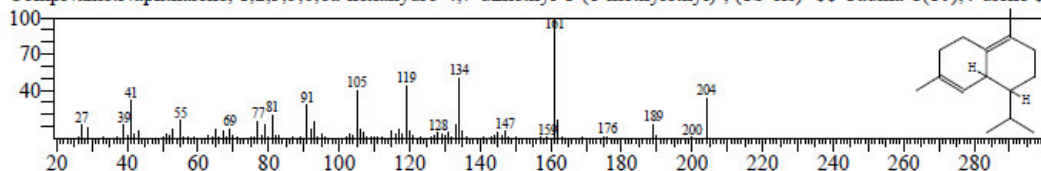
Line#:28 R.Time:59.235(Scan#:11248) MassPeaks:183
RawMode:Averaged 59.230-59.240(11247-11249) BasePeak:161.10(18538)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



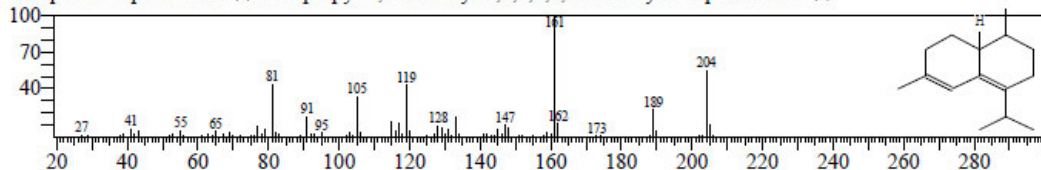
Hit#:1 Entry:19121 Library:NIST14s.lib
SI:86 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-



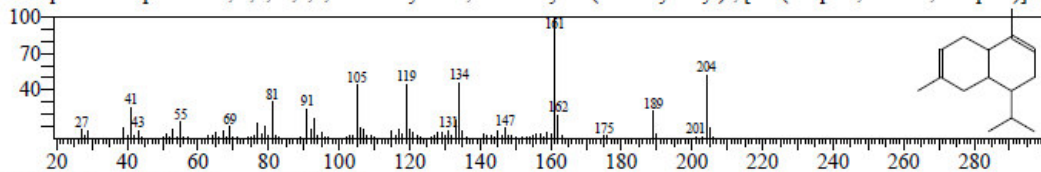
Hit#:2 Entry:19202 Library:NIST14s.lib
SI:85 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)- \$\$ Cadina-1(10),4-diene \$\$



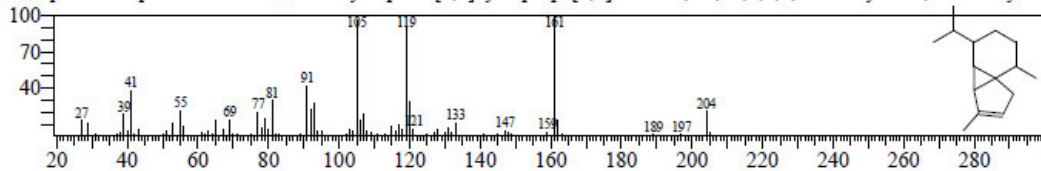
Hit#:3 Entry:19211 Library:NIST14s.lib
SI:85 Formula:C15H24 CAS:41702-63-0 MolWeight:204 RetIndex:1469
CompName:Epizonarene \$\$ 4-Isopropyl-1,6-dimethyl-1,2,3,7,8,8a-hexahydronaphthalene # \$\$



Hit#:4 Entry:19214 Library:NIST14s.lib
SI:85 Formula:C15H24 CAS:523-47-7 MolWeight:204 RetIndex:1440
CompName:Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, [1S-(1.alpha.,4a.beta.,8a.alpha.)]- \$



Hit#:5 Entry:19191 Library:NIST14s.lib
SI:85 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-

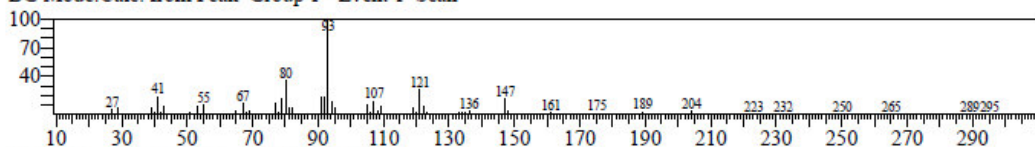


<< Target >>

Line#:29 R.Time:59.365(Scan#:11274) MassPeaks:207

RawMode:Averaged 59.360-59.370(11273-11275) BasePeak:93.05(252909)

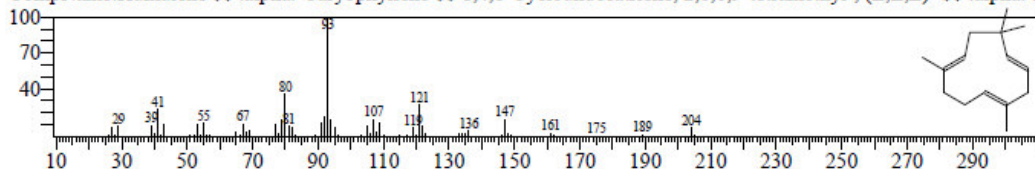
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19088 Library:NIST14s.lib

SI:97 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

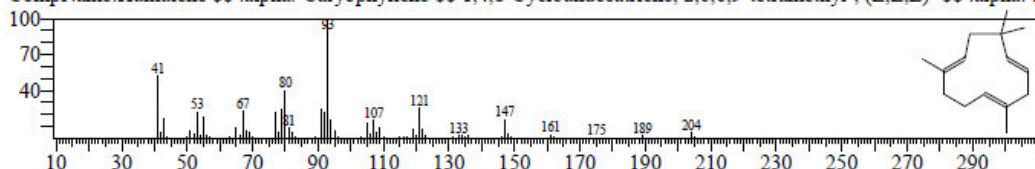
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:2 Entry:19082 Library:NIST14s.lib

SI:90 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

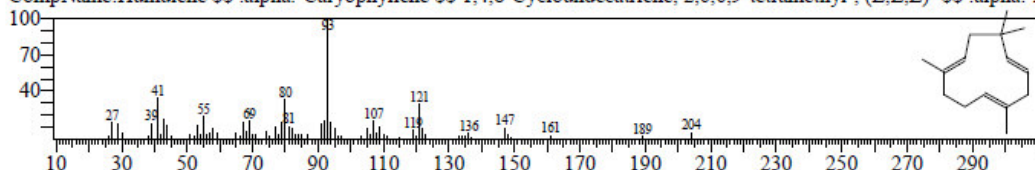
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:3 Entry:19081 Library:NIST14s.lib

SI:86 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

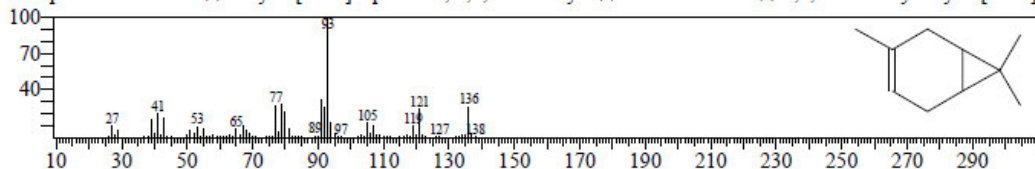
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:4 Entry:6843 Library:NIST14s.lib

SI:86 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948

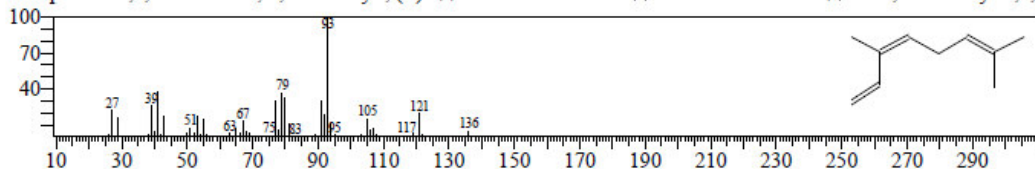
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]



Hit#:5 Entry:6814 Library:NIST14s.lib

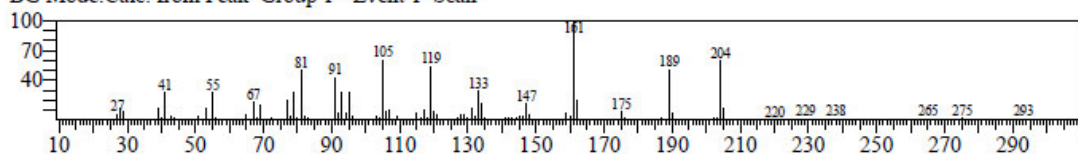
SI:84 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976

CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6

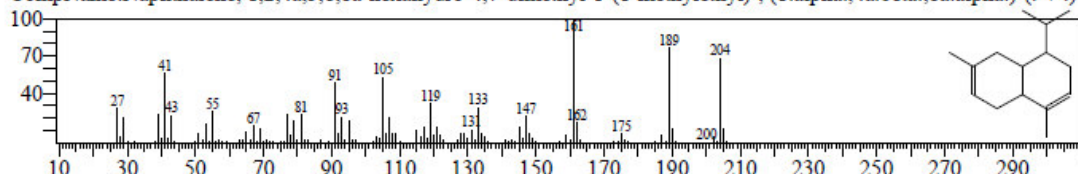


<< Target >>

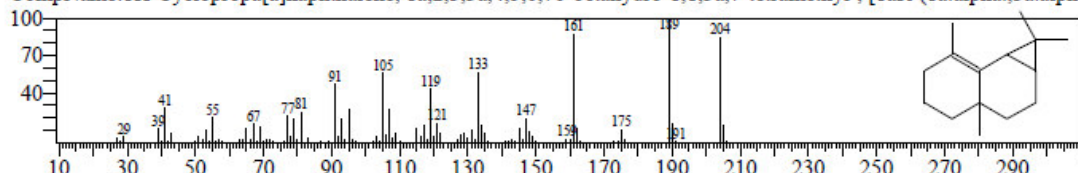
Line#:30 R.Time:60.280(Scan#:11457) MassPeaks:200
RawMode:Averaged 60.275-60.285(11456-11458) BasePeak:161.10(2921)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



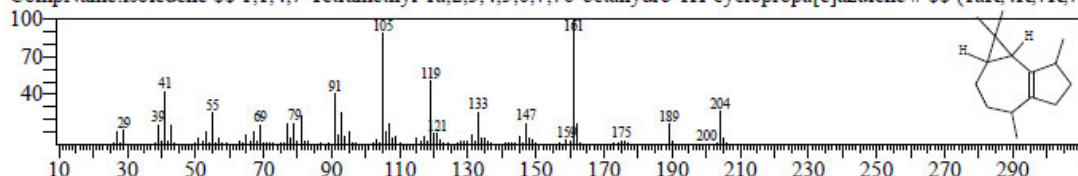
Hit#:1 Entry:19209 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:5951-61-1 MolWeight:204 RetIndex:1440
CompName:Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)-(+/-)-



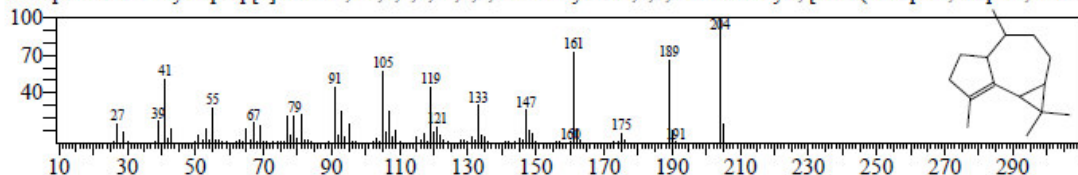
Hit#:2 Entry:19224 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:489-29-2 MolWeight:204 RetIndex:1432
CompName:1H-Cyclopropa[a]naphthalene, 1a,2,3,3a,4,5,6,7b-octahydro-1,1,3a,7-tetramethyl-, [1aR-(1a.alpha.,3a.alpha.)]



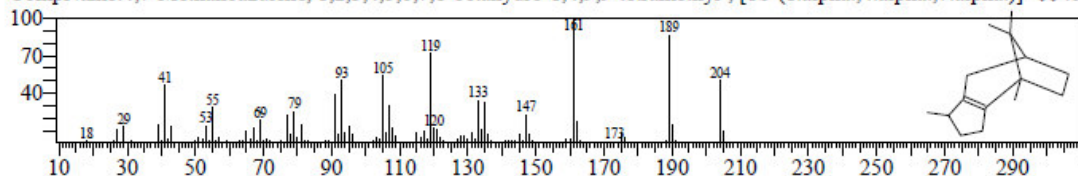
Hit#:3 Entry:19194 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:95910-36-4 MolWeight:204 RetIndex:0
CompName:isoleidene \$\$\$\$ 1,1,4,7-Tetramethyl-1a,2,3,4,5,6,7,7b-octahydro-1H-cyclopropa[e]azulene # \$\$\$\$ (1aR,4R,7R,7t)



Hit#:4 Entry:19233 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:489-40-7 MolWeight:204 RetIndex:1419
CompName:1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.alpha.,4a.beta.)]

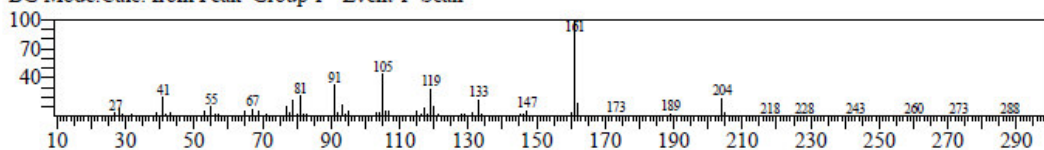


Hit#:5 Entry:19206 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:514-51-2 MolWeight:204 RetIndex:1432
CompName:4,7-Methanoazulene, 1,2,3,4,5,6,7,8-octahydro-1,4,9,9-tetramethyl-, [1S-(1.alpha.,4.alpha.,7.alpha.)] - \$\$\$\$.b

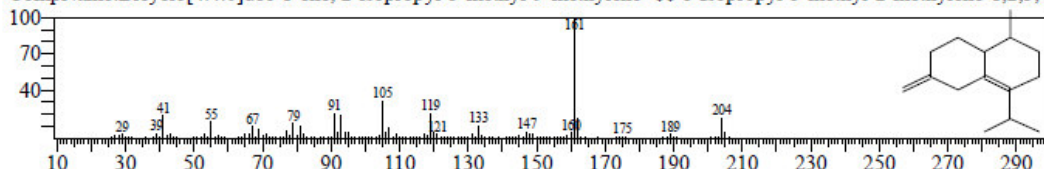


<< Target >>

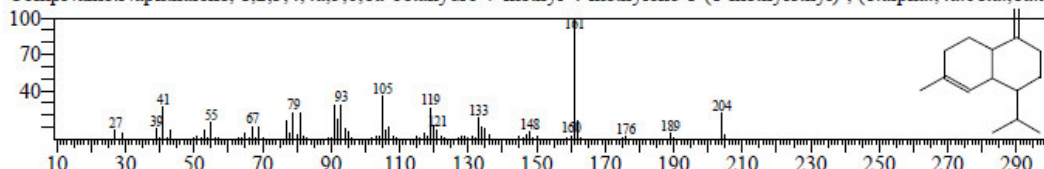
Line#:31 R.Time:61.035(Scan#:11608) MassPeaks:172
RawMode:Averaged 61.030-61.040(11607-11609) BasePeak:161.10(5969)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



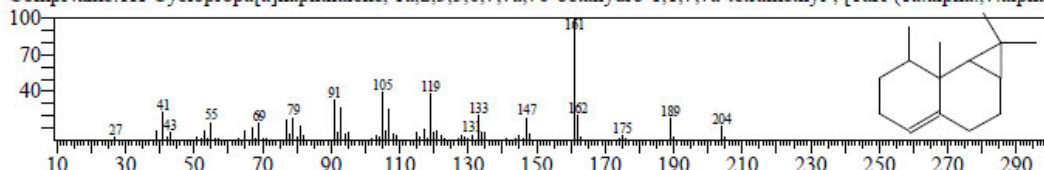
Hit#:1 Entry:19187 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:150320-52-8 MolWeight:204 RetIndex:1464
CompName:Bicyclo[4.4.0]dec-1-ene, 2-isopropyl-5-methyl-9-methylene- 8-Isopropyl-5-methyl-2-methylene-1,2,3,4,



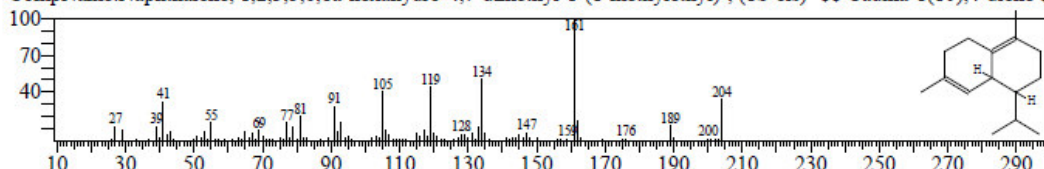
Hit#:2 Entry:19189 Library:NIST14s.lib
SI:88 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RetIndex:1435
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)



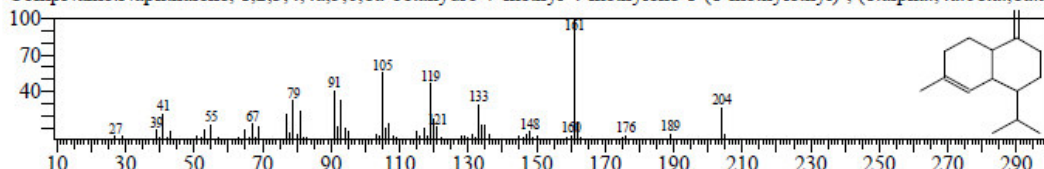
Hit#:3 Entry:19190 Library:NIST14s.lib
SI:86 Formula:C15H24 CAS:17334-55-3 MolWeight:204 RetIndex:1403
CompName:1H-Cyclopropa[a]naphthalene, 1a,2,3,5,6,7,7a,7b-octahydro-1,1,7,7a-tetramethyl-, [1aR-(1.alpha.,7.alpha.)



Hit#:4 Entry:19202 Library:NIST14s.lib
SI:86 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)- 8-Cadinane-1(10),4-diene 8-

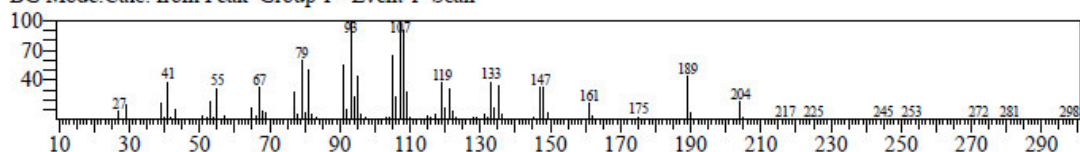


Hit#:5 Entry:19193 Library:NIST14s.lib
SI:86 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RetIndex:1435
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)

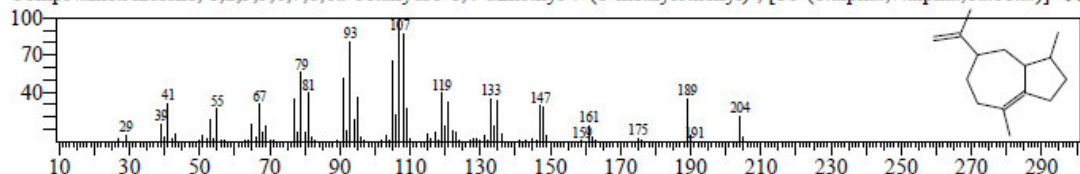


<< Target >>

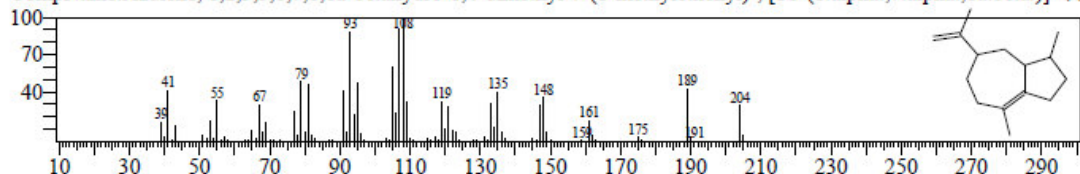
Line#:32 R.Time:61.655(Scan#:11732) MassPeaks:190
RawMode:Averaged 61.650-61.660(11731-11733) BasePeak:93.05(16293)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



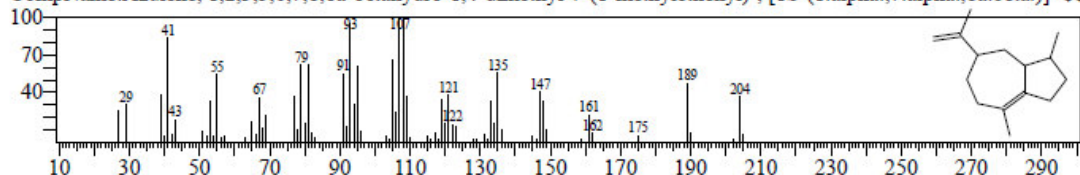
Hit#:1 Entry:19130 Library:NIST14s.lib
SI:96 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-



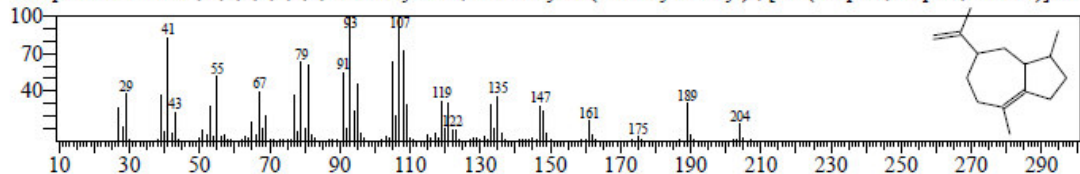
Hit#:2 Entry:19135 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-



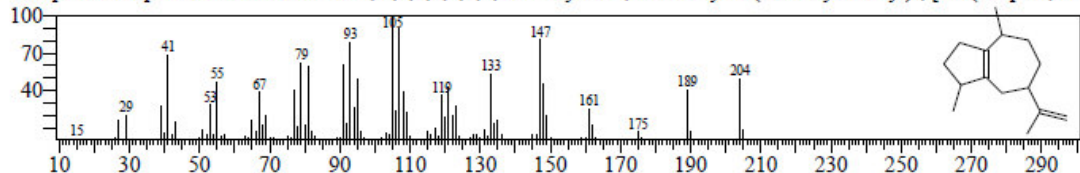
Hit#:3 Entry:19129 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-



Hit#:4 Entry:19126 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]-

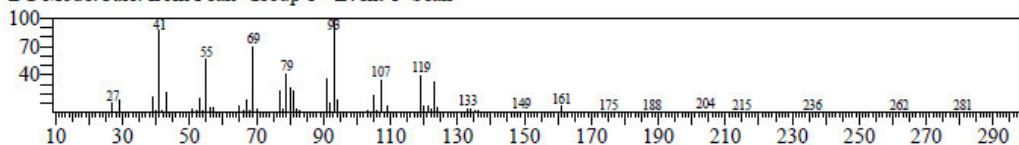


Hit#:5 Entry:19114 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:3691-12-1 MolWeight:204 RetIndex:1490
CompName:.alpha.-Guaiene \$Azulene, 1,2,3,4,5,6,7,8-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,4.alpha.)]-

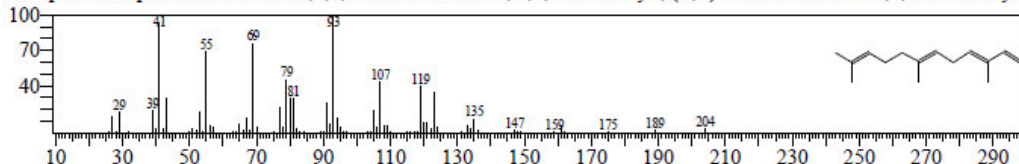


<< Target >>

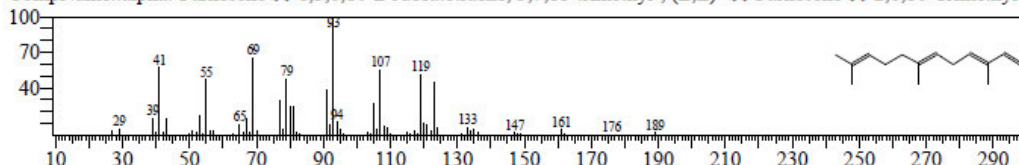
Line#:33 R.Time:61.755(Scan#:11752) MassPeaks:182
RawMode:Averaged 61.750-61.760(11751-11753) BasePeak:93.05(13624)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



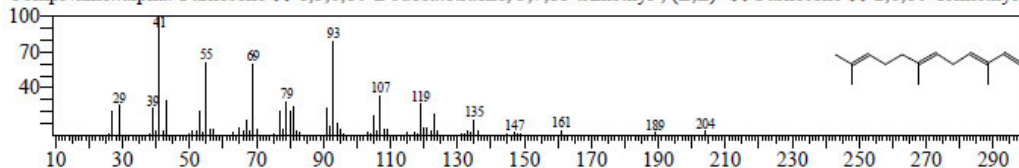
Hit#:1 Entry:19080 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:502-61-4 MolWeight:204 RetIndex:1458
CompName:.alpha.-Farnesene \$\$ 1,3,6,10-Dodecatetraene, 3,7,11-trimethyl-, (E,E)- \$\$ Farnesene \$\$ 2,6,10-Trimethyl-2



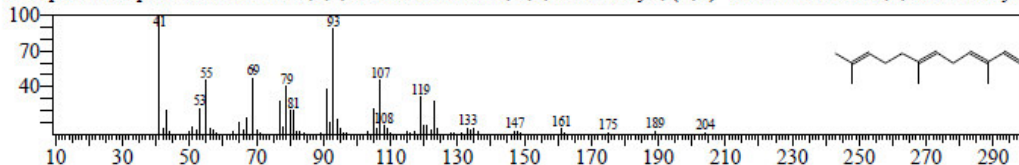
Hit#:2 Entry:19085 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:502-61-4 MolWeight:204 RetIndex:1458
CompName:.alpha.-Farnesene \$\$ 1,3,6,10-Dodecatetraene, 3,7,11-trimethyl-, (E,E)- \$\$ Farnesene \$\$ 2,6,10-Trimethyl-2



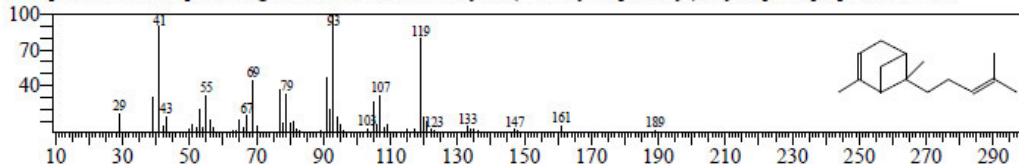
Hit#:3 Entry:19041 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:502-61-4 MolWeight:204 RetIndex:1458
CompName:.alpha.-Farnesene \$\$ 1,3,6,10-Dodecatetraene, 3,7,11-trimethyl-, (E,E)- \$\$ Farnesene \$\$ 2,6,10-Trimethyl-2



Hit#:4 Entry:19043 Library:NIST14s.lib
SI:91 Formula:C15H24 CAS:502-61-4 MolWeight:204 RetIndex:1458
CompName:.alpha.-Farnesene \$\$ 1,3,6,10-Dodecatetraene, 3,7,11-trimethyl-, (E,E)- \$\$ Farnesene \$\$ 2,6,10-Trimethyl-2

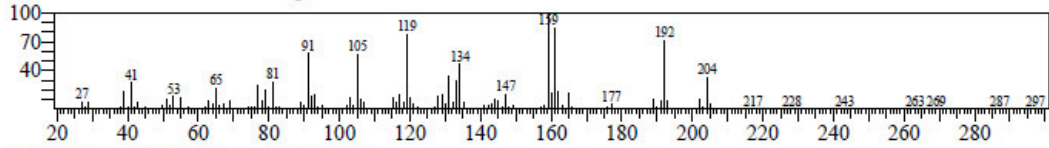


Hit#:5 Entry:19084 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:13474-59-4 MolWeight:204 RetIndex:1430
CompName:trans-.alpha.-Bergamotene \$\$ 2,6-Dimethyl-6-(4-methyl-3-pentenyl)bicyclo[3.1.1]hept-2-ene # \$\$



<< Target >>

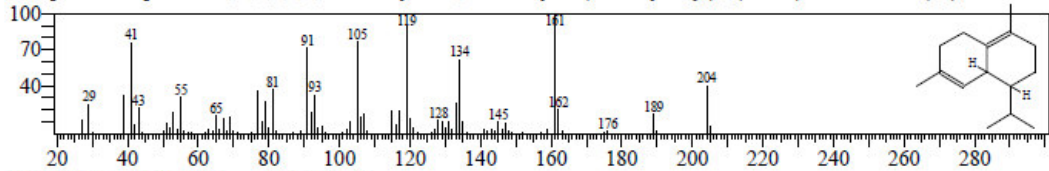
Line#:34 R.Time:62.380(Scan#:11877) MassPeaks:215
RawMode:Averaged 62.375-62.385(11876-11878) BasePeak:159.10(20310)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19198 Library:NIST14s.lib

SI:78 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469

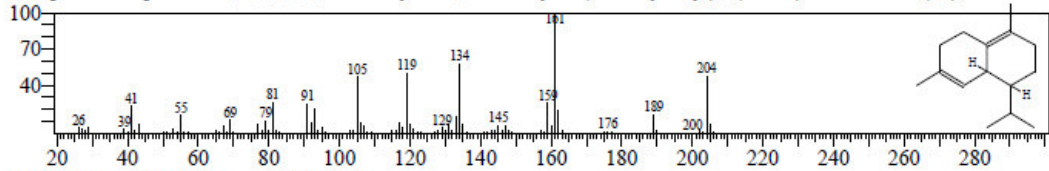
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)- \$\$\$\$ Cadina-1(10),4-diene \$\$\$



Hit#:2 Entry:19201 Library:NIST14s.lib

SI:77 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469

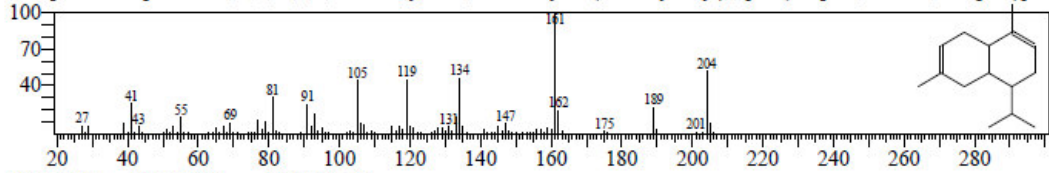
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)- \$\$\$\$ Cadina-1(10),4-diene \$\$\$



Hit#:3 Entry:19214 Library:NIST14s.lib

SI:77 Formula:C15H24 CAS:523-47-7 MolWeight:204 RetIndex:1440

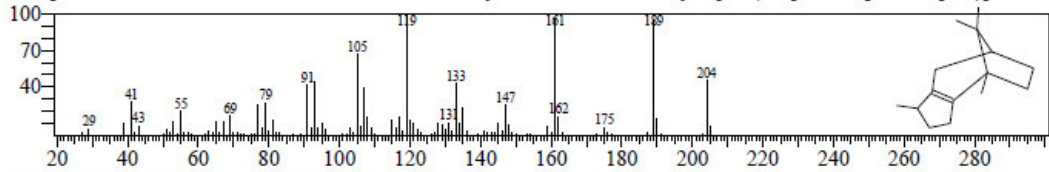
CompName:Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, [1S-(1.alpha.,4a.beta.,8a.alpha.)]- \$\$\$\$



Hit#:4 Entry:19155 Library:NIST14s.lib

SI:75 Formula:C15H24 CAS:514-51-2 MolWeight:204 RetIndex:1432

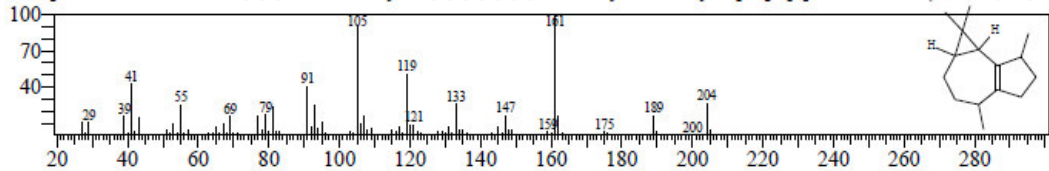
CompName:4,7-Methanoazulene, 1,2,3,4,5,6,7,8-octahydro-1,4,9-tetramethyl-, [1S-(1.alpha.,4.alpha.,7.alpha.)]- \$\$\$\$



Hit#:5 Entry:19194 Library:NIST14s.lib

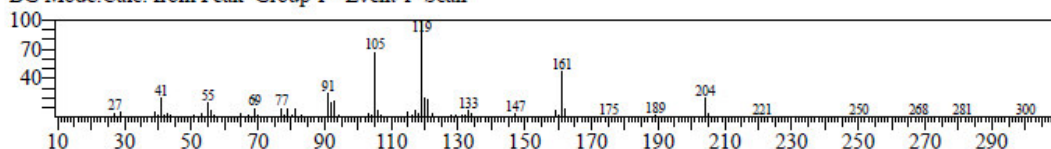
SI:75 Formula:C15H24 CAS:95910-36-4 MolWeight:204 RetIndex:0

CompName:isoledene \$\$\$\$ 1,1,4,7-Tetramethyl-1a,2,3,4,5,6,7,7b-octahydro-1H-cyclopropa[e]azulene # \$\$\$\$ (1aR,4R,7R,7bR)

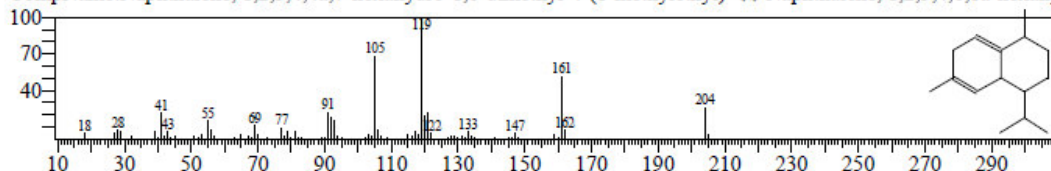


<< Target >>

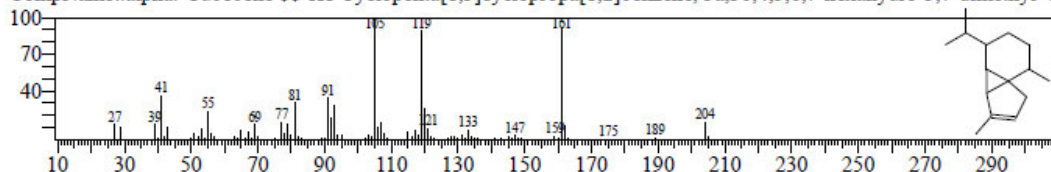
Line#:35 R.Time:62.740(Scan#:11949) MassPeaks:187
RawMode:Averaged 62.735-62.745(11948-11950) BasePeak:119.05(9521)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



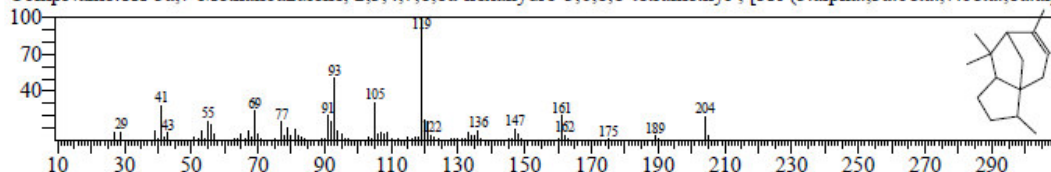
Hit#:1 Entry:19150 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:16728-99-7 MolWeight:204 RetIndex:1440
CompName:Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methylethyl)- \$\$ Naphthalene, 1,2,3,4,6,8a-hexahy



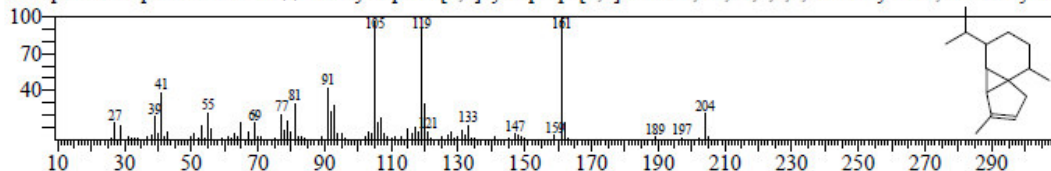
Hit#:2 Entry:19121 Library:NIST14s.lib
SI:86 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-



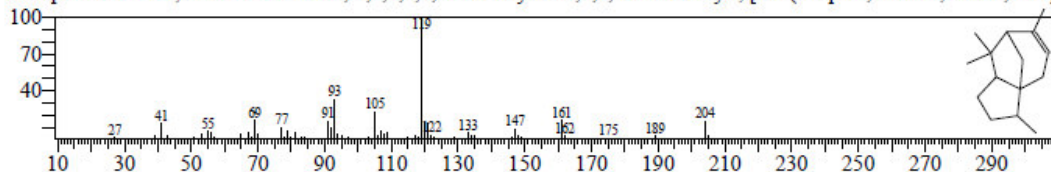
Hit#:3 Entry:19141 Library:NIST14s.lib
SI:84 Formula:C15H24 CAS:469-61-4 MolWeight:204 RetIndex:1403
CompName:1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, [3R-(3.alpha.,3a.beta.,7.beta.,8a.alp



Hit#:4 Entry:19191 Library:NIST14s.lib
SI:84 Formula:C15H24 CAS:17699-14-8 MolWeight:204 RetIndex:1344
CompName:.alpha.-Cubebene \$\$ 1H-Cyclopenta[1,3]cyclopropa[1,2]benzene, 3a,3b,4,5,6,7-hexahydro-3,7-dimethyl-4-

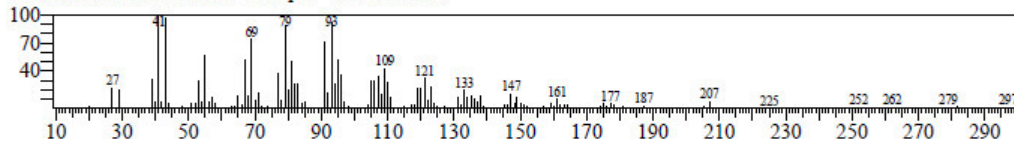


Hit#:5 Entry:19142 Library:NIST14s.lib
SI:83 Formula:C15H24 CAS:469-61-4 MolWeight:204 RetIndex:1403
CompName:1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, [3R-(3.alpha.,3a.beta.,7.beta.,8a.alp

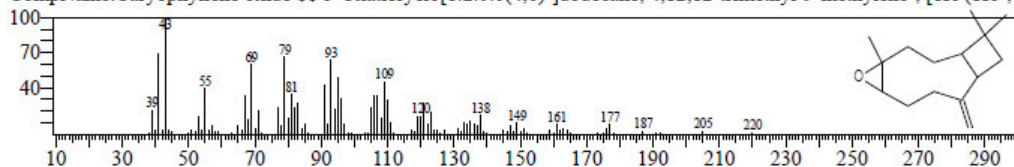


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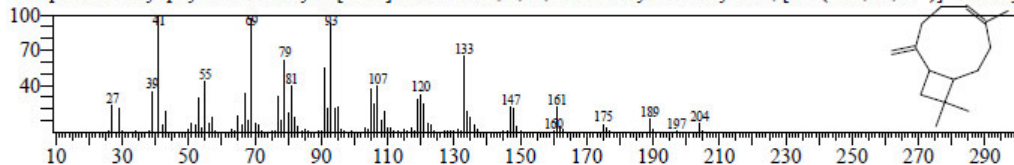
Line#:36 R.Time:64.900(Scan#:12381) MassPeaks:211
RawMode:Averaged 64.895-64.905(12380-12382) BasePeak:41.00(2174)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



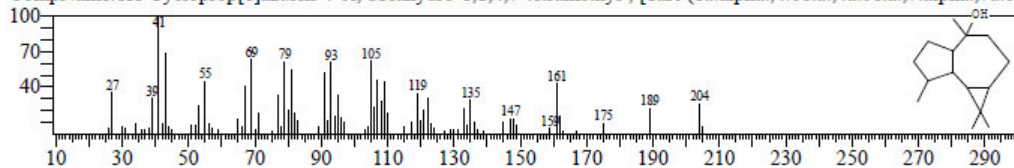
Hit#:1 Entry:21335 Library:NIST14s.lib
SI:92 Formula:C15H24O CAS:1139-30-6 MolWeight:220 RetIndex:1507
CompName:Caryophyllene oxide \$\$ 5-Oxatricyclo[8.2.0.0(4,6)-]dodecane, 4,12,12-trimethyl-9-methylene-, [1R-(1R*,4



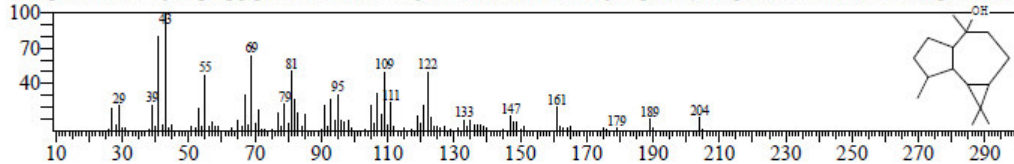
Hit#:2 Entry:19033 Library:NIST14s.lib
SI:84 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



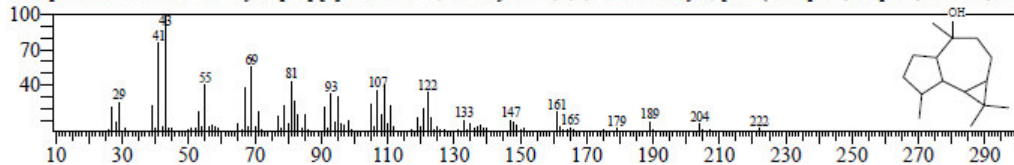
Hit#:3 Entry:21624 Library:NIST14s.lib
SI:83 Formula:C15H26O CAS:552-02-3 MolWeight:222 RetIndex:1530
CompName:1H-Cycloprop[e]azulen-4-ol, decahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.beta.,4a.beta.,7.alpha.,7a.be



Hit#:4 Entry:21630 Library:NIST14s.lib
SI:83 Formula:C15H26O CAS:552-02-3 MolWeight:222 RetIndex:1530
CompName:1H-Cycloprop[e]azulen-4-ol, decahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.beta.,4a.beta.,7.alpha.,7a.be



Hit#:5 Entry:21632 Library:NIST14s.lib
SI:83 Formula:C15H26O CAS:577-27-5 MolWeight:222 RetIndex:1530
CompName:Ledol \$\$ 1H-Cycloprop[e]azulen-4-ol, decahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.alpha.,4a.beta.,7.a



ANEXO 7: Resultados del análisis de CG/EM del aceite esencial de las hojas de *Shinus molle*.

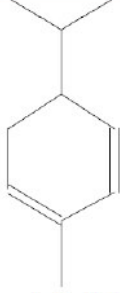


UNIVERSIDAD NACIONAL DE INGENIERÍA
FACULTAD DE CIENCIAS
LABICER (Laboratorio N° 12)
ANÁLISIS QUÍMICO, CONSULTORÍA E INVESTIGACIÓN



INFORME TÉCNICO N° 1276 – 18 – LABICER

- 1. DATOS DEL SOLICITANTE**
 - 1.1 NOMBRES DE LAS SOLICITANTES : JULIO REYNALDO RUIZ QUIROZ
 - 1.2 DNI : 07760326
- 2. CRONOGRAMA DE FECHAS**
 - 2.1 FECHA DE RECEPCIÓN : 24 / 07 / 2018
 - 2.2 FECHA DE ENSAYO : 25 / 07 / 2018
 - 2.3 FECHA DE EMISIÓN : 01 / 08 / 2018
- 3. ANÁLISIS SOLICITADO** : ANÁLISIS DE ACEITE ESENCIAL *SCHINUS MOLLE* (MOLLE)
- 4. DATOS REFERENCIALES DE LA MUESTRA SEGÚN SOLICITANTE**
 - 4.1 IDENTIFICACIÓN DE LA MUESTRA : 01 MUESTRA DE ACEITE ESENCIAL DE "*SCHINUS MOLLE*" (MOLLE)
- 5. LUGAR DE RECEPCIÓN** : LABORATORIO LABICER - FACULTAD DE CIENCIAS
- 6. CONDICIONES AMBIENTALES** : Temperatura: 20.1 °C; Humedad relativa: 65%
- 7. DOCUMENTO DE REFERENCIA** : Bilal Gurbuza, *et. al.* Rosemary (*Rosmarinus officinalis* L.) cultivation studies under Ankara ecological conditions. *Industrial Crops and Products* 88 (2016) 12–16.
- 8. EQUIPOS UTILIZADOS**
CROMATÓGRAFO DE GASES. SHIMADZU, GC-2010 Plus.
AUTOMUESTREADOR: SHIMADZU, AOC-6000.
Detector de espectrometría de masas: SHIMADZU, GCMS-QP210 Ultra.
COLUMNA GC: RESTEK. RTX-5MS, 30m x 0.25 mm ID x 0.25 µm df. Serial: 1346249.
- 9. RESULTADOS**

MUESTRA	COMPONENTE PRINCIPAL <i>Análisis de Componentes Volátiles - Inyección por Headspace (HS)</i>	MÉTODO UTILIZADO
Aceite esencial de " <i>Schinus molle</i> " (molle)	 Componente mayoritario: Alpha.- Phellandrene	Cromatografía de gases acoplado a espectrometría de masas

*Ver en Anexos (Tabla N°1) la lista de compuestos de la muestra, obtenido por el software del equipo GCMSsolution de SHIMADZU utilizando la librería NIST.

10. OBSERVACIONES

Se encontraron 37 componentes volátiles en la muestra de aceite esencial, siendo los componentes mayoritarios Alpha.- Phellandrene (19,59%), Camphene (19,10%) y Alpha.- Pinene (16,56%) (Porcentaje relativo calculado de las áreas del cromatograma de la muestra).

11. VALIDEZ DEL INFORME TÉCNICO

Los resultados de este Informe técnico son válido solo para la muestra proporcionada por el solicitante del servicio en las condiciones indicadas del presente informe técnico.

Bach. Jesús Utano Reyes
Analista
LABICER –UNI

MSc Otilia Acha de la Cruz
Responsable de Análisis
Jefa de laboratorio
CQP 202

El Laboratorio no se responsabiliza del muestreo ni de la procedencia de la muestra.

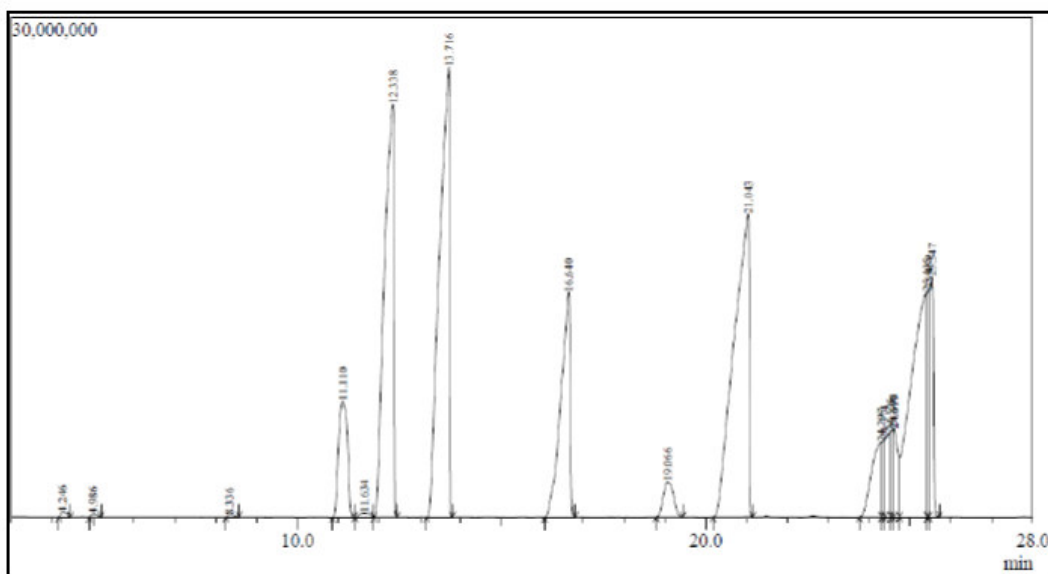


FIGURA N°1: PRIMERA PARTE DEL CROMATOGRAMA DE 3 A 28 MINUTOS

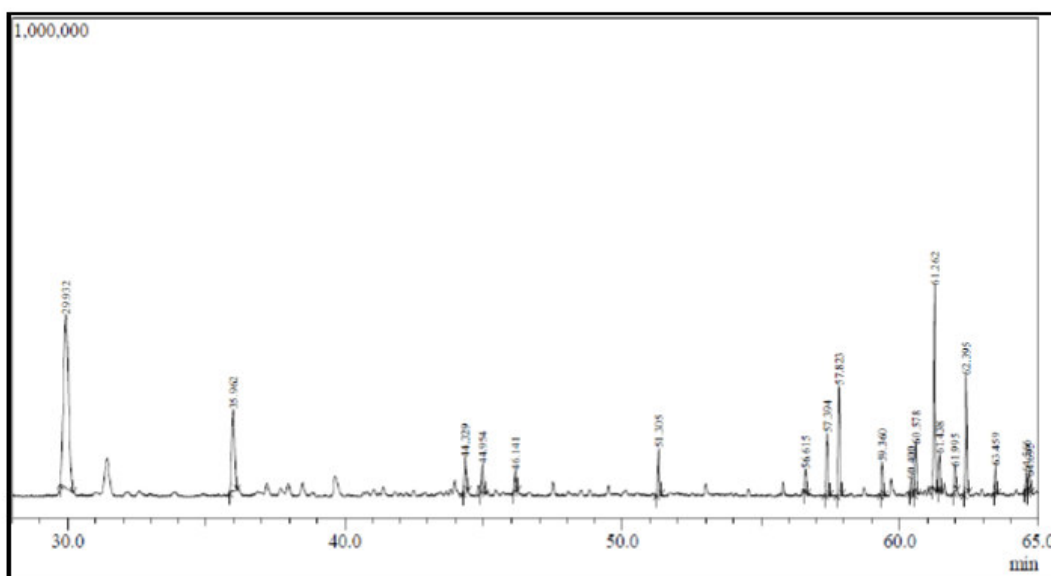


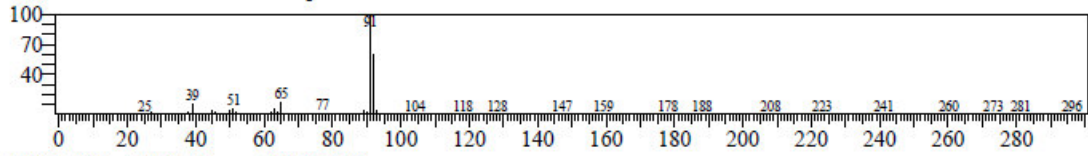
FIGURA N°2: SEGUNDA PARTE DEL CROMATOGRAMA DE 28 A 65 MINUTOS

TABLA Nº1: RESULTADOS DE COMPOSICIÓN DE ACEITE ESENCIAL DE MOLLE

Peak#	R. Time	Area	Area%	Height	Height%	Name
1	4.246	2985782	0.12	291309	0.18	Toluene
2	4.986	2015586	0.08	198814	0.12	Hexane, 2,4-dimethyl-
3	8.336	1215845	0.05	109846	0.07	1-Heptene, 2,6-dimethyl-
4	11.110	103862549	4.34	6984612	4.30	Tricyclo[2.2.1.0(2.6)]heptane, 1,7,7-trimethyl-
5	11.634	4272058	0.18	250933	0.15	Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)-
6	12.338	396475193	16.56	24776241	15.27	.alpha.-Pinene
7	13.716	457296305	19.10	27003814	16.64	Camphene
8	16.640	211774197	8.85	13498598	8.32	Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)-
9	19.066	36557314	1.53	2138347	1.32	.beta.-Myrcene
10	21.043	468971435	19.59	18156845	11.19	.alpha.-Phellandrene
11	24.297	74406662	3.11	4520883	2.79	o-Cymene
12	24.374	22074570	0.92	4686762	2.89	3-(4-Methylbenzoyl)-2-thioxo-4-thiazolyl 4-methylbenz
13	24.525	44394791	1.85	5153169	3.18	o-Cymene
14	24.598	22016125	0.92	5351030	3.30	1-Pentanone, 1-(4-methylphenyl)-
15	24.619	36740666	1.53	5291759	3.26	o-Cymene
16	25.415	362830482	15.16	13532870	8.34	.beta.-Phellandrene
17	25.459	36657104	1.53	13680305	8.43	.gamma.-Terpinene
18	25.547	96812764	4.04	14413966	8.88	D-Limonene
19	29.932	4442478	0.19	347032	0.21	1,3,6-Octatriene, 3,7-dimethyl-, (Z)-
20	35.962	1213217	0.05	163307	0.10	Cyclohexene, 1-methyl-4-(1-methylethylidene)-
21	44.329	340474	0.01	69757	0.04	Terpinen-4-ol
22	44.954	274534	0.01	56789	0.03	2-Cyclohexen-1-one, 4-(1-methylethyl)-
23	46.141	175637	0.01	40702	0.03	Bicyclo[3.1.0]hexan-3-ol, 4-methylenc-1-(1-methylethyl)
24	51.305	390192	0.02	93331	0.06	Bornyl acetate
25	56.615	160050	0.01	45140	0.03	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethen
26	57.394	515592	0.02	123788	0.08	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1
27	57.823	917597	0.04	218878	0.13	Caryophyllene
28	59.360	260536	0.01	65891	0.04	Humulene
29	60.400	79165	0.00	24792	0.02	.gamma.-Muurolene
30	60.578	392030	0.02	99078	0.06	Germacrene D
31	61.262	1684074	0.07	408338	0.25	Cyclohexane, 1-ethenyl-1-methyl-2-(1-methylethenyl)-4
32	61.438	262893	0.01	72774	0.04	.alpha.-Muurolene
33	61.995	173801	0.01	48688	0.03	Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-m
34	62.395	942002	0.04	235570	0.15	Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1
35	63.459	205582	0.01	54571	0.03	Cyclohexanemethanol, 4-ethenyl-.alpha.,.alpha.,4-trimet
36	64.566	142464	0.01	34675	0.02	(2E,4S,7E)-4-Isopropyl-1,7-dimethylcyclodeca-2,7-dien
37	64.695	169973	0.01	31224	0.02	1H-Cycloprop[e]azulene-7-ol, decahydro-1,1,7-trimethyl-
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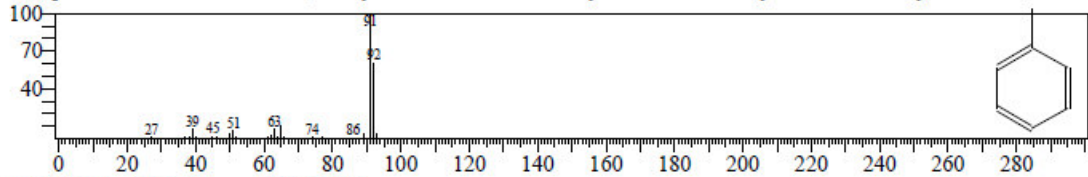
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SI:98 Formula:C7H8 CAS:108-88-3 MolWeight:92 RetIndex:794

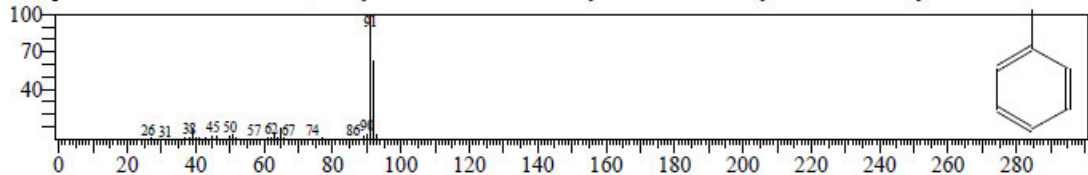
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SI:97 Formula:C7H8 CAS:108-88-3 MolWeight:92 RetIndex:794

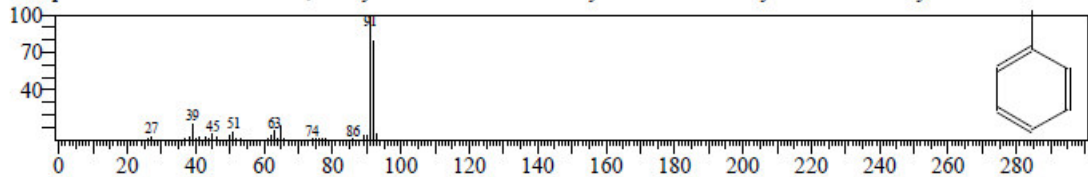
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SI:96 Formula:C7H8 CAS:108-88-3 MolWeight:92 RetIndex:794

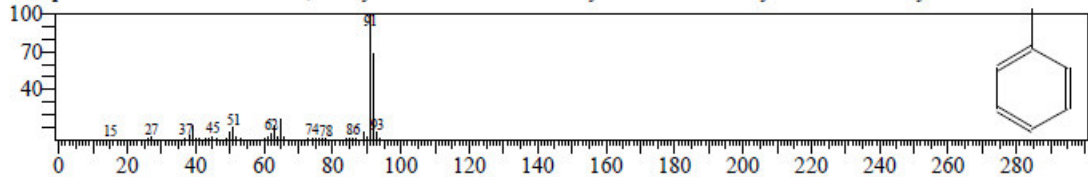
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SI:96 Formula:C7H8 CAS:108-88-3 MolWeight:92 RetIndex:794

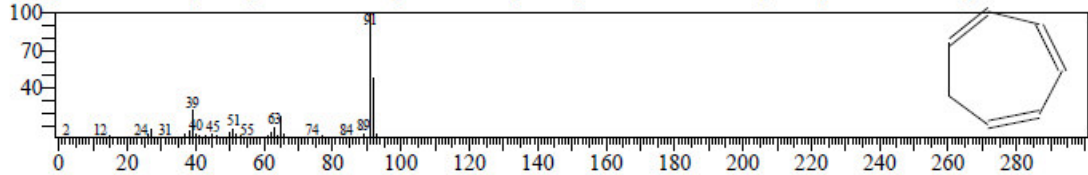
CompName:Toluene \$\$ Benzene, methyl \$\$ Methacide \$\$ Methylbenzene \$\$ Methylbenzol \$\$ Phenylmethane \$\$ Antis



Hit#:5 Entry:1270 Library:NIST14s.lib

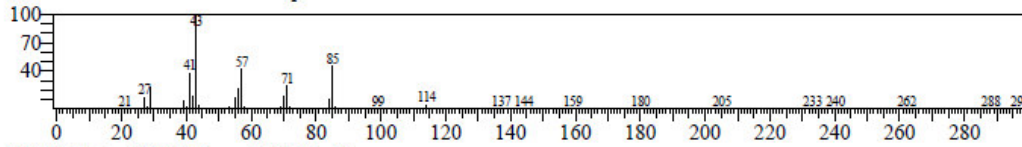
SI:94 Formula:C7H8 CAS:544-25-2 MolWeight:92 RetIndex:786

CompName:1,3,5-Cycloheptatriene \$\$ Tropilidene \$\$ Cyclohepta-1,3,5-triene \$\$ Cycloheptatriene \$\$ Tropilidin \$\$ UN

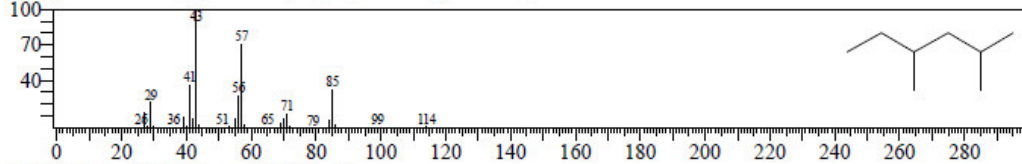


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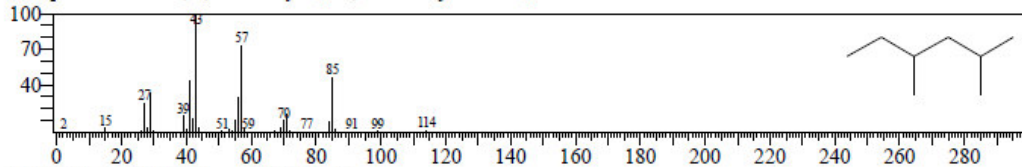
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BG Mode:Calc. from Peak Group 1 - Event 1 Scan



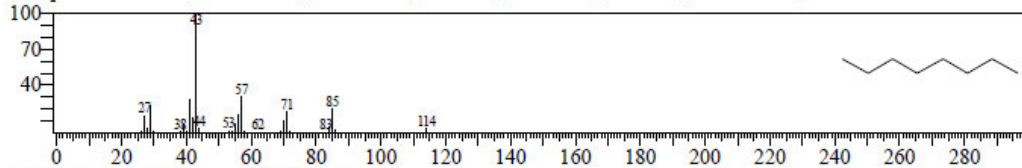
Hit#:1 Entry:3463 Library:NIST14s.lib
SI:94 Formula:C8H18 CAS:589-43-5 MolWeight:114 RetIndex:688
CompName:Hexane, 2,4-dimethyl- \$\$ 2,4-Dimethylhexane \$\$



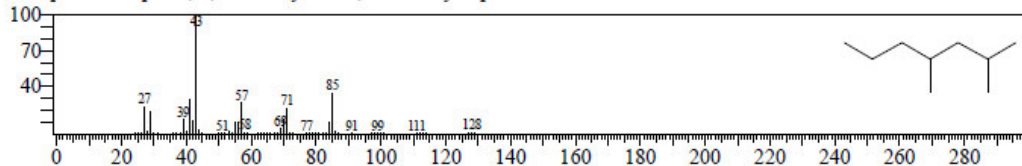
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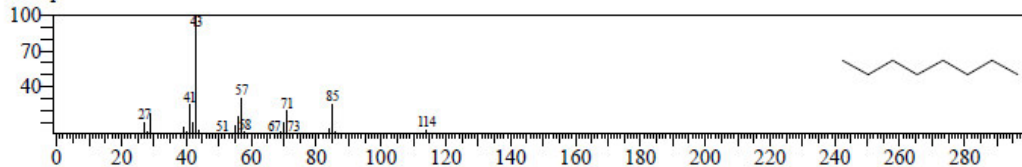
Hit#:3 Entry:3462 Library:NIST14s.lib
SI:94 Formula:C8H18 CAS:111-65-9 MolWeight:114 RetIndex:816
CompName:Octane \$\$ n-Octane \$\$ n-C8H18 \$\$ Oktan \$\$ Oktanen \$\$ Ottani \$\$ UN 1262 \$\$



Hit#:4 Entry:5394 Library:NIST14s.lib
SI:93 Formula:C9H20 CAS:2213-23-2 MolWeight:128 RetIndex:788
CompName:Heptane, 2,4-dimethyl- \$\$ 2,4-Dimethylheptane \$\$

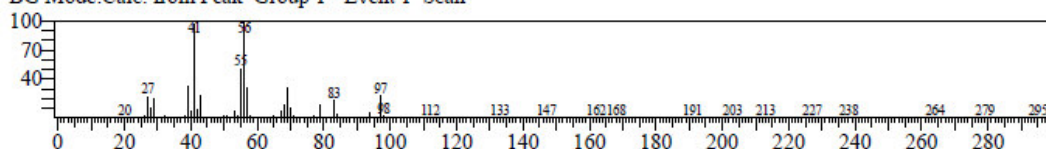


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SI:93 Formula:C8H18 CAS:111-65-9 MolWeight:114 RetIndex:816
CompName:Octane \$\$ n-Octane \$\$ n-C8H18 \$\$ Oktan \$\$ Oktanen \$\$ Ottani \$\$ UN 1262 \$\$

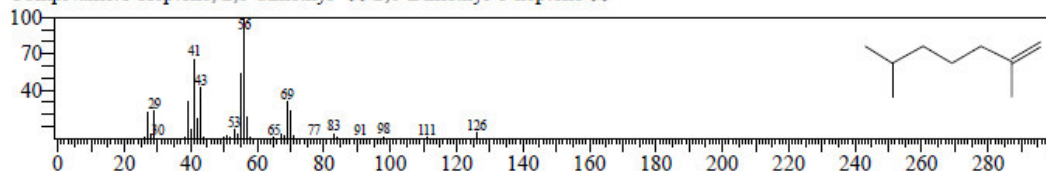


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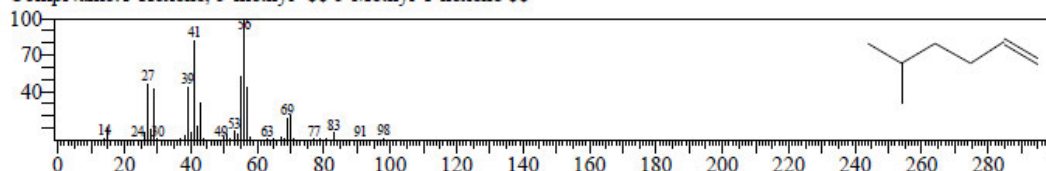
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BG Mode:Calc. from Peak Group 1 - Event 1 Scan



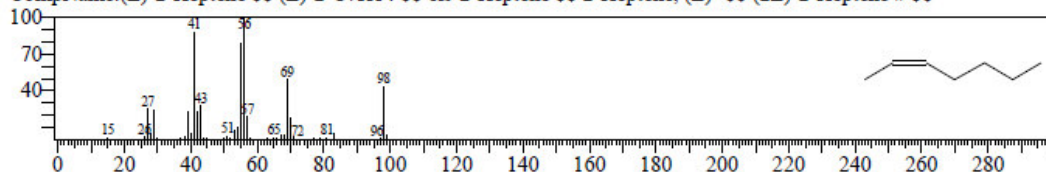
Hit#:1 Entry:4996 Library:NIST14s.lib
SI:91 Formula:C9H18 CAS:3074-78-0 MolWeight:126 RetIndex:819
CompName:1-Heptene, 2,6-dimethyl- \$\$ 2,6-Dimethyl-1-heptene \$\$



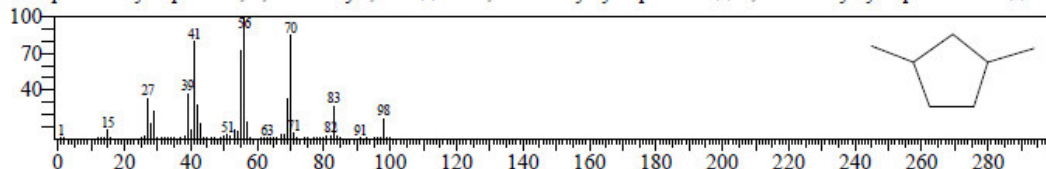
Hit#:2 Entry:1653 Library:NIST14s.lib
SI:90 Formula:C7H14 CAS:3524-73-0 MolWeight:98 RetIndex:643
CompName:1-Hexene, 5-methyl- \$\$ 5-Methyl-1-hexene \$\$



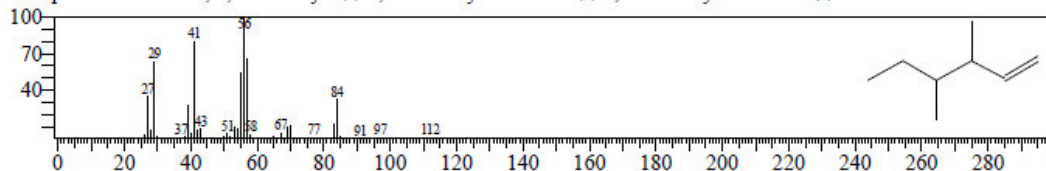
Hit#:3 Entry:1655 Library:NIST14s.lib
SI:88 Formula:C7H14 CAS:6443-92-1 MolWeight:98 RetIndex:725
CompName:(Z)-2-Heptene \$\$ (Z)-2-C7H14 \$\$ cis-2-Heptene \$\$ 2-Heptene, (Z)- \$\$ (Z)-2-Heptene # \$\$



Hit#:4 Entry:1661 Library:NIST14s.lib
SI:88 Formula:C7H14 CAS:2532-58-3 MolWeight:98 RetIndex:722
CompName:Cyclopentane, 1,3-dimethyl-, cis- \$\$ cis-1,3-Dimethylcyclopentane \$\$ 1,3-Dimethylcyclopentane cis \$\$ 1-c

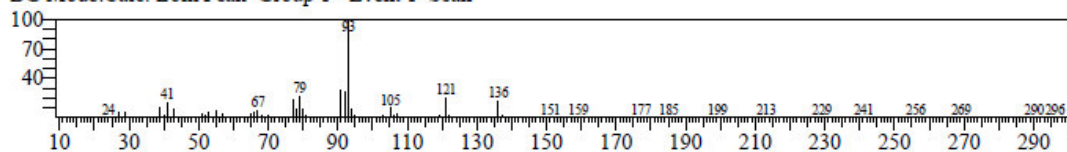


Hit#:5 Entry:3125 Library:NIST14s.lib
SI:87 Formula:C8H16 CAS:16745-94-1 MolWeight:112 RetIndex:678
CompName:1-Hexene, 3,4-dimethyl- \$\$ 3,4-Dimethyl-1-hexene \$\$ 3,4-Dimethylhex-1-ene \$\$

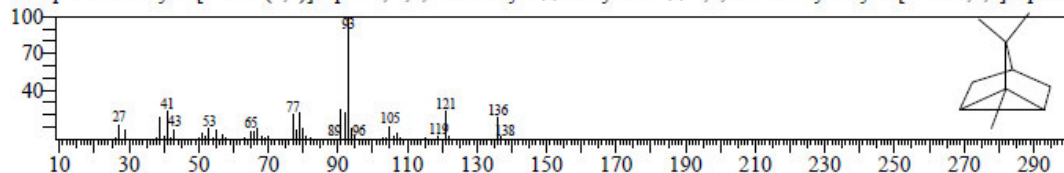


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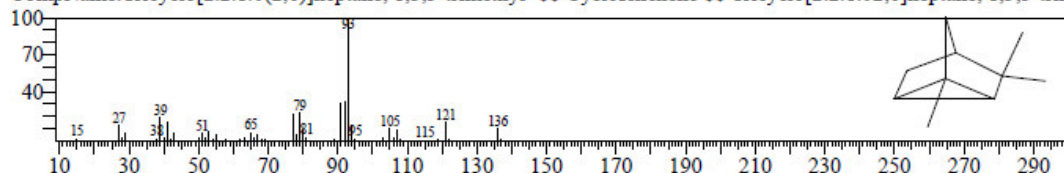
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BG Mode:Calc. from Peak Group 1 - Event 1 Scan



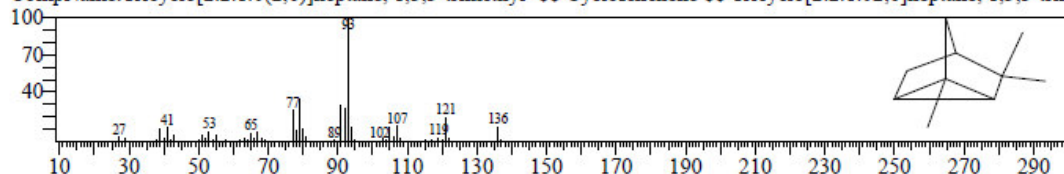
Hit# 1 Entry:6832 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:508-32-7 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,7,7-trimethyl- \$\$ Tricyclene \$\$ 1,7,7-Trimethyltricyclo[2.2.1.0,2,6]heptane



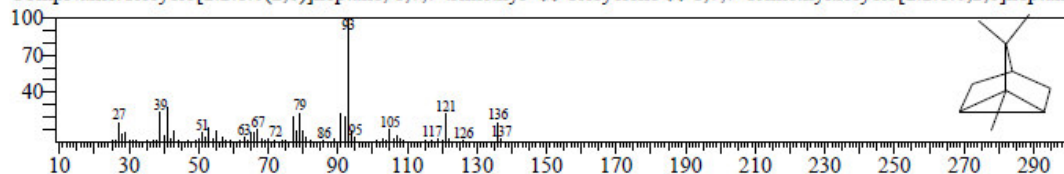
Hit# 2 Entry:6848 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0,2,6]heptane, 1,3,3-trimethyl-



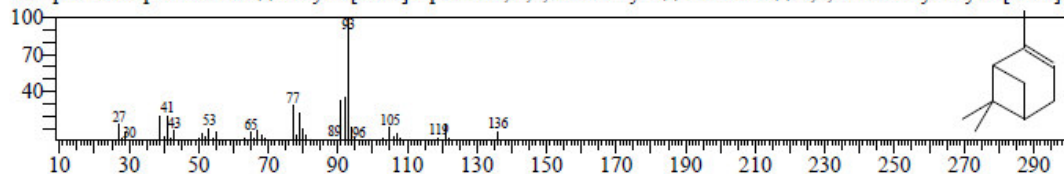
Hit# 3 Entry:6828 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0,2,6]heptane, 1,3,3-trimethyl-



Hit# 4 Entry:6806 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:508-32-7 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,7,7-trimethyl- \$\$ Tricyclene \$\$ 1,7,7-Trimethyltricyclo[2.2.1.0,2,6]heptane

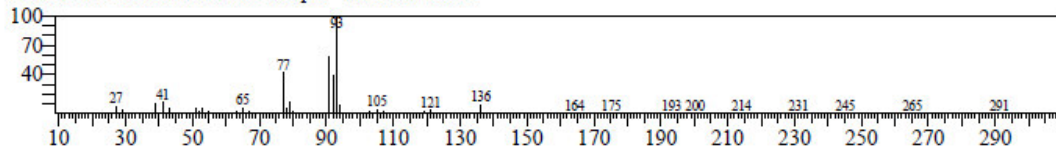


Hit# 5 Entry:6850 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]hept-2-ene

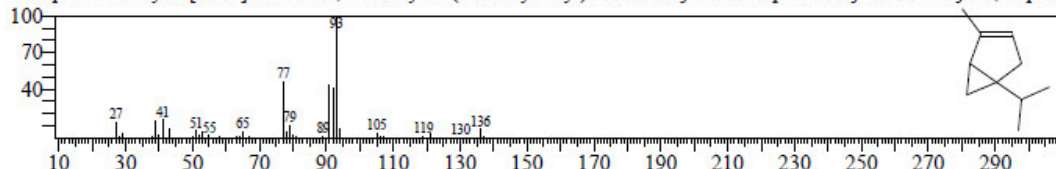


<< Target >>

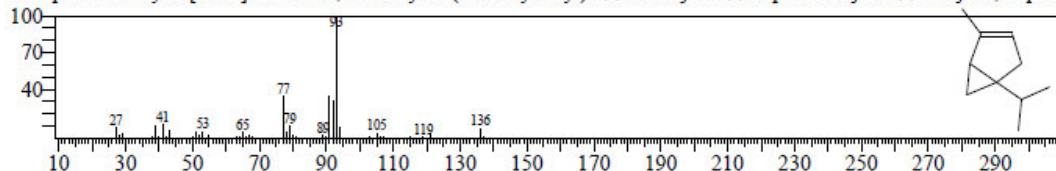
Line#:5 R.Time:11.635(Scan#:1728) MassPeaks:208
RawMode:Averaged 11.630-11.640(1727-1729) BasePeak:93.05(65973)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



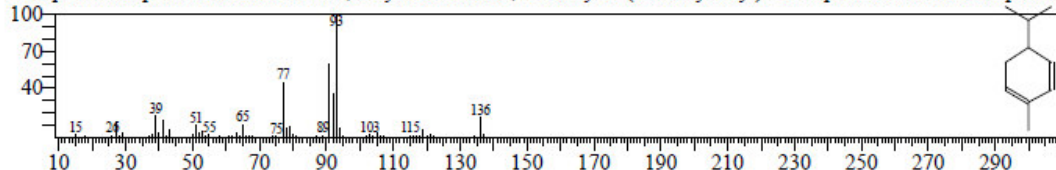
Hit#:1 Entry:6824 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RetIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



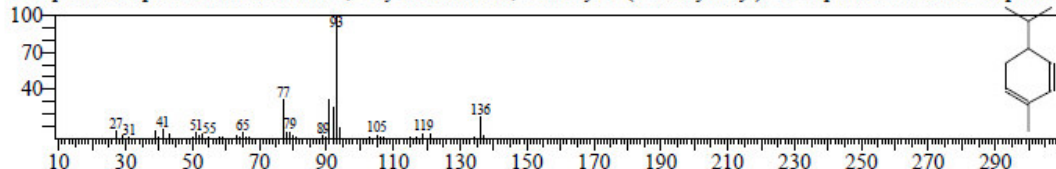
Hit#:2 Entry:6837 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RetIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



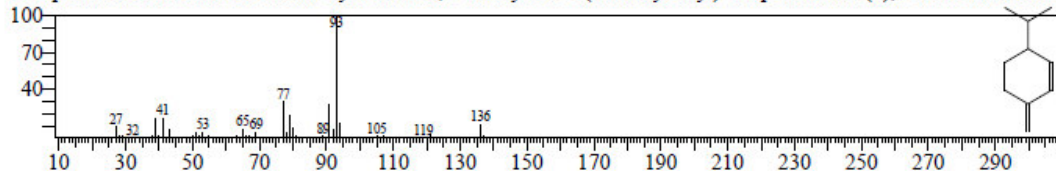
Hit#:3 Entry:6840 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:99-83-2 MolWeight:136 RetIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men



Hit#:4 Entry:6839 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:99-83-2 MolWeight:136 RetIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men



Hit#:5 Entry:6822 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellanc

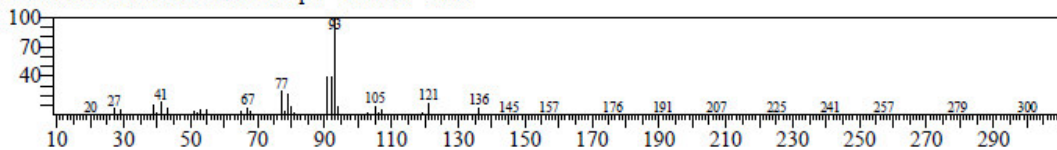


<< Target >>

Line#:6 R.Time:12.340(Scan#:1869) MassPeaks:194

RawMode:Averaged 12.335-12.345(1868-1870) BasePeak:93.05(6601077)

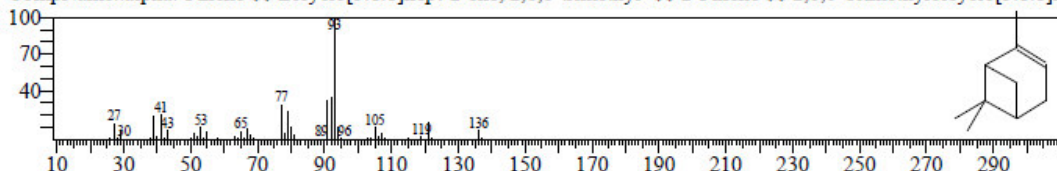
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6850 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:80-56-8 MolWeight:136 RefIndex:948

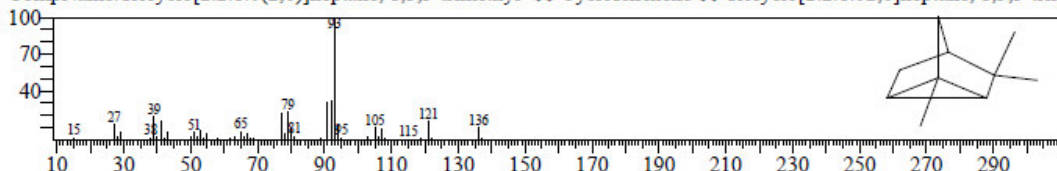
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



Hit#:2 Entry:6848 Library:NIST14s.lib

SI:95 Formula:C10H16 CAS:488-97-1 MolWeight:136 RefIndex:729

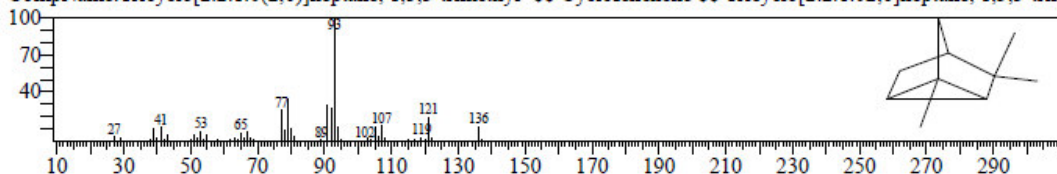
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit#:3 Entry:6828 Library:NIST14s.lib

SI:94 Formula:C10H16 CAS:488-97-1 MolWeight:136 RefIndex:729

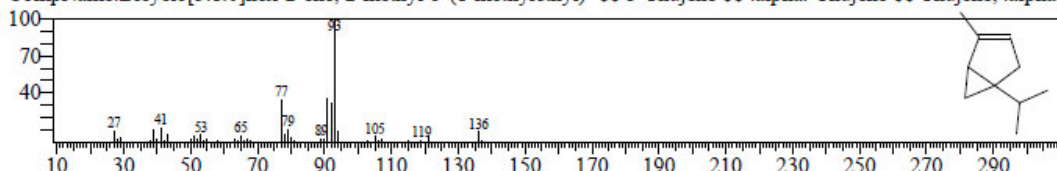
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



Hit#:4 Entry:6837 Library:NIST14s.lib

SI:93 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RefIndex:902

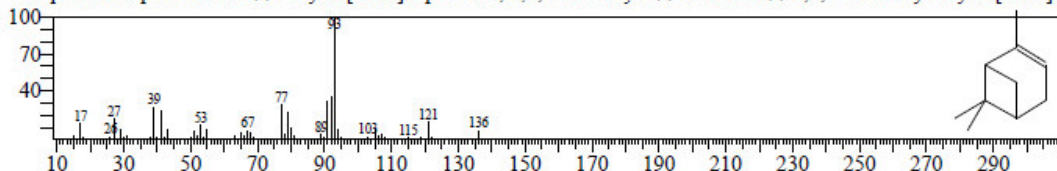
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



Hit#:5 Entry:6849 Library:NIST14s.lib

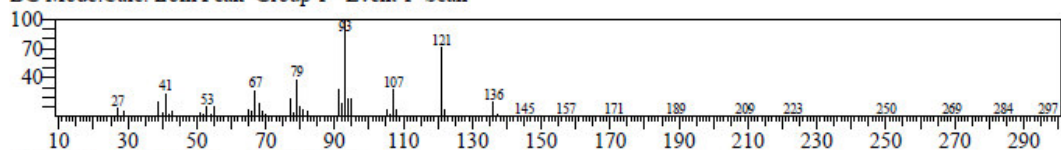
SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RefIndex:948

CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h

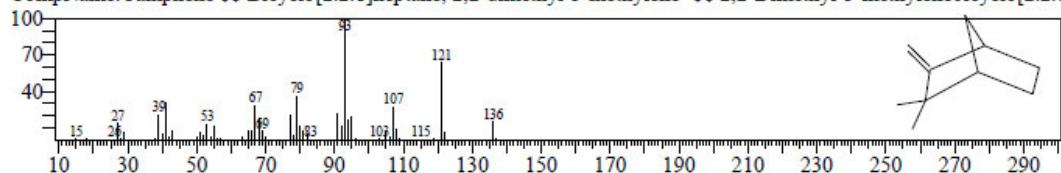


<< Target >>

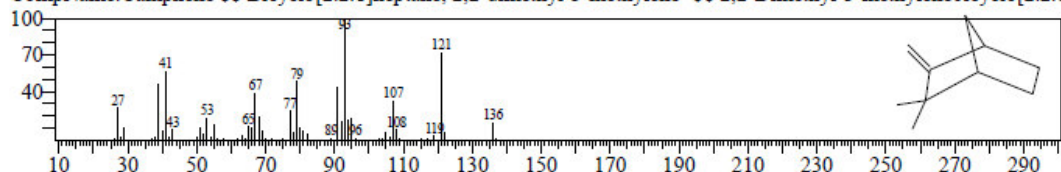
Line#:7 R.Time:13.715(Scan#:2144) MassPeaks:184
RawMode:Averaged 13.710-13.720(2143-2145) BasePeak:93.05(4805492)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



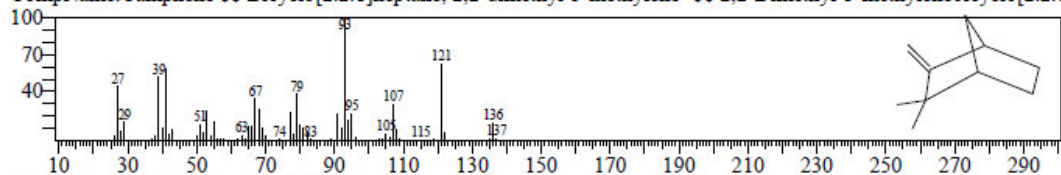
Hit#:1 Entry:6853 Library:NIST14s.lib
SI:97 Formula:C10H16 CAS:79-92-5 MolWeight:136 RetIndex:943
CompName:Camphene \$\$ Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- \$\$ 2,2-Dimethyl-3-methylenebicyclo[2.2.1]



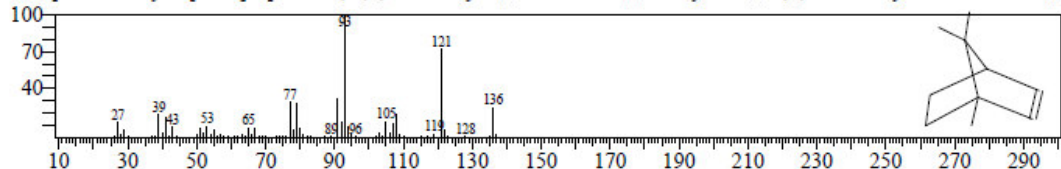
Hit#:2 Entry:6852 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:79-92-5 MolWeight:136 RetIndex:943
CompName:Camphene \$\$ Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- \$\$ 2,2-Dimethyl-3-methylenebicyclo[2.2.1]



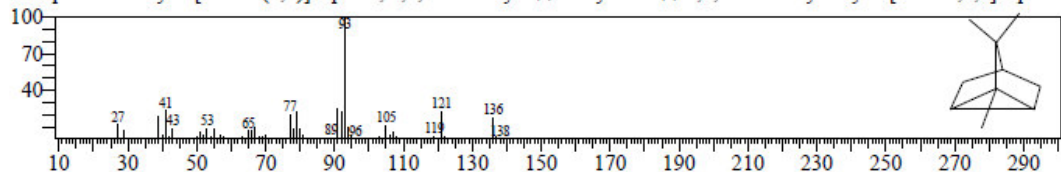
Hit#:3 Entry:6851 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:79-92-5 MolWeight:136 RetIndex:943
CompName:Camphene \$\$ Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene- \$\$ 2,2-Dimethyl-3-methylenebicyclo[2.2.1]



Hit#:4 Entry:6855 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:464-17-5 MolWeight:136 RetIndex:932
CompName:Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl- \$\$ 2-Bornene \$\$ Bornylene \$\$ 1,7,7-Trimethyl-2-norbornene \$\$

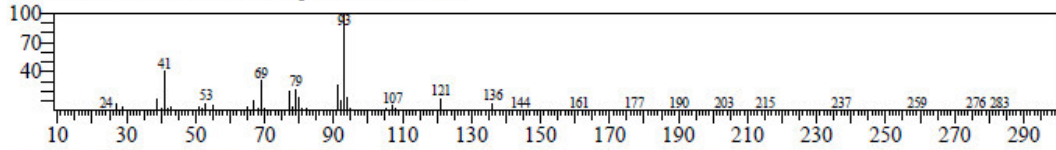


Hit#:5 Entry:6832 Library:NIST14s.lib
SI:89 Formula:C10H16 CAS:508-32-7 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,7,7-trimethyl- \$\$ Tricyclene \$\$ 1,7,7-Trimethyltricyclo[2.2.1.0(2,6)]heptane

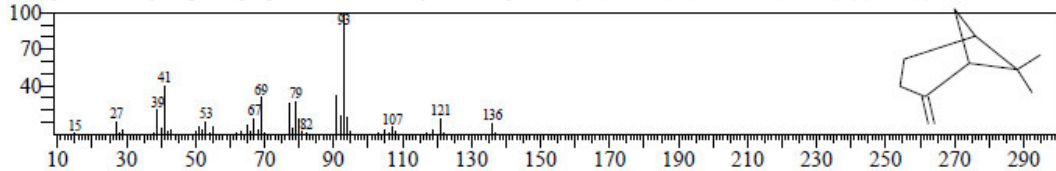


<< Target >>

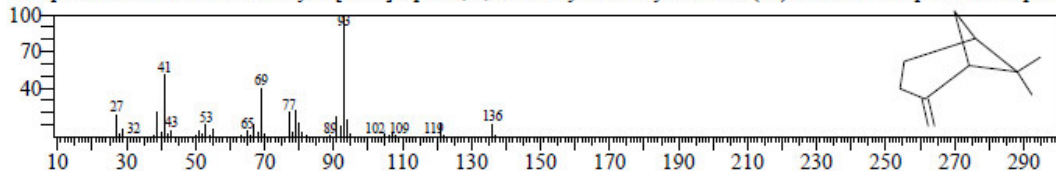
Line#:8 R.Time:16.640(Scan#:2729) MassPeaks:193
RawMode:Averaged 16.635-16.645(2728-2730) BasePeak:93.05(3436998)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



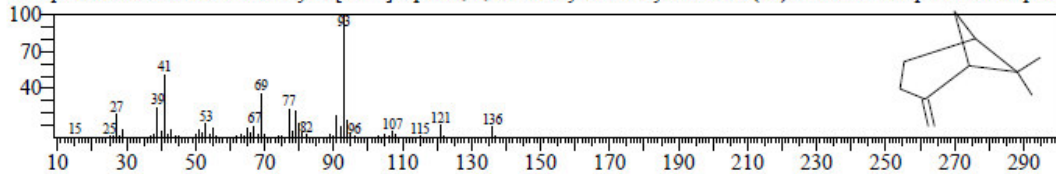
Hit#:1 Entry:6816 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:18172-67-3 MolWeight:136 RetIndex:943
CompName:Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)- \$\$ 2(10)-Pinene, (1S,5S)-(-)- \$\$ (-)-.beta.-Pinene :



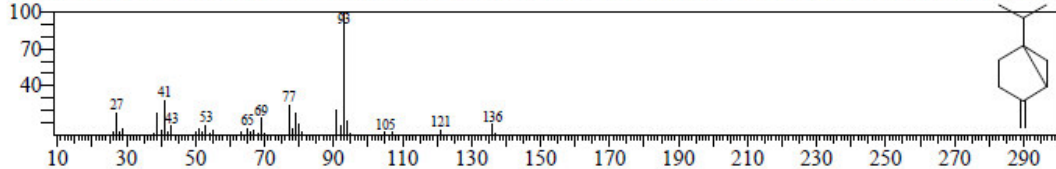
Hit#:2 Entry:6809 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



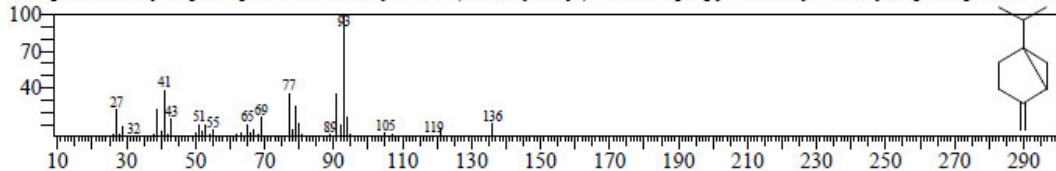
Hit#:3 Entry:6808 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



Hit#:4 Entry:6811 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

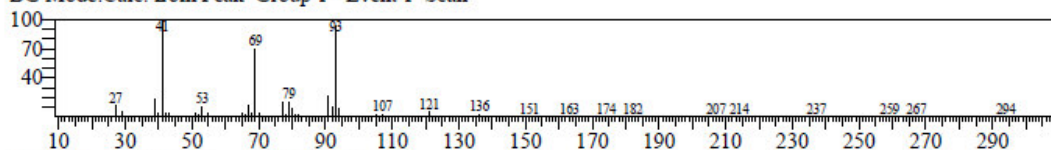


Hit#:5 Entry:6817 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$

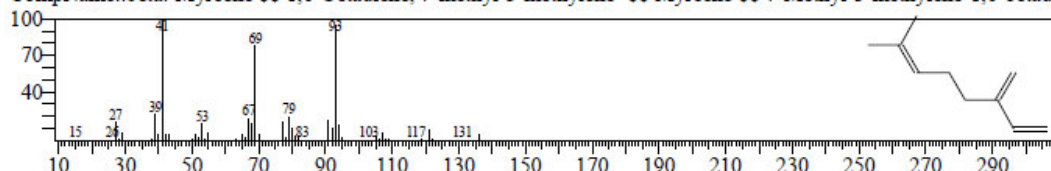


<< Target >>

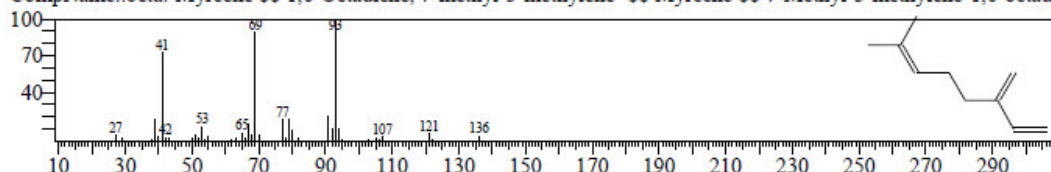
Line#:9 R.Time:19.065(Scan#:3214) MassPeaks:189
RawMode:Averaged 19.060-19.070(3213-3215) BasePeak:41.00(460628)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



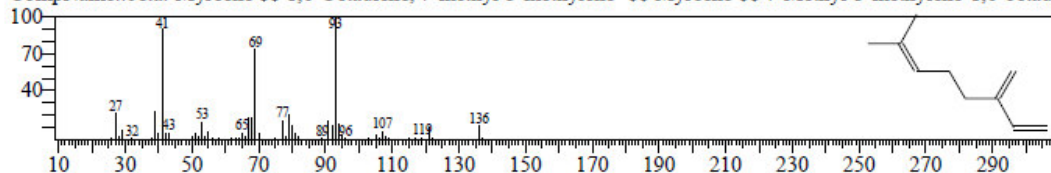
Hit#:1 Entry:6778 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadiene



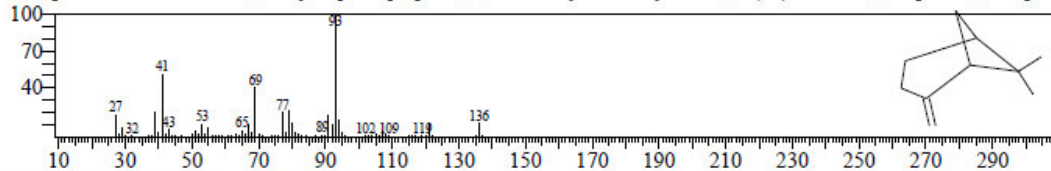
Hit#:2 Entry:6820 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadiene



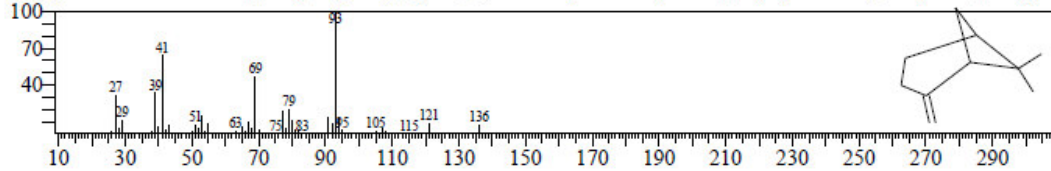
Hit#:3 Entry:6810 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadiene



Hit#:4 Entry:6809 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

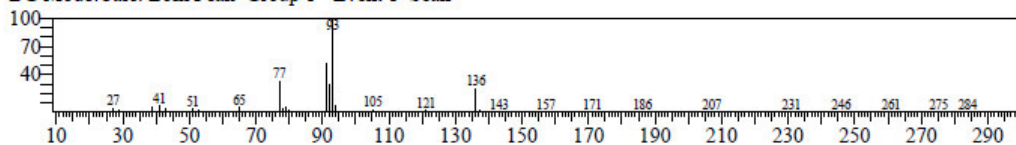


Hit#:5 Entry:6807 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine

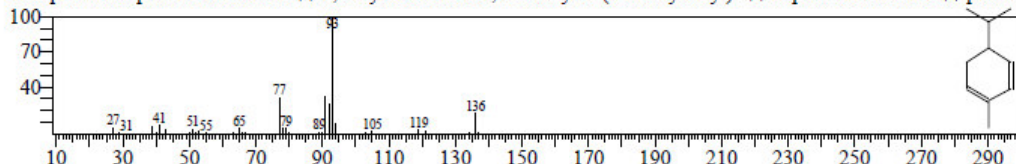


<< Target >>

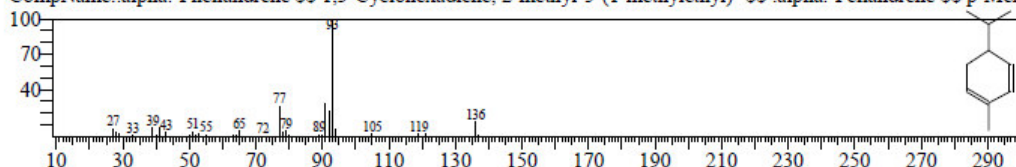
Line#:10 R.Time:21.045(Scan#:3610) MassPeaks:198
RawMode:Averaged 21.040-21.050(3609-3611) BasePeak:93.05(5747620)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



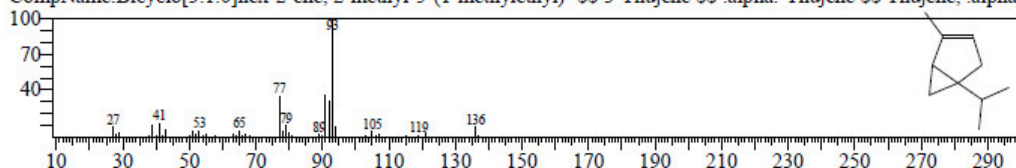
Hit#:1 Entry:6839 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:99-83-2 MolWeight:136 RefIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men



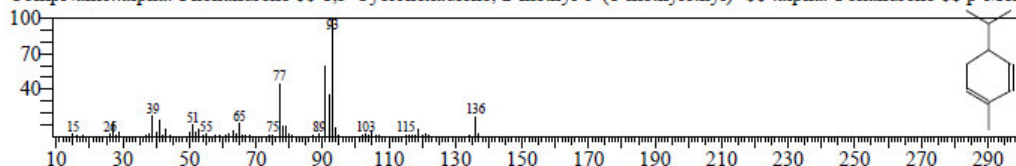
Hit#:2 Entry:6841 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:99-83-2 MolWeight:136 RefIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men



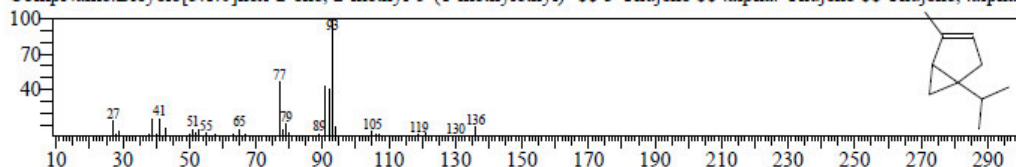
Hit#:3 Entry:6837 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RefIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.



Hit#:4 Entry:6840 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:99-83-2 MolWeight:136 RefIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men

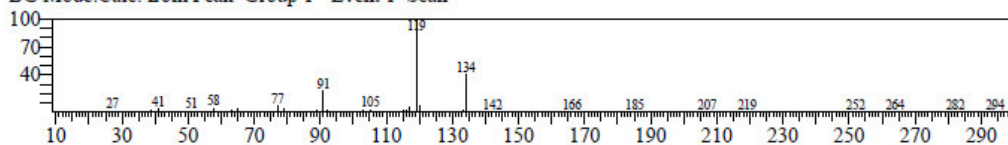


Hit#:5 Entry:6824 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RefIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.

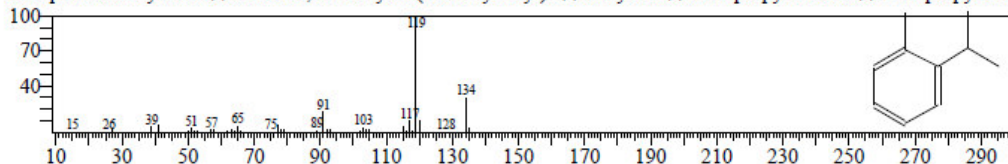


<< Target >>

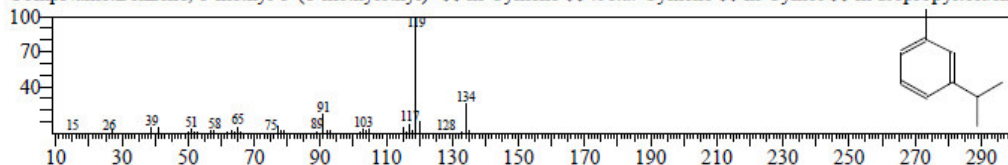
Line#:11 R.Time:24.295(Scan#:4260) MassPeaks:157
RawMode:Averaged 24.290-24.300(4259-4261) BasePeak:119.05(80849)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



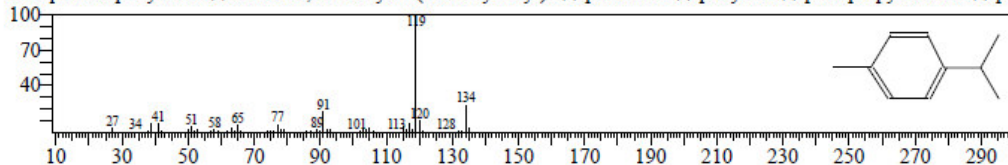
Hit#:1 Entry:6391 Library:NIST14s.lib
SI:91 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m



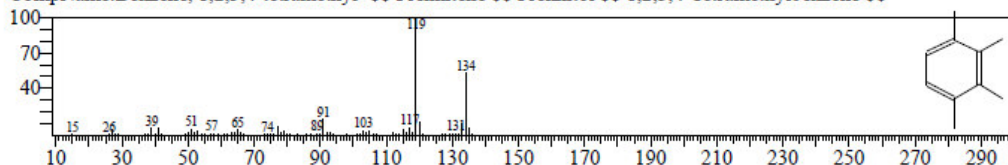
Hit#:2 Entry:6387 Library:NIST14s.lib
SI:91 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene



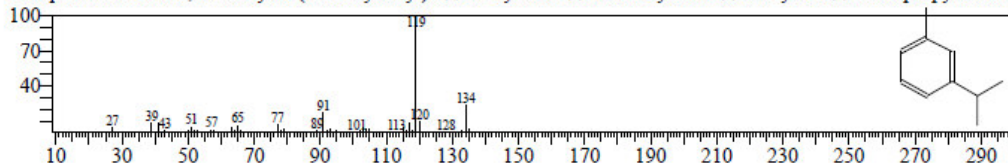
Hit#:3 Entry:6371 Library:NIST14s.lib
SI:90 Formula:C10H14 CAS:99-87-6 MolWeight:134 RetIndex:1042
CompName:p-Cymene \$\$ Benzene, 1-methyl-4-(1-methylethyl)- \$\$ p-Cimene \$\$ p-Cymol \$\$ p-Isopropyltoluene \$\$ p-l



Hit#:4 Entry:6373 Library:NIST14s.lib
SI:89 Formula:C10H14 CAS:488-23-3 MolWeight:134 RetIndex:1133
CompName:Benzen, 1,2,3,4-tetramethyl- \$\$ Prehnitene \$\$ Prehnitol \$\$ 1,2,3,4-Tetramethylbenzene \$\$

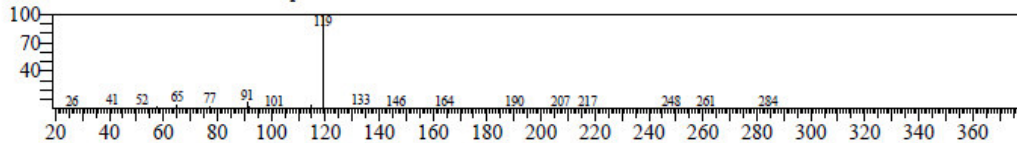


Hit#:5 Entry:6388 Library:NIST14s.lib
SI:89 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene

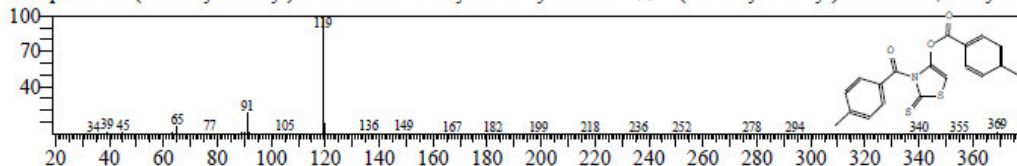


<< Target >>

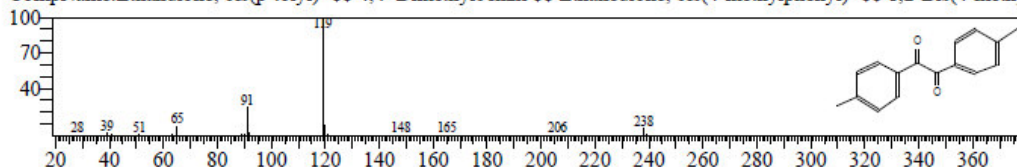
Line#:12 R.Time:24.375(Scan#:4276) MassPeaks:140
RawMode:Averaged 24.370-24.380(4275-4277) BasePeak:119.05(57791)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



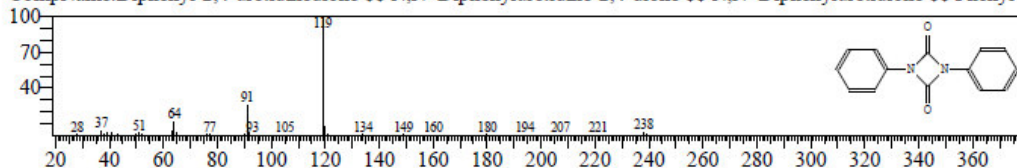
Hit#:1 Entry:31619 Library:NIST14s.lib
SI:87 Formula:C19H15NO3S2 CAS:299929-13-8 MolWeight:369 RetIndex:3110
CompName:3-(4-Methylbenzoyl)-2-thioxo-4-thiazolyl 4-methylbenzoate



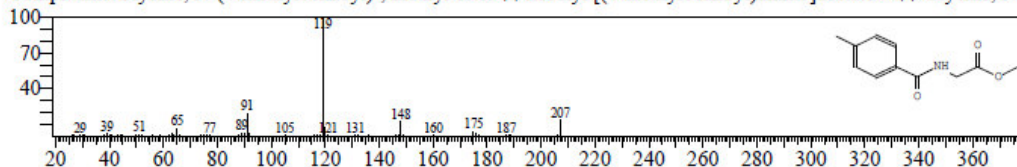
Hit#:2 Entry:23417 Library:NIST14s.lib
SI:84 Formula:C16H14O2 CAS:3457-48-5 MolWeight:238 RetIndex:2064
CompName:Ethandione, bis(p-tolyl)-



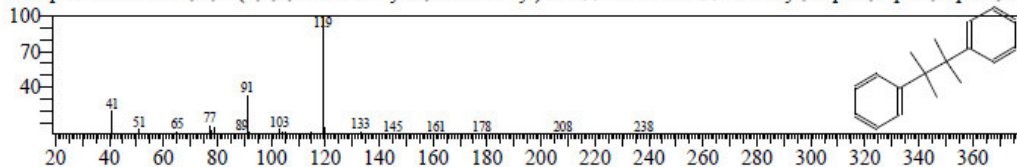
Hit#:3 Entry:23370 Library:NIST14s.lib
SI:81 Formula:C14H10N2O2 CAS:1025-36-1 MolWeight:238 RetIndex:2268
CompName:Diphenyl-2,4-uretidinedione



Hit#:4 Entry:19568 Library:NIST14s.lib
SI:81 Formula:C11H13NO3 CAS:1208-23-7 MolWeight:207 RetIndex:1773
CompName:Glycine, N-(4-methylbenzoyl)-, methyl ester

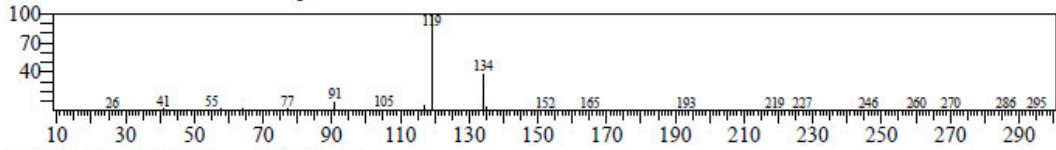


Hit#:5 Entry:23446 Library:NIST14s.lib
SI:81 Formula:C18H22 CAS:1889-67-4 MolWeight:238 RetIndex:1795
CompName:Benzenes, 1,1'-(1,1,2,2-tetramethyl-1,2-ethanediyl)bis-

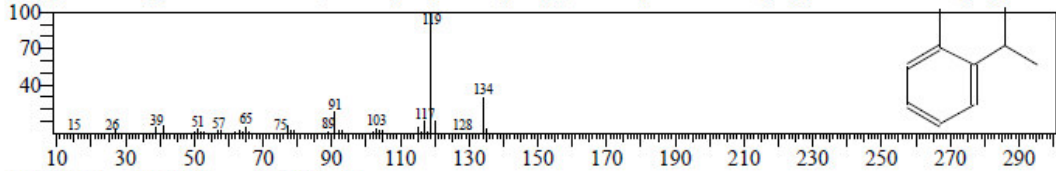


<< Target >>

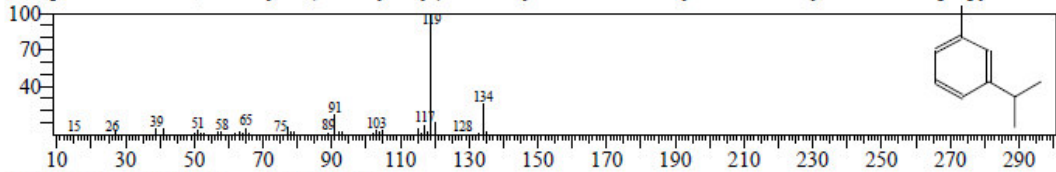
Line#:13 R.Time:24.525(Scan#:4306) MassPeaks:142
RawMode:Averaged 24.520-24.530(4305-4307) BasePeak:119.05(50956)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



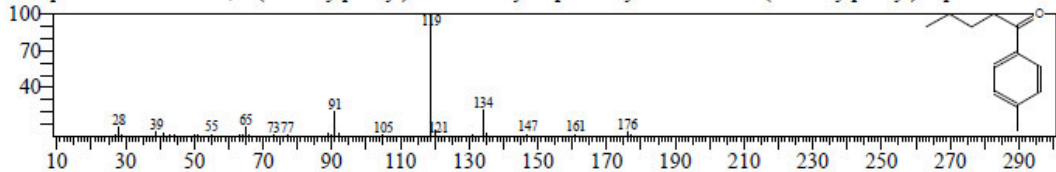
Hit#:1 Entry:6391 Library:NIST14s.lib
SI:82 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m-



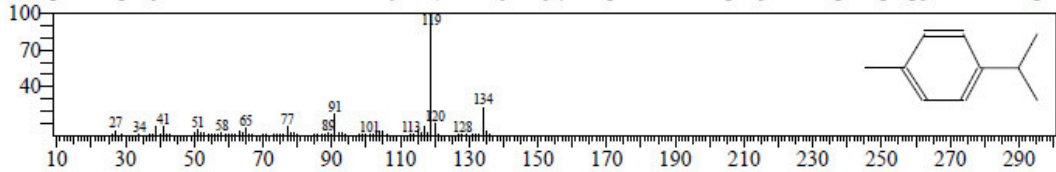
Hit#:2 Entry:6387 Library:NIST14s.lib
SI:82 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene



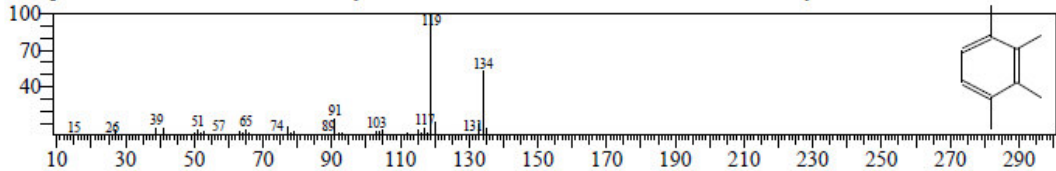
Hit#:3 Entry:14349 Library:NIST14s.lib
SI:82 Formula:C12H16O CAS:1671-77-8 MolWeight:176 RetIndex:1440
CompName:1-Pentanone, 1-(4-methylphenyl)- \$\$ 4-Methyl-1-pentanoylbenzene \$\$ 1-(4-Methylphenyl)-1-pentanone #



Hit#:4 Entry:6371 Library:NIST14s.lib
SI:81 Formula:C10H14 CAS:99-87-6 MolWeight:134 RetIndex:1042
CompName:p-Cymene \$\$ Benzene, 1-methyl-4-(1-methylethyl)- \$\$ p-Cimene \$\$ p-Cymol \$\$ p-Isopropyltoluene \$\$ p-l

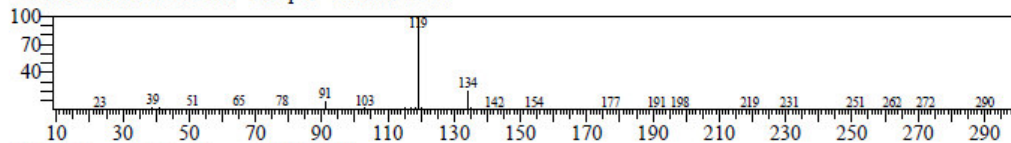


Hit#:5 Entry:6373 Library:NIST14s.lib
SI:81 Formula:C10H14 CAS:488-23-3 MolWeight:134 RetIndex:1133
CompName:Benzen, 1,2,3,4-tetramethyl- \$\$ Prehnitene \$\$ Prehnitol \$\$ 1,2,3,4-Tetramethylbenzene \$\$

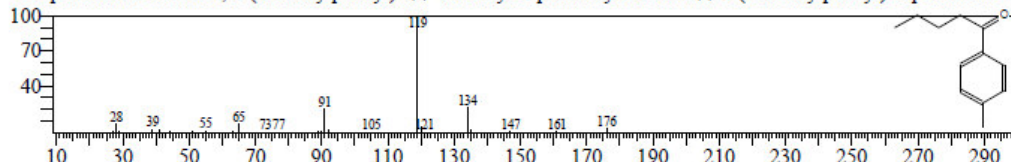


<< Target >>

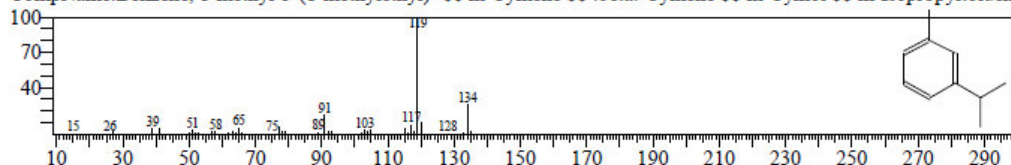
Line#:14 R.Time:24.595(Scan#:4320) MassPeaks:157
RawMode:Averaged 24.590-24.600(4319-4321) BasePeak:119.05(83899)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



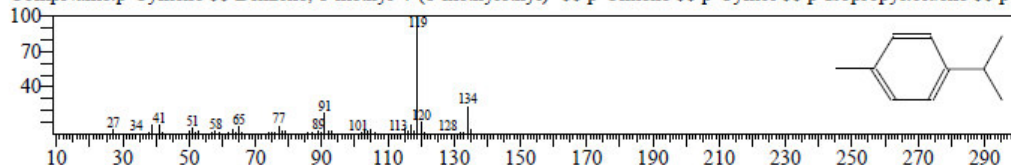
Hit#:1 Entry:14349 Library:NIST14s.lib
SI:88 Formula:C12H16O CAS:1671-77-8 MolWeight:176 RetIndex:1440
CompName:1-Pentanone, 1-(4-methylphenyl)- \$\$ 4-Methyl-1-pentanoylbenzene \$\$ 1-(4-Methylphenyl)-1-pentanone #



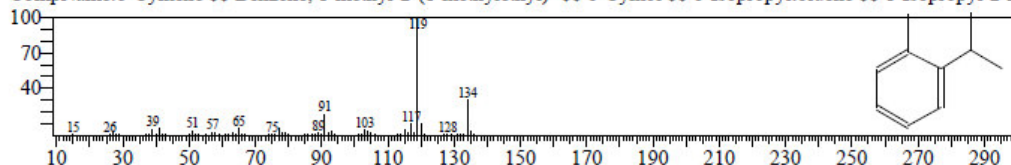
Hit#:2 Entry:6387 Library:NIST14s.lib
SI:86 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzene, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene



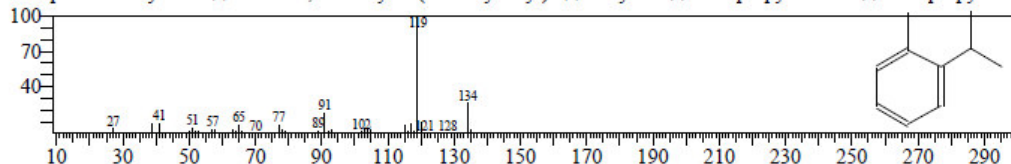
Hit#:3 Entry:6371 Library:NIST14s.lib
SI:86 Formula:C10H14 CAS:99-87-6 MolWeight:134 RetIndex:1042
CompName:p-Cymene \$\$ Benzene, 1-methyl-4-(1-methylethyl)- \$\$ p-Cimene \$\$ p-Cymol \$\$ p-Isopropyltoluene \$\$ p-



Hit#:4 Entry:6391 Library:NIST14s.lib
SI:86 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m

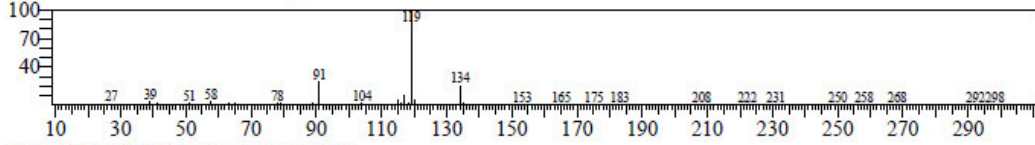


Hit#:5 Entry:6390 Library:NIST14s.lib
SI:85 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m

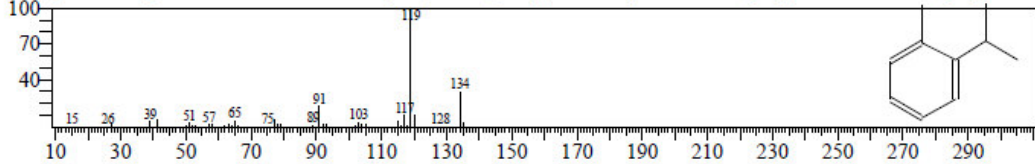


<< Target >>

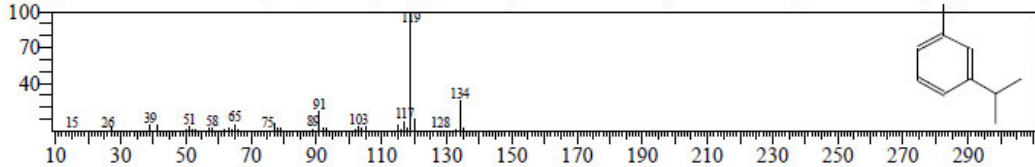
Line#:15 R.Time:24.620(Scan#:4325) MassPeaks:172
RawMode:Averaged 24.615-24.625(4324-4326) BasePeak:119.05(87152)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



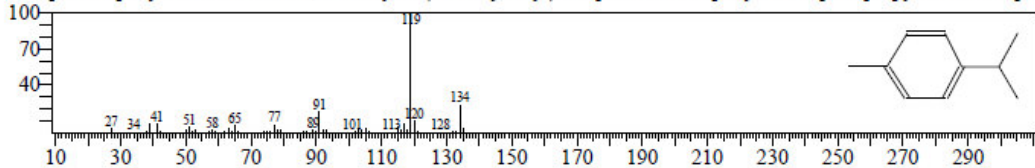
Hit#:1 Entry:6391 Library:NIST14s.lib
SI:91 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m



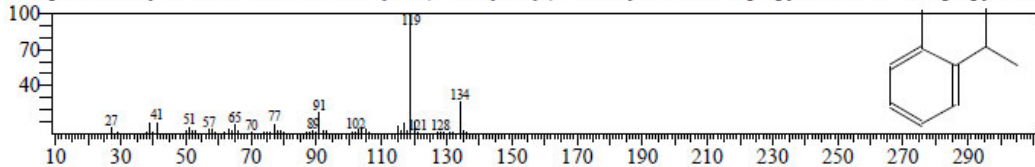
Hit#:2 Entry:6387 Library:NIST14s.lib
SI:91 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene



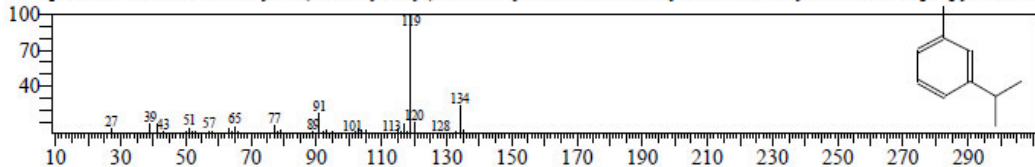
Hit#:3 Entry:6371 Library:NIST14s.lib
SI:91 Formula:C10H14 CAS:99-87-6 MolWeight:134 RetIndex:1042
CompName:p-Cymene \$\$ Benzene, 1-methyl-4-(1-methylethyl)- \$\$ p-Cimene \$\$ p-Cymol \$\$ p-Isopropyltoluene \$\$ p-I



Hit#:4 Entry:6390 Library:NIST14s.lib
SI:90 Formula:C10H14 CAS:527-84-4 MolWeight:134 RetIndex:1042
CompName:o-Cymene \$\$ Benzene, 1-methyl-2-(1-methylethyl)- \$\$ o-Cymol \$\$ o-Isopropyltoluene \$\$ 1-Isopropyl-2-m

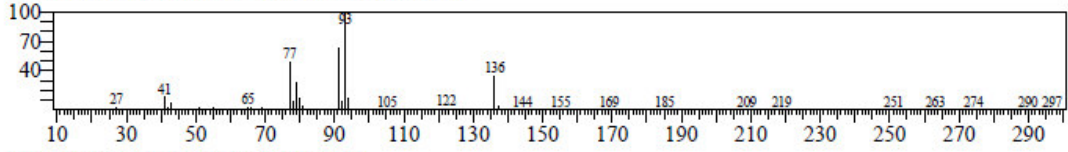


Hit#:5 Entry:6388 Library:NIST14s.lib
SI:90 Formula:C10H14 CAS:535-77-3 MolWeight:134 RetIndex:1042
CompName:Benzen, 1-methyl-3-(1-methylethyl)- \$\$ m-Cymene \$\$.beta.-Cymene \$\$ m-Cymol \$\$ m-Isopropyltoluene

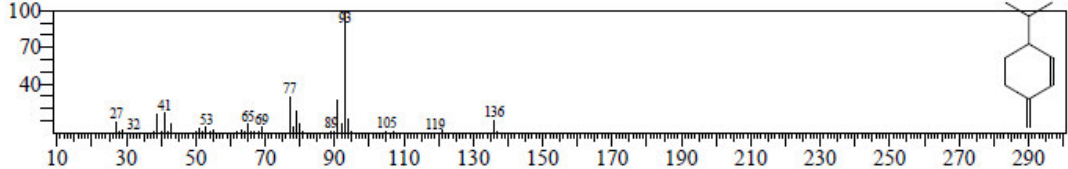


<< Target >>

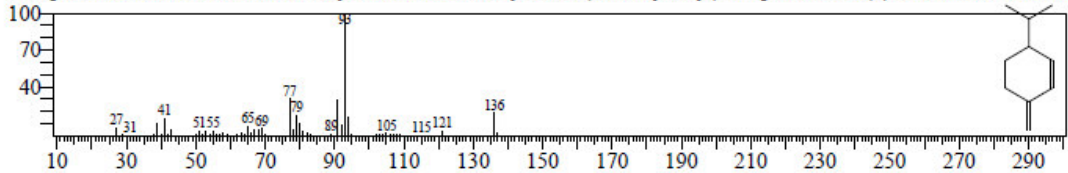
Line#:16 R.Time:25.415(Scan#:4484) MassPeaks:157
RawMode:Averaged 25.410-25.420(4483-4485) BasePeak:93.05(81652)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



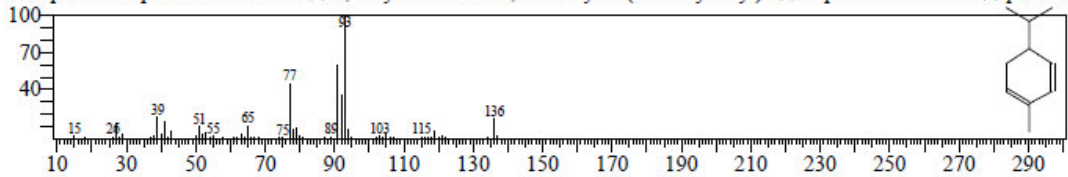
Hit#:1 Entry:6822 Library:NIST14s.lib
SI:86 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellanc



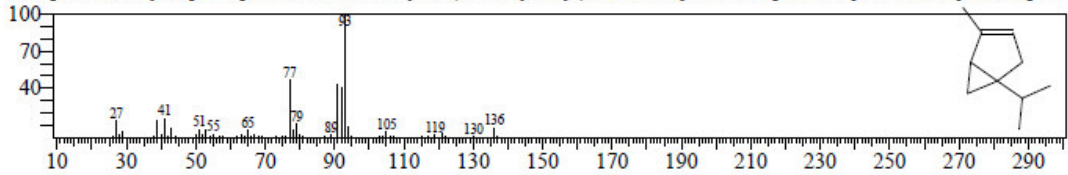
Hit#:2 Entry:6823 Library:NIST14s.lib
SI:86 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellanc



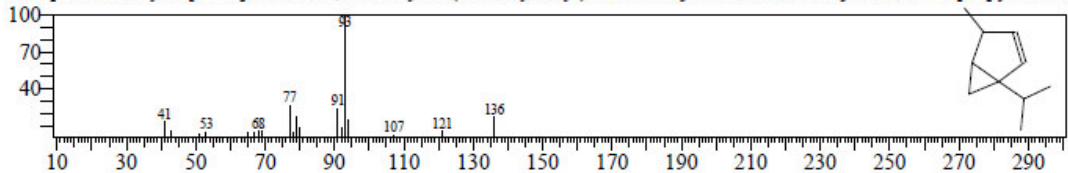
Hit#:3 Entry:6840 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:99-83-2 MolWeight:136 RetIndex:969
CompName:.alpha.-Phellandrene \$\$ 1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)- \$\$.alpha.-Fellandrene \$\$ p-Men



Hit#:4 Entry:6824 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:2867-05-2 MolWeight:136 RetIndex:902
CompName:Bicyclo[3.1.0]hex-2-ene, 2-methyl-5-(1-methylethyl)- \$\$ 3-Thujene \$\$.alpha.-Thujene \$\$ Thujene, .alpha.-

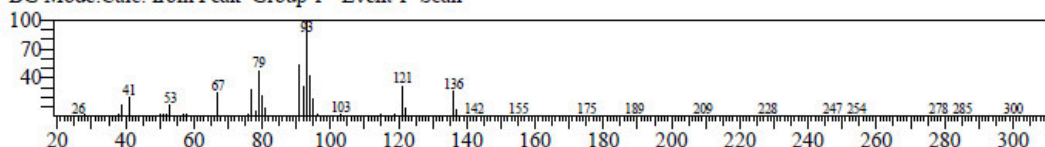


Hit#:5 Entry:6821 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:28634-89-1 MolWeight:136 RetIndex:873
CompName:Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)- \$\$ 2-Thujene \$\$.beta.-Thujene \$\$ 1-Isopropyl-4-me



<< Target >>

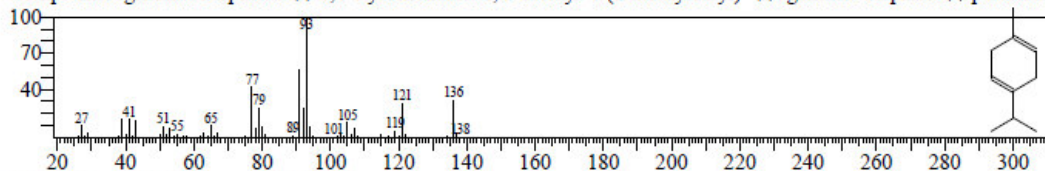
Line#:17 R.Time:25.460(Scan#:4493) MassPeaks:139
RawMode:Averaged 25.455-25.465(4492-4494) BasePeak:93.05(23169)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:6836 Library:NIST14s.lib

SI:83 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998

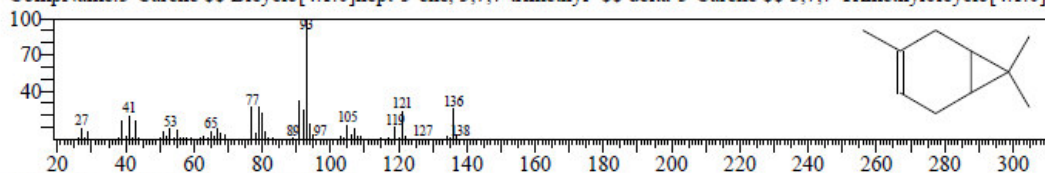
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Menth



Hit#:2 Entry:6843 Library:NIST14s.lib

SI:83 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948

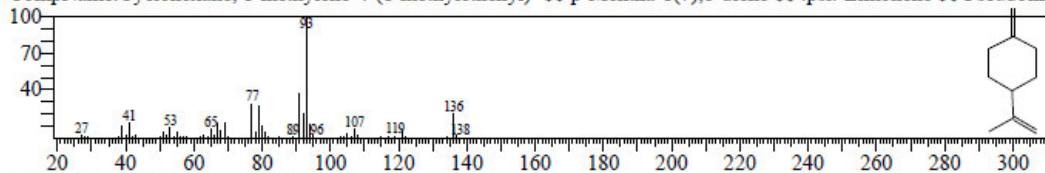
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]



Hit#:3 Entry:6833 Library:NIST14s.lib

SI:83 Formula:C10H16 CAS:499-97-8 MolWeight:136 RetIndex:1013

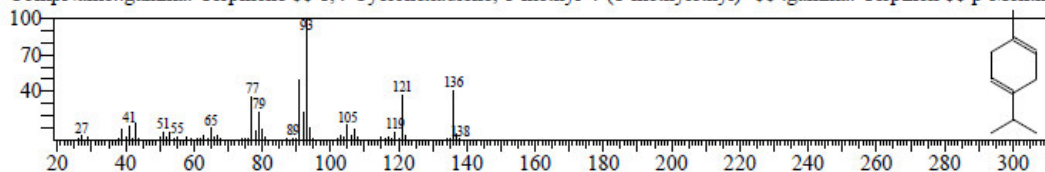
CompName:Cyclohexane, 1-methylene-4-(1-methylethenyl)- \$\$ p-Mentha-1(7),8-diene \$\$.psi.-Limonene \$\$ Pseudolin



Hit#:4 Entry:6846 Library:NIST14s.lib

SI:82 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998

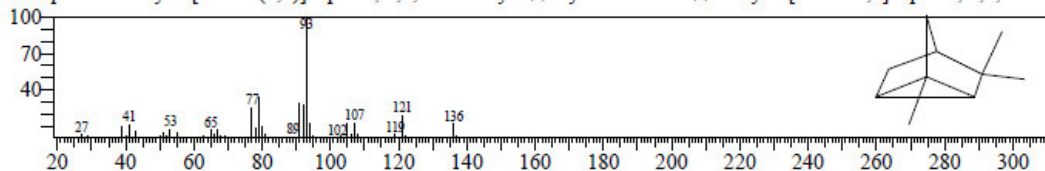
CompName:.gamma.-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$.gamma.-Terpinen \$\$ p-Menth



Hit#:5 Entry:6828 Library:NIST14s.lib

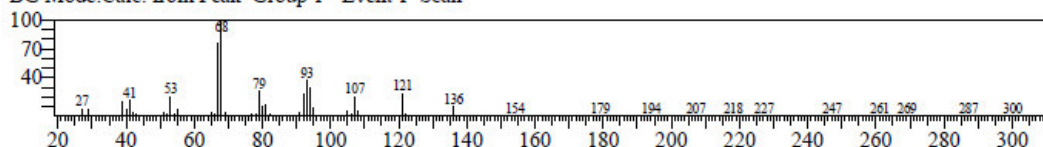
SI:82 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729

CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trin

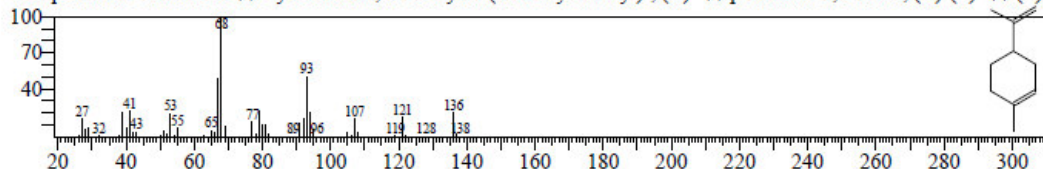


<< Target >>

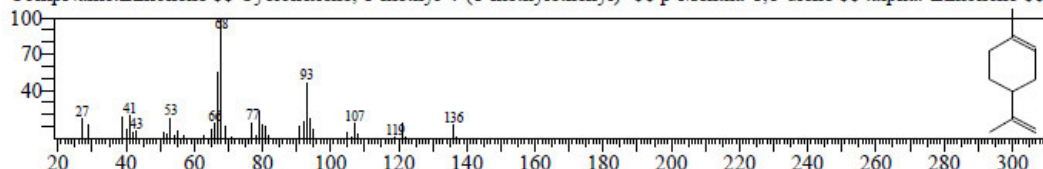
Line#:18 R.Time:25.545(Scan#:4510) MassPeaks:218
RawMode:Averaged 25.540-25.550(4509-4511) BasePeak:68.00(936954)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



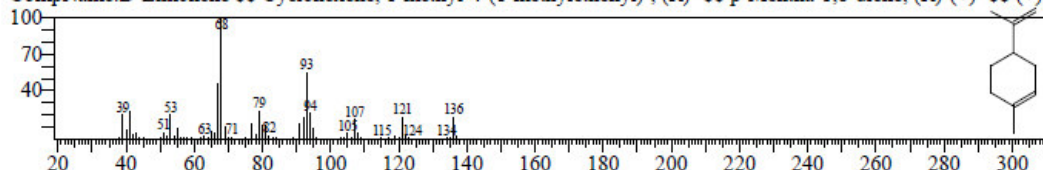
Hit#:1 Entry:6792 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



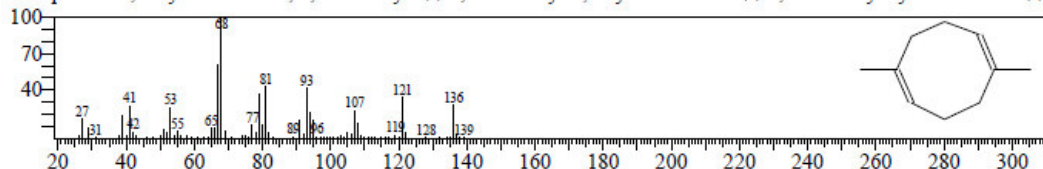
Hit#:2 Entry:6785 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



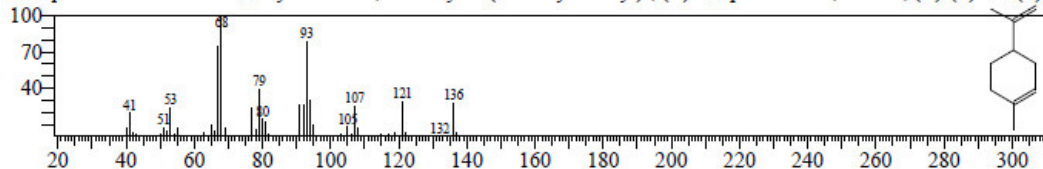
Hit#:3 Entry:6791 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



Hit#:4 Entry:6784 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:3760-14-3 MolWeight:136 RetIndex:1103
CompName:1,5-Cyclooctadiene, 1,5-dimethyl- \$\$ 1,5-Dimethyl-1,5-cyclooctadiene \$\$ 1,5-Dimethyl cyclooctadiene \$\$

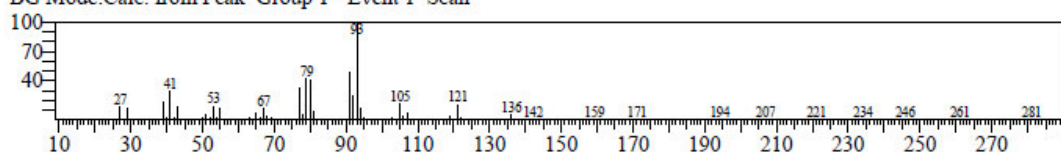


Hit#:5 Entry:6793 Library:NIST14s.lib
SI:89 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

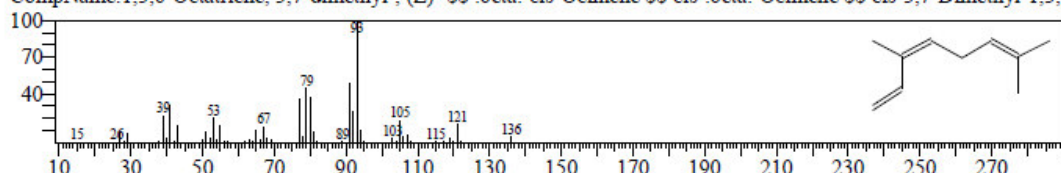


<< Target >>

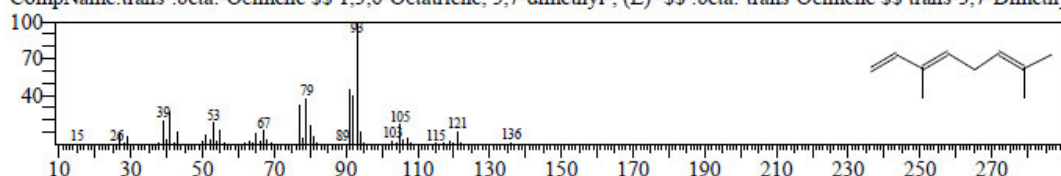
Line#:19 R.Time:29.930(Scan#:5387) MassPeaks:144
RawMode:Averaged 29.925-29.935(5386-5388) BasePeak:93.05(64471)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



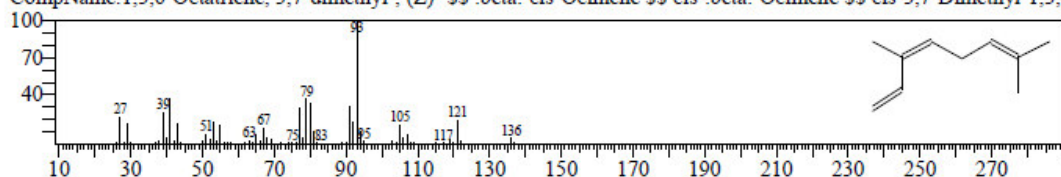
Hit#:1 Entry:6842 Library:NIST14s.lib
SI:97 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6



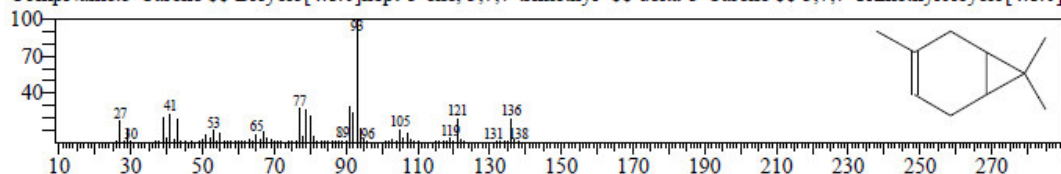
Hit#:2 Entry:6844 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethy



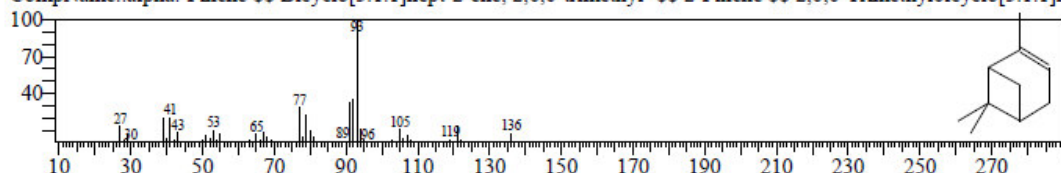
Hit#:3 Entry:6814 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6



Hit#:4 Entry:6838 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]

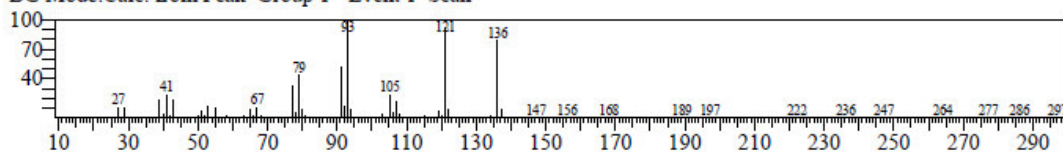


Hit#:5 Entry:6850 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h

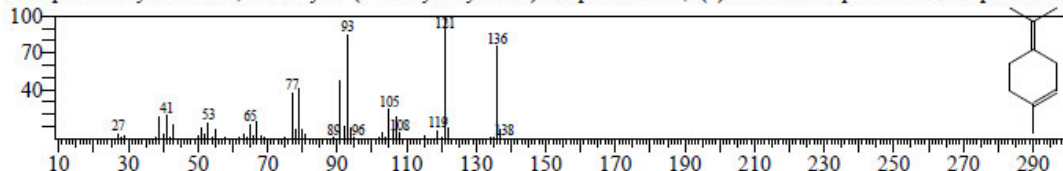


<< Target >>

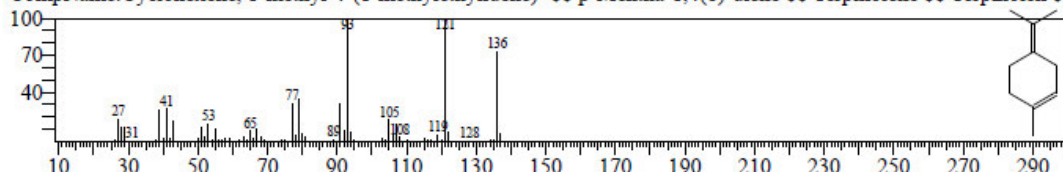
Line#:20 R.Time:35.960(Scan#:6593) MassPeaks:149
RawMode:Averaged 35.955-35.965(6592-6594) BasePeak:93.05(24002)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



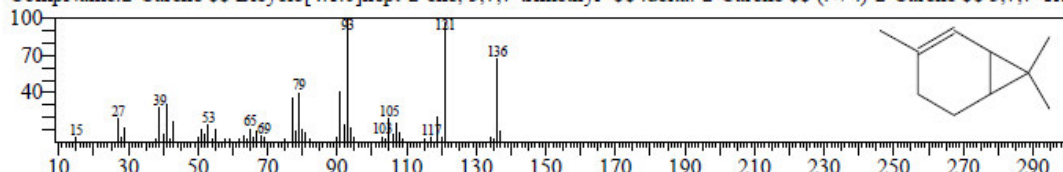
Hit#:1 Entry:6867 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



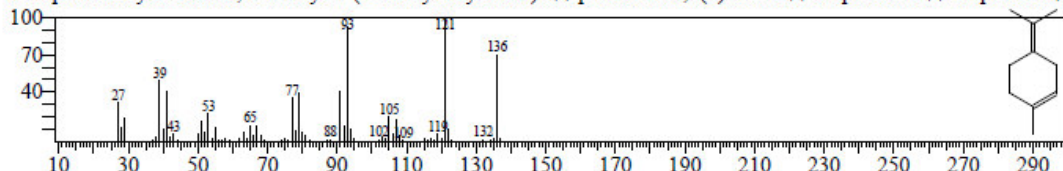
Hit#:2 Entry:6866 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



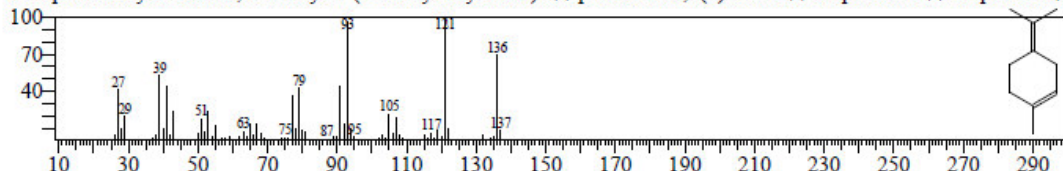
Hit#:3 Entry:6859 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:554-61-0 MolWeight:136 RetIndex:948
CompName:2-Carene \$\$ Bicyclo[4.1.0]hept-2-ene, 3,7,7-trimethyl- \$\$.delta.-2-Carene \$\$ (+/-)-2-Carene \$\$ 3,7,7-Tri



Hit#:4 Entry:6865 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$

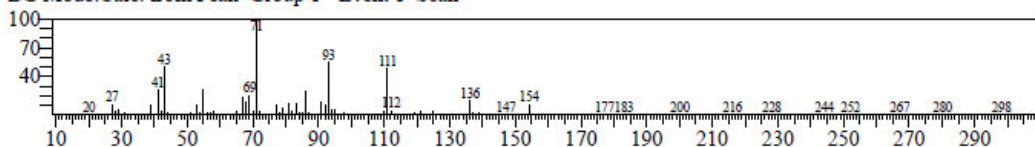


Hit#:5 Entry:6864 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$

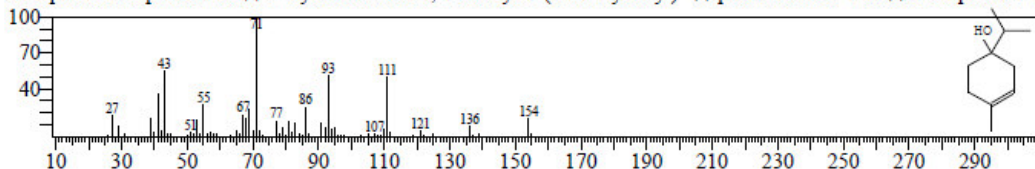


<< Target >>

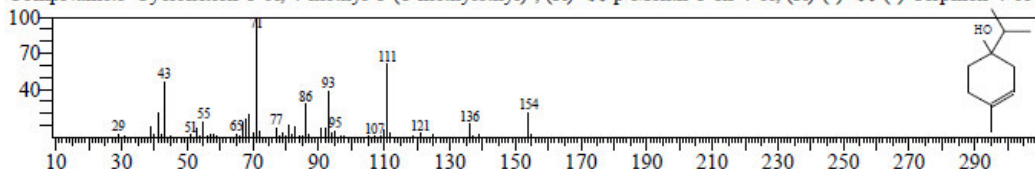
Line#:21 R.Time:44.330(Scan#:8267) MassPeaks:152
RawMode:Averaged 44.325-44.335(8266-8268) BasePeak:71.00(11611)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



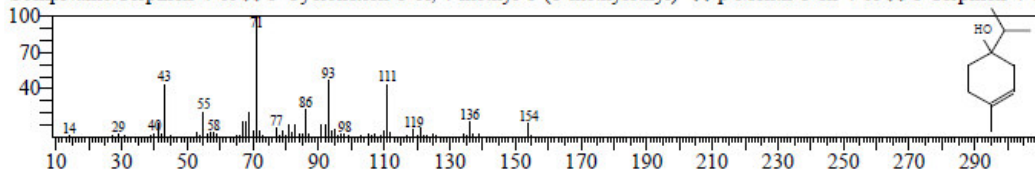
Hit#:1 Entry:10355 Library:NIST14s.lib
SI:94 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol



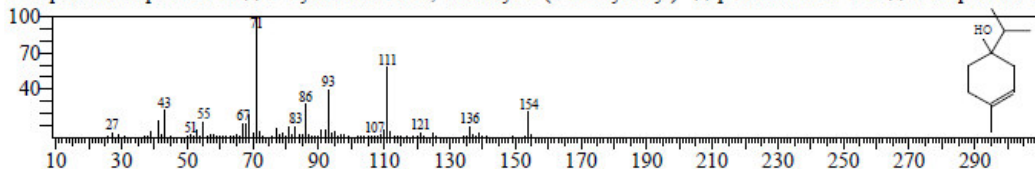
Hit#:2 Entry:10363 Library:NIST14s.lib
SI:92 Formula:C10H18O CAS:20126-76-5 MolWeight:154 RetIndex:1137
CompName:3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)-, (R)- \$ p-Menth-1-en-4-ol, (R)-(-) \$ (-)-Terpinen-4-ol \$



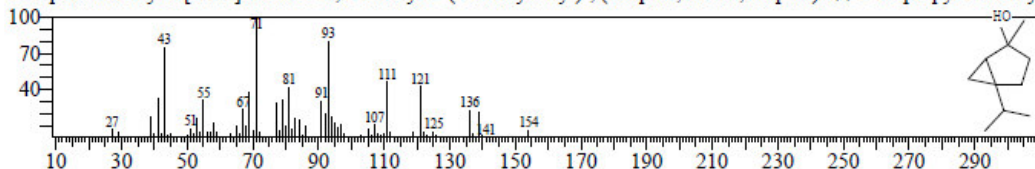
Hit#:3 Entry:10361 Library:NIST14s.lib
SI:92 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol



Hit#:4 Entry:10364 Library:NIST14s.lib
SI:90 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol

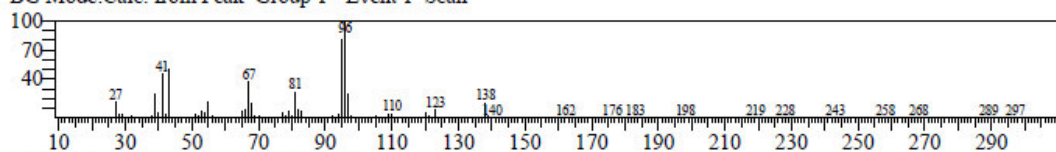


Hit#:5 Entry:10362 Library:NIST14s.lib
SI:83 Formula:C10H18O CAS:15537-55-0 MolWeight:154 RetIndex:1041
CompName:Bicyclo[3.1.0]hexan-2-ol, 2-methyl-5-(1-methylethyl)-, (1.alpha.,2.beta.,5.alpha.)- \$ 5-Isopropyl-2-methyl



<< Target >>

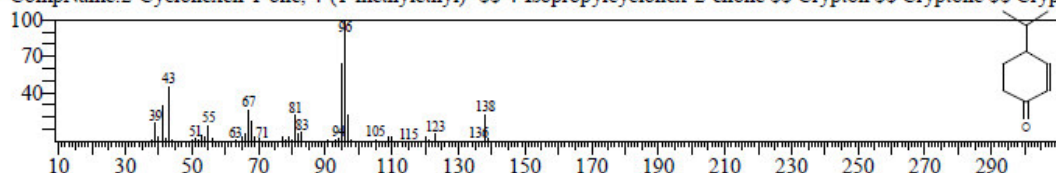
Line#:22 R Time:44.955(Scan#:8392) MassPeaks:184
RawMode:Averaged 44.950-44.960(8391-8393) BasePeak:96.00(9481)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:7190 Library:NIST14s.lib

SI:92 Formula:C9H14O CAS:500-02-7 MolWeight:138 RetIndex:1069

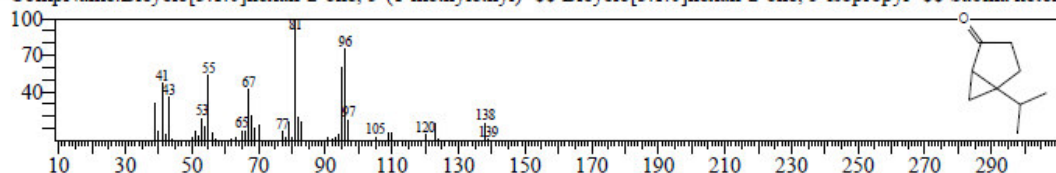
CompName:2-Cyclohexen-1-one, 4-(1-methylethyl)- \$\$ 4-Isopropylcyclohex-2-enone \$\$ Crypton \$\$ Cryptone \$\$ Crypt



Hit#:2 Entry:7180 Library:NIST14s.lib

SI:86 Formula:C9H14O CAS:513-20-2 MolWeight:138 RetIndex:1001

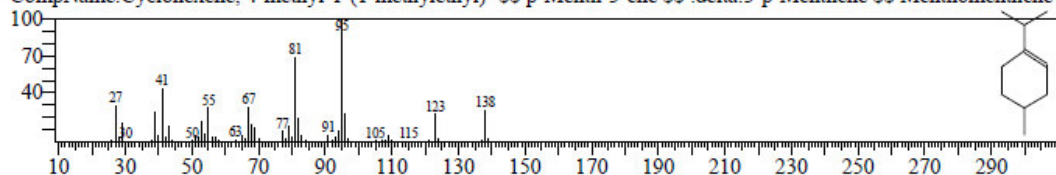
CompName:Bicyclo[3.1.0]hexan-2-one, 5-(1-methylethyl)- \$\$ Bicyclo[3.1.0]hexan-2-one, 5-isopropyl- \$\$ Sabina keton



Hit#:3 Entry:7243 Library:NIST14s.lib

SI:83 Formula:C10H18 CAS:500-00-5 MolWeight:138 RetIndex:987

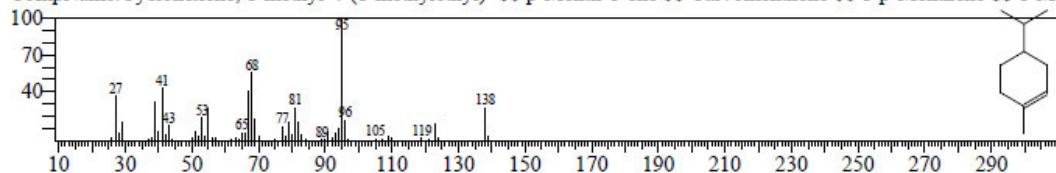
CompName:Cyclohexene, 4-methyl-1-(1-methylethyl)- \$\$ p-Menth-3-ene \$\$.delta.3-p-Menthene \$\$ Menthomenthene !



Hit#:4 Entry:7241 Library:NIST14s.lib

SI:83 Formula:C10H18 CAS:5502-88-5 MolWeight:138 RetIndex:987

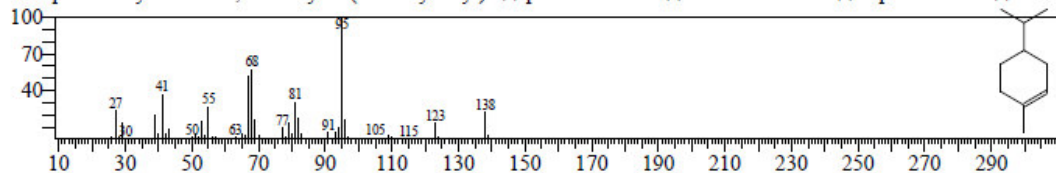
CompName:Cyclohexene, 1-methyl-4-(1-methylethyl)- \$\$ p-Menth-1-ene \$\$ Carvomenthene \$\$ 1-p-Menthene \$\$ 1-Me



Hit#:5 Entry:7242 Library:NIST14s.lib

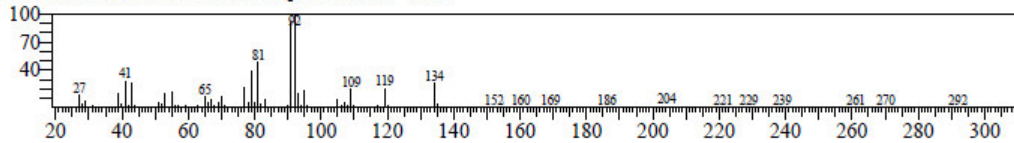
SI:83 Formula:C10H18 CAS:5502-88-5 MolWeight:138 RetIndex:987

CompName:Cyclohexene, 1-methyl-4-(1-methylethyl)- \$\$ p-Menth-1-ene \$\$ Carvomenthene \$\$ 1-p-Menthene \$\$ 1-Me

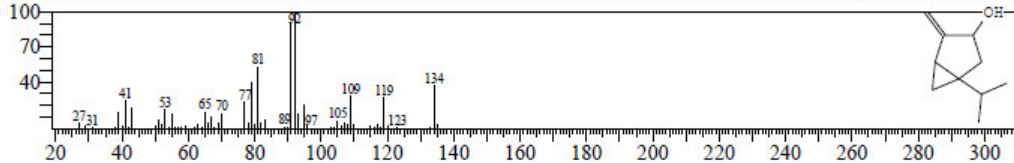


<< Target >>

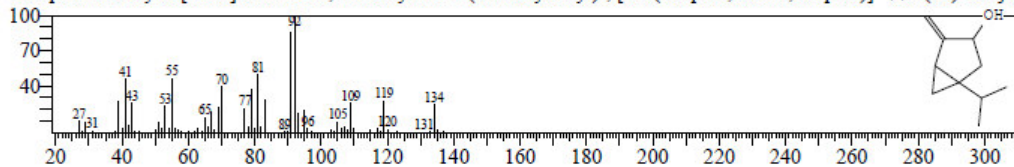
Line#:23 R.Time:46.140(Scan#:8629) MassPeaks:175
RawMode:Averaged 46.135-46.145(8628-8630) BasePeak:92.00(6015)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



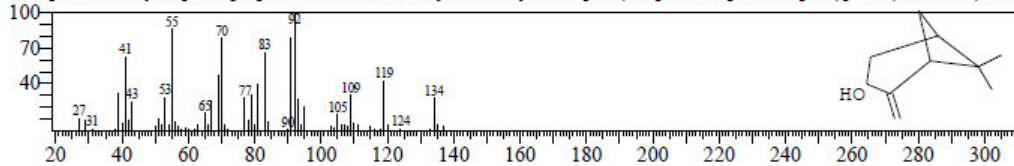
Hit#:1 Entry:9881 Library:NIST14s.lib
SI:95 Formula:C10H16O CAS:3310-02-9 MolWeight:152 RetIndex:1085
CompName:Bicyclo[3.1.0]hexan-3-ol, 4-methylene-1-(1-methylethyl)-, (1.alpha.,3.alpha.,5.alpha.)- \$\$ (1R,3R,5R)-1-Is



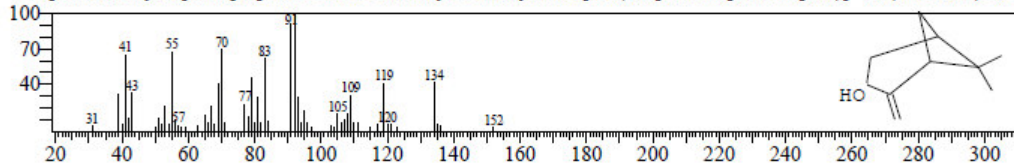
Hit#:2 Entry:9880 Library:NIST14s.lib
SI:91 Formula:C10H16O CAS:471-16-9 MolWeight:152 RetIndex:1085
CompName:Bicyclo[3.1.0]hexan-3-ol, 4-methylene-1-(1-methylethyl)-, [1S-(1.alpha.,3.beta.,5.alpha.)]- \$\$ 4(10)-Thujer



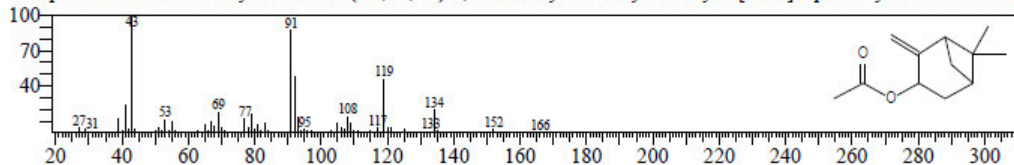
Hit#:3 Entry:9878 Library:NIST14s.lib
SI:83 Formula:C10H16O CAS:547-61-5 MolWeight:152 RetIndex:1131
CompName:Bicyclo[3.1.1]heptan-3-ol, 6,6-dimethyl-2-methylene-, [1S-(1.alpha.,3.alpha.,5.alpha.)]- \$\$ (1S,3R,5S)-6,6-



Hit#:4 Entry:9879 Library:NIST14s.lib
SI:83 Formula:C10H16O CAS:547-61-5 MolWeight:152 RetIndex:1131
CompName:Bicyclo[3.1.1]heptan-3-ol, 6,6-dimethyl-2-methylene-, [1S-(1.alpha.,3.alpha.,5.alpha.)]- \$\$ (1S,3R,5S)-6,6-

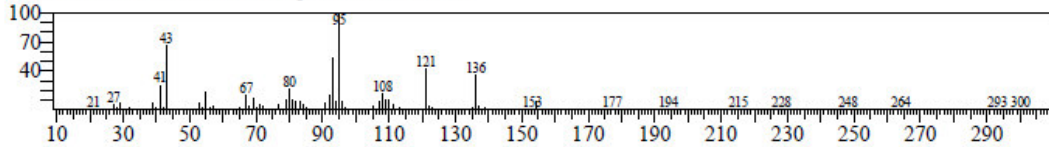


Hit#:5 Entry:17384 Library:NIST14s.lib
SI:83 Formula:C12H18O2 CAS:1686-15-3 MolWeight:194 RetIndex:0
CompName:trans-Pinocarvyl acetate \$\$ (1R,3S,5R)-6,6-Dimethyl-2-methylenebicyclo[3.1.1]heptan-3-yl acetate \$\$ Bicy

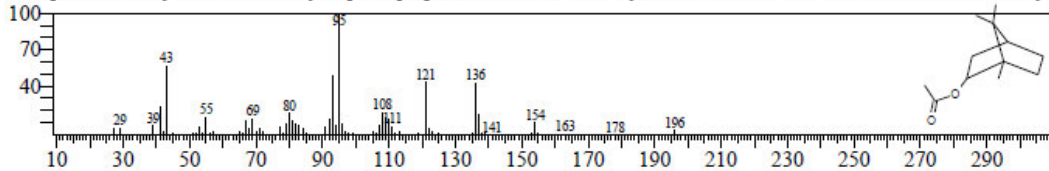


<< Target >>

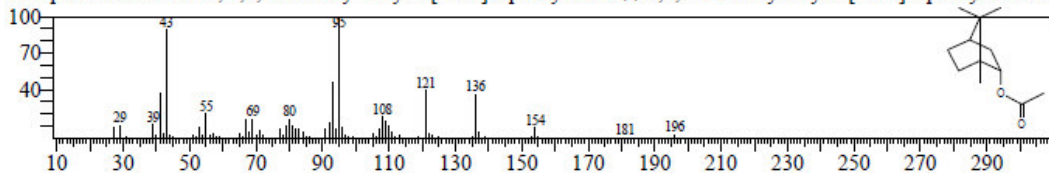
Line#:24 R.Time:51.305(Scan#:9662) MassPeaks:161
RawMode:Averaged 51.300-51.310(9661-9663) BasePeak:95.05(14681)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



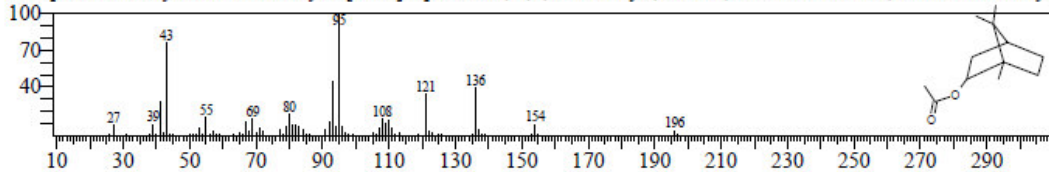
Hit#:1 Entry:17808 Library:NIST14s.lib
SI:95 Formula:C12H20O2 CAS:76-49-3 MolWeight:196 RetIndex:1277
CompName:Bornyl acetate \$\$ Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo- \$\$ Borneol, acetate \$\$ Bornyl



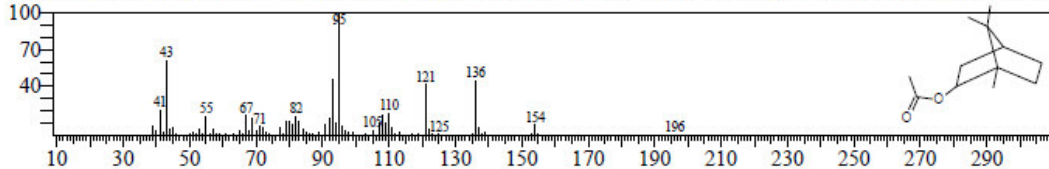
Hit#:2 Entry:17806 Library:NIST14s.lib
SI:95 Formula:C12H20O2 CAS:92618-89-8 MolWeight:196 RetIndex:1277
CompName:Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester \$\$ 1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acetate



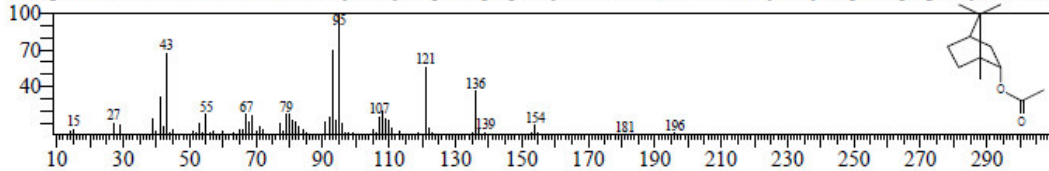
Hit#:3 Entry:17809 Library:NIST14s.lib
SI:95 Formula:C12H20O2 CAS:76-49-3 MolWeight:196 RetIndex:1277
CompName:Bornyl acetate \$\$ Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo- \$\$ Borneol, acetate \$\$ Bornyl



Hit#:4 Entry:17807 Library:NIST14s.lib
SI:93 Formula:C12H20O2 CAS:125-12-2 MolWeight:196 RetIndex:1277
CompName:Isobornyl acetate \$\$ Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, exo- \$\$ Isoborneol, acetate \$\$ Ace

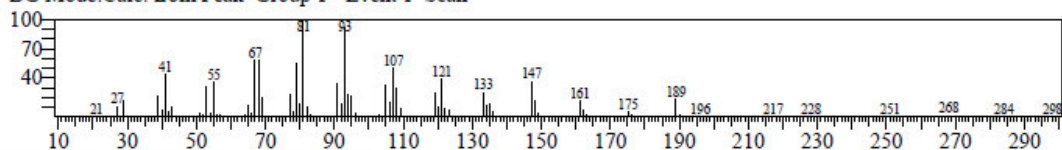


Hit#:5 Entry:17814 Library:NIST14s.lib
SI:93 Formula:C12H20O2 CAS:92618-89-8 MolWeight:196 RetIndex:1277
CompName:Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester \$\$ 1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acetate

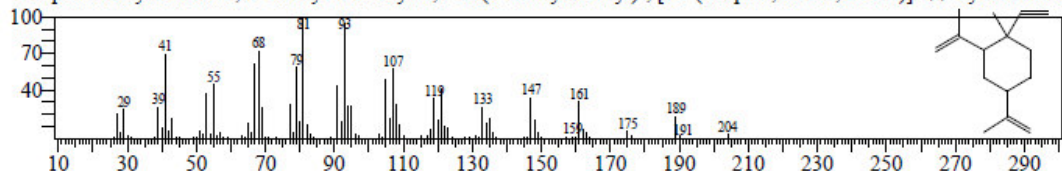


<< Target >>

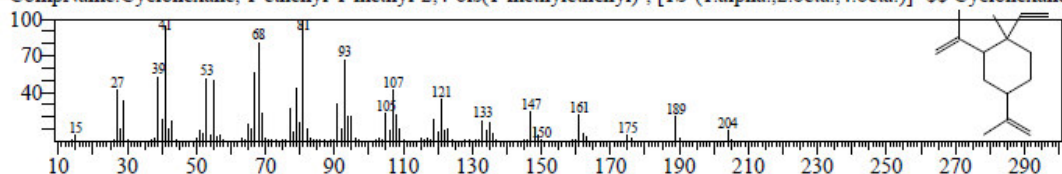
Line#:25 R.Time:56.615(Scan#:10724) MassPeaks:152
RawMode:Averaged 56.610-56.620(10723-10725) BasePeak:81.00(3974)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



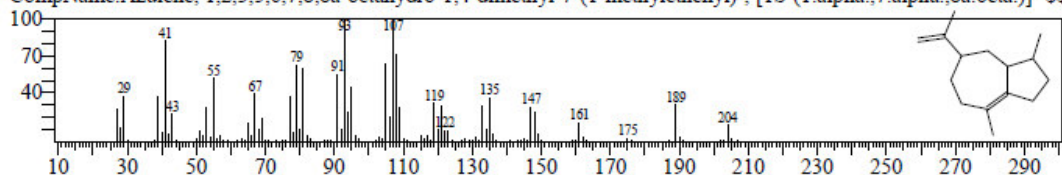
Hit#:1 Entry:19071 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:515-13-9 MolWeight:204 RetIndex:1398
CompName:Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-, [1S-(1.alpha.,2.beta.,4.beta.)]- \$\$ Cyclohexane



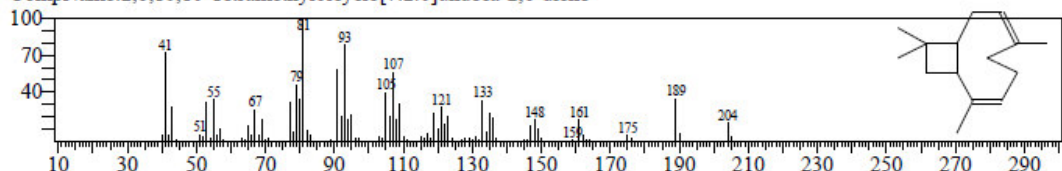
Hit#:2 Entry:19067 Library:NIST14s.lib
SI:91 Formula:C15H24 CAS:515-13-9 MolWeight:204 RetIndex:1398
CompName:Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl)-, [1S-(1.alpha.,2.beta.,4.beta.)]- \$\$ Cyclohexane



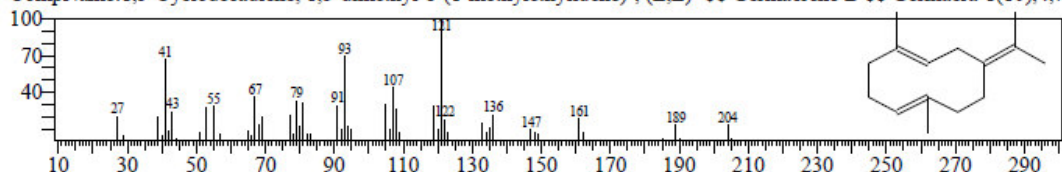
Hit#:3 Entry:19126 Library:NIST14s.lib
SI:87 Formula:C15H24 CAS:3691-11-0 MolWeight:204 RetIndex:1490
CompName:Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1.alpha.,7.alpha.,8a.beta.)]- \$\$



Hit#:4 Entry:19070 Library:NIST14s.lib
SI:87 Formula:C15H24 CAS:136296-37-2 MolWeight:204 RetIndex:1499
CompName:2,6,10,10-Tetramethylbicyclo[7.2.0]undeca-2,6-diene

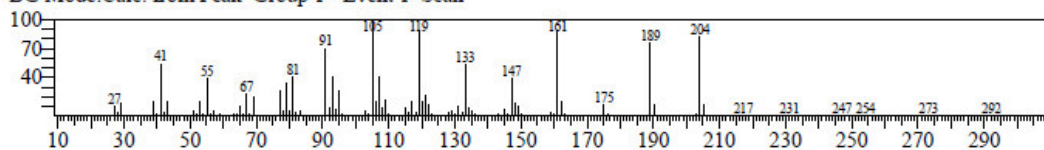


Hit#:5 Entry:19159 Library:NIST14s.lib
SI:87 Formula:C15H24 CAS:15423-57-1 MolWeight:204 RetIndex:1603
CompName:1,5-Cyclodecadiene, 1,5-dimethyl-8-(1-methylethylidene)-, (E,E)- \$\$ Germacrene B \$\$ Germacra-1(10),4,7

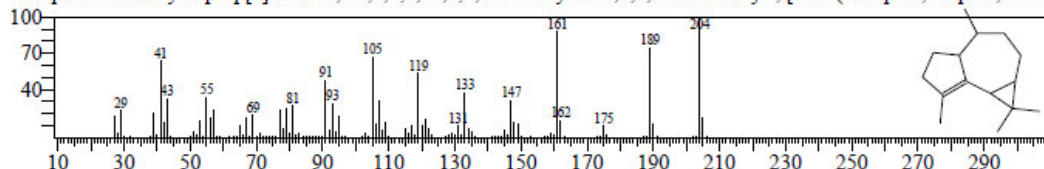


<< Target >>

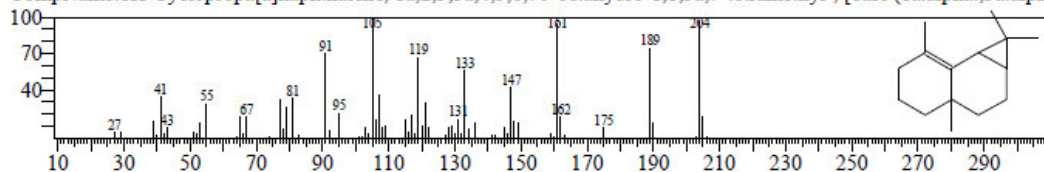
Line#:26 R.Time:57.395(Scan#:10880) MassPeaks:197
RawMode:Averaged 57.390-57.400(10879-10881) BasePeak:105.05(8838)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



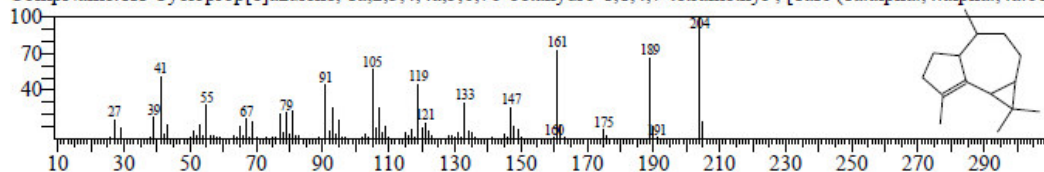
Hit#:1 Entry:19232 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:489-40-7 MolWeight:204 RetIndex:1419
CompName:1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.alpha.,4a.beta



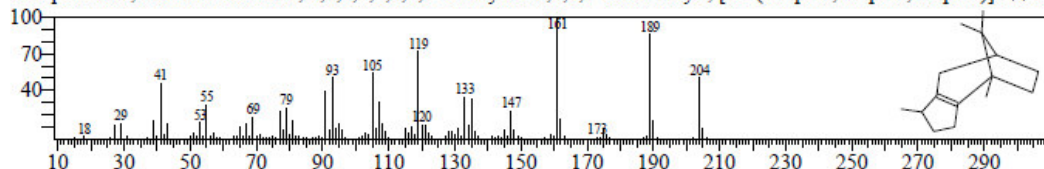
Hit#:2 Entry:19124 Library:NIST14s.lib
SI:91 Formula:C15H24 CAS:489-29-2 MolWeight:204 RetIndex:1432
CompName:1H-Cyclopropa[a]naphthalene, 1a,2,3,3a,4,5,6,7b-octahydro-1,1,3a,7-tetramethyl-, [1aR-(1a.alpha.,3a.alpha



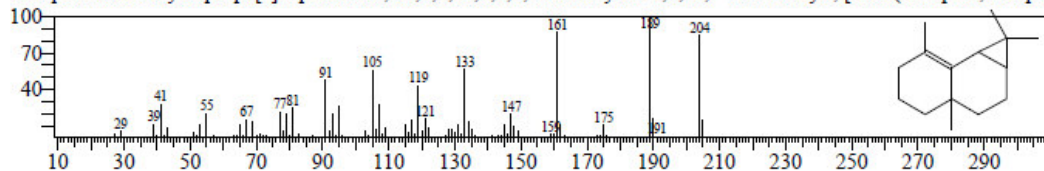
Hit#:3 Entry:19233 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:489-40-7 MolWeight:204 RetIndex:1419
CompName:1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-tetramethyl-, [1aR-(1a.alpha.,4.alpha.,4a.beta



Hit#:4 Entry:19206 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:514-51-2 MolWeight:204 RetIndex:1432
CompName:4,7-Methanoazulene, 1,2,3,4,5,6,7,8-octahydro-1,4,9,9-tetramethyl-, [1S-(1.alpha.,4.alpha.,7.alpha.)]-\$- \$\$.b

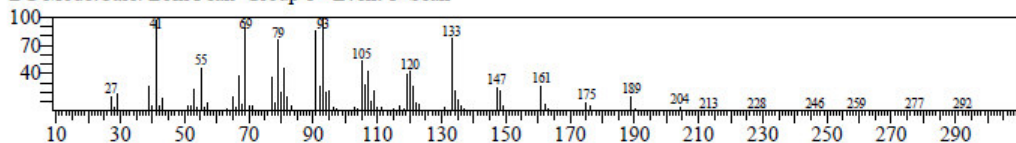


Hit#:5 Entry:19224 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:489-29-2 MolWeight:204 RetIndex:1432
CompName:1H-Cyclopropa[a]naphthalene, 1a,2,3,3a,4,5,6,7b-octahydro-1,1,3a,7-tetramethyl-, [1aR-(1a.alpha.,3a.alpha

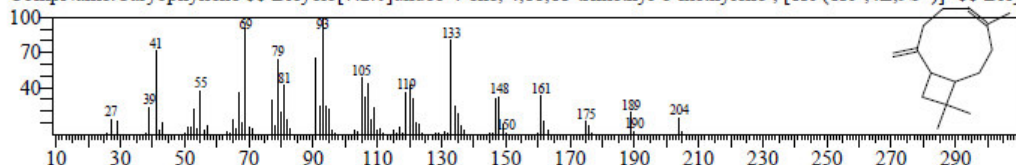


<< Target >>

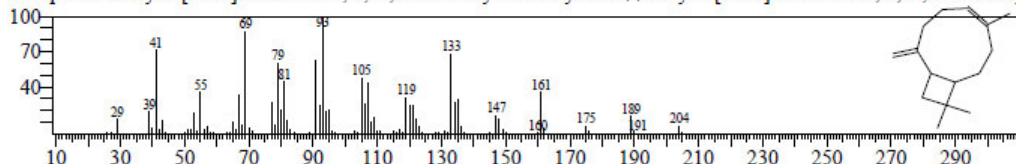
Line#:27 R.Time:57.825(Scan#:10966) MassPeaks:216
RawMode:Averaged 57.820-57.830(10965-10967) BasePeak:93.05(14753)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



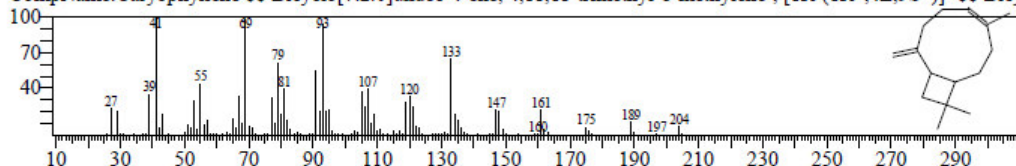
Hit#:1 Entry:19087 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



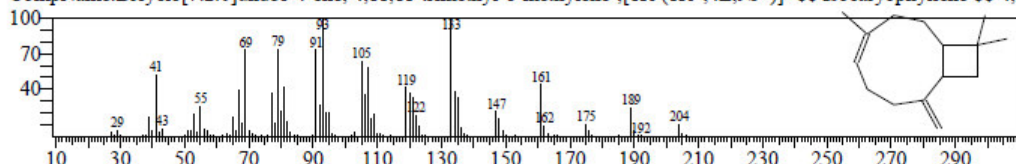
Hit#:2 Entry:19086 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:13877-93-5 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene- \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethy



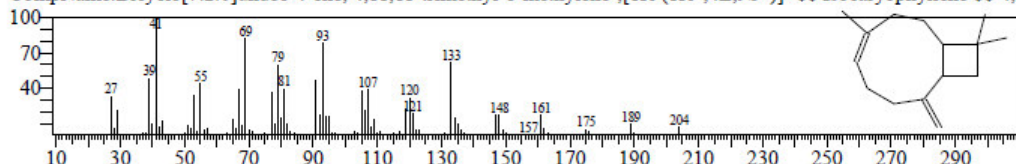
Hit#:3 Entry:19033 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



Hit#:4 Entry:19094 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1



Hit#:5 Entry:19032 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1

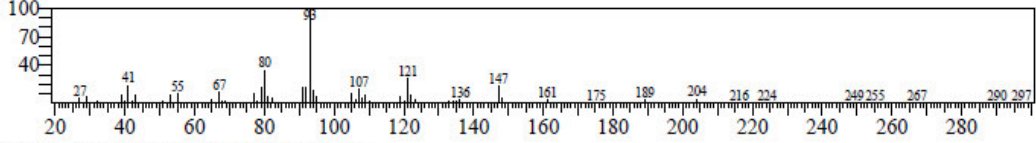


<< Target >>

Line#:28 R.Time:59.360(Scan#:11273) MassPeaks:188

RawMode:Averaged 59.355-59.365(11272-11274) BasePeak:93.05(13700)

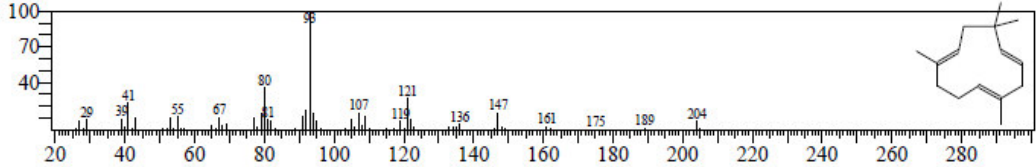
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19088 Library:NIST14s.lib

SI:96 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

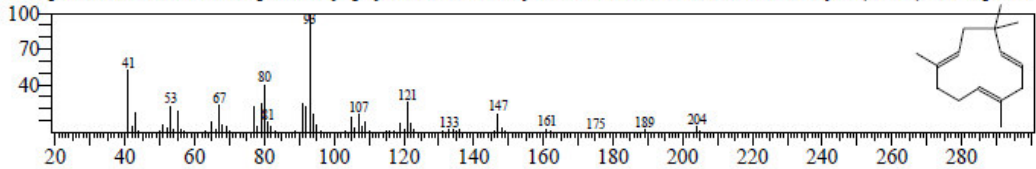
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:2 Entry:19082 Library:NIST14s.lib

SI:89 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

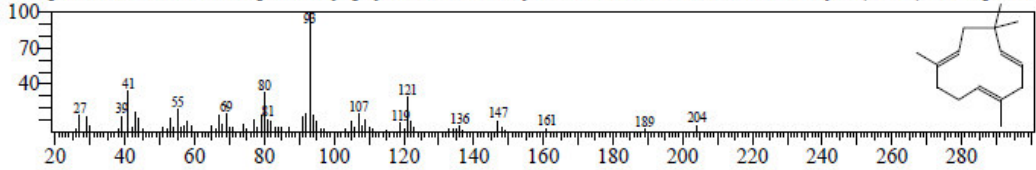
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:3 Entry:19081 Library:NIST14s.lib

SI:86 Formula:C15H24 CAS:6753-98-6 MolWeight:204 RetIndex:1579

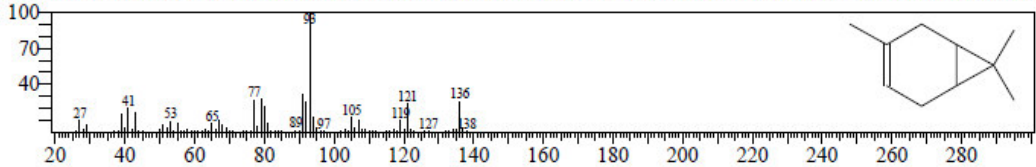
CompName:Humulene \$\$.alpha.-Caryophyllene \$\$ 1,4,8-Cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)- \$\$.alpha.-F



Hit#:4 Entry:6843 Library:NIST14s.lib

SI:85 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948

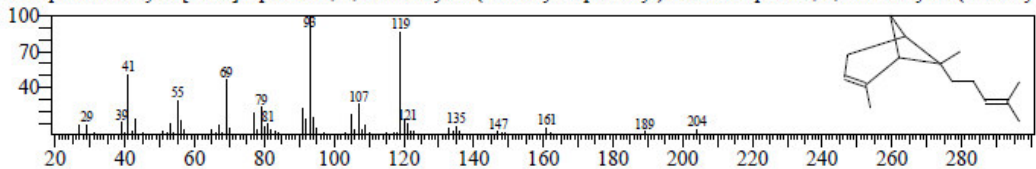
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]



Hit#:5 Entry:19091 Library:NIST14s.lib

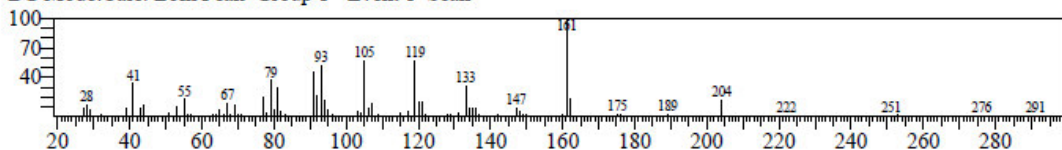
SI:83 Formula:C15H24 CAS:17699-05-7 MolWeight:204 RetIndex:1430

CompName:Bicyclo[3.1.1]hept-2-ene, 2,6-dimethyl-6-(4-methyl-3-pentenyl)- \$\$ 2-Norpinene, 2,6-dimethyl-6-(4-methy



<< Target >>

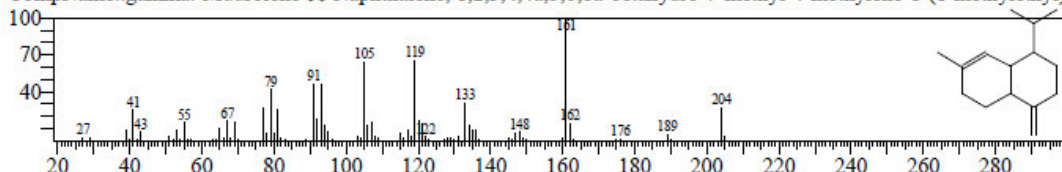
Line#:29 R.Time:60.400(Scan#:11481) MassPeaks:178
RawMode:Averaged 60.395-60.405(11480-11482) BasePeak:161.10(2873)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19197 Library:NIST14s.lib

SI:93 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435

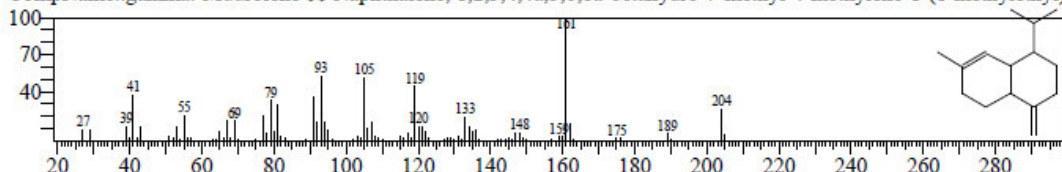
CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:2 Entry:19180 Library:NIST14s.lib

SI:92 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435

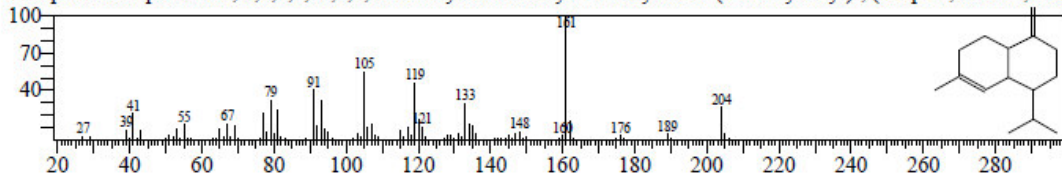
CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:3 Entry:19193 Library:NIST14s.lib

SI:90 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RefIndex:1435

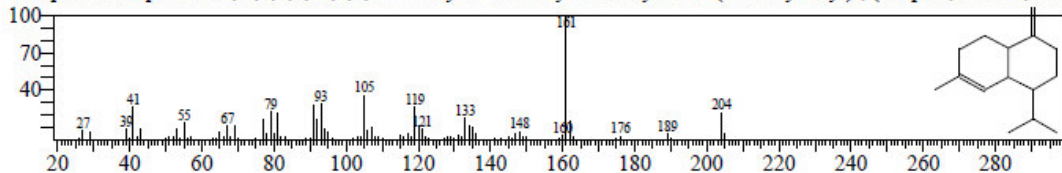
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)



Hit#:4 Entry:19189 Library:NIST14s.lib

SI:88 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RefIndex:1435

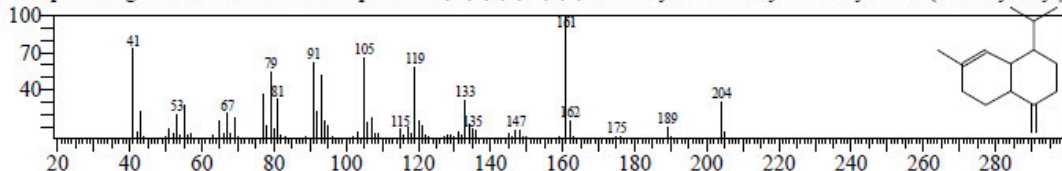
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)



Hit#:5 Entry:19174 Library:NIST14s.lib

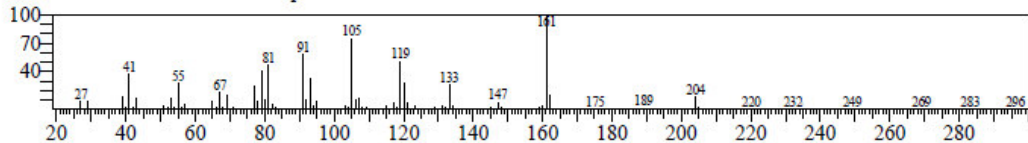
SI:88 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435

CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-

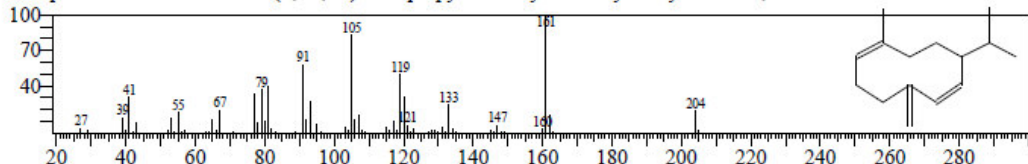


<< Target >>

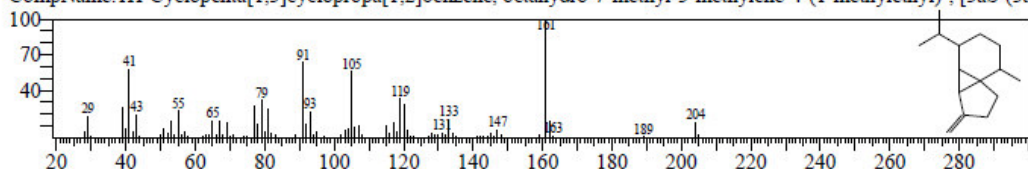
Line#:30 R.Time:60.580(Scan#:11517) MassPeaks:199
RawMode:Averaged 60.575-60.585(11516-11518) BasePeak:161.10(11559)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



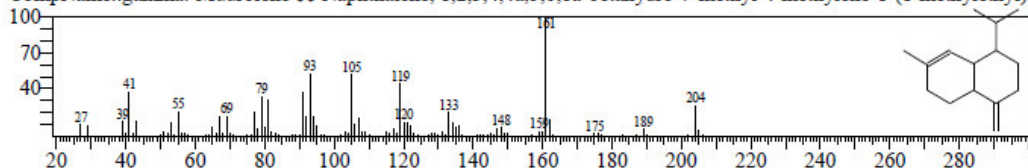
Hit#:1 Entry:19185 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:23986-74-5 MolWeight:204 RefIndex:1515
CompName:Germacrene D \$\$ (S,1Z,6Z)-8-Isopropyl-1-methyl-5-methylenecyclodeca-1,6-diene \$\$ D-Germacrene \$\$ 1



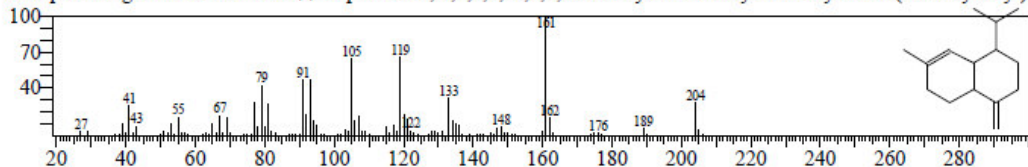
Hit#:2 Entry:19178 Library:NIST14s.lib
SI:90 Formula:C15H24 CAS:13744-15-5 MolWeight:204 RefIndex:1339
CompName:1H-Cyclopenta[1,3]cyclopropano[1,2]benzene, octahydro-7-methyl-3-methylene-4-(1-methylethyl)-, [3aS-(3a



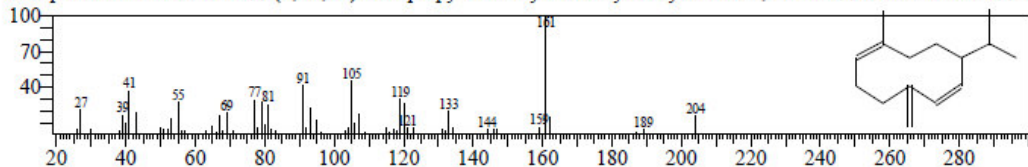
Hit#:3 Entry:19180 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435
CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:4 Entry:19197 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435
CompName:.gamma.-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:5 Entry:19184 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:23986-74-5 MolWeight:204 RefIndex:1515
CompName:Germacrene D \$\$ (S,1Z,6Z)-8-Isopropyl-1-methyl-5-methylenecyclodeca-1,6-diene \$\$ D-Germacrene \$\$ 1

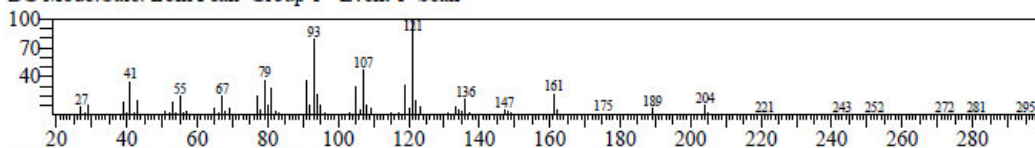


<< Target >>

Line#:31 R.Time:61.260(Scan#:11653) MassPeaks:192

RawMode:Averaged 61.255-61.265(11652-11654) BasePeak:121.10(49264)

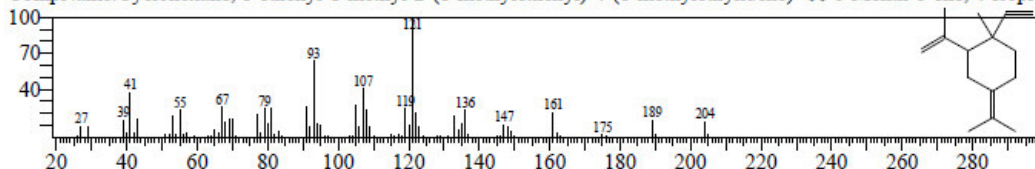
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19161 Library:NIST14s.lib

SI:92 Formula:C15H24 CAS:3242-08-8 MolWeight:204 RetIndex:1431

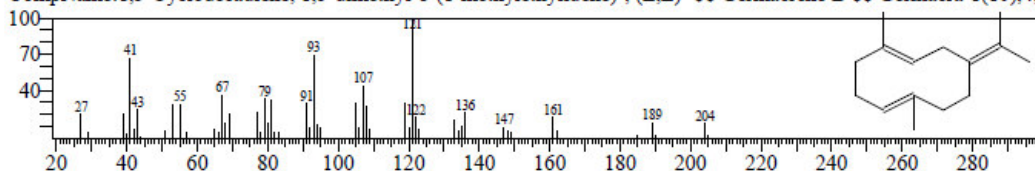
CompName:Cyclohexane, 1-ethenyl-1-methyl-2-(1-methylethenyl)-4-(1-methylethylidene)- \$\$ o-Menth-8-ene, 4-isopro



Hit#:2 Entry:19159 Library:NIST14s.lib

SI:92 Formula:C15H24 CAS:15423-57-1 MolWeight:204 RetIndex:1603

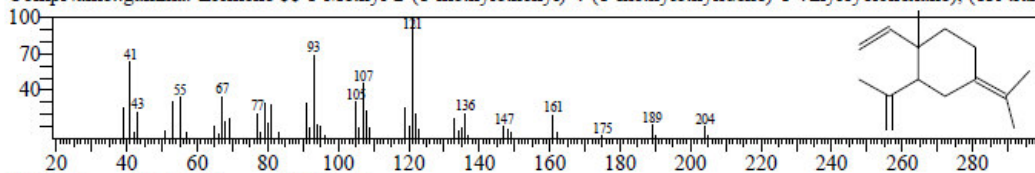
CompName:1,5-Cyclodecadiene, 1,5-dimethyl-8-(1-methylethylidene)-, (E,E)- \$\$ Germacrene B \$\$ Germacra-1(10),4,7



Hit#:3 Entry:19158 Library:NIST14s.lib

SI:90 Formula:C15H24 CAS:29873-99-2 MolWeight:204 RetIndex:1431

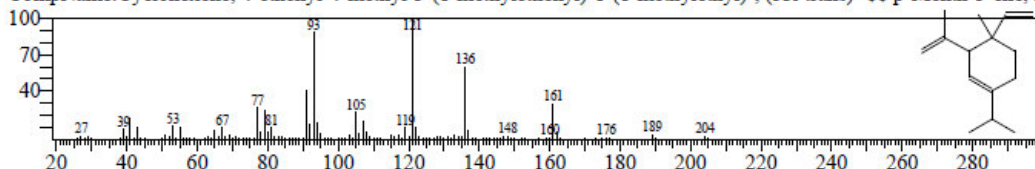
CompName:.gamma.-Elemene \$\$ 1-Methyl-2-(1-methylethenyl)-4-(1-methylethylidene)-1-vinylcyclohexane), (1R-trans



Hit#:4 Entry:19162 Library:NIST14s.lib

SI:87 Formula:C15H24 CAS:20307-84-0 MolWeight:204 RetIndex:1377

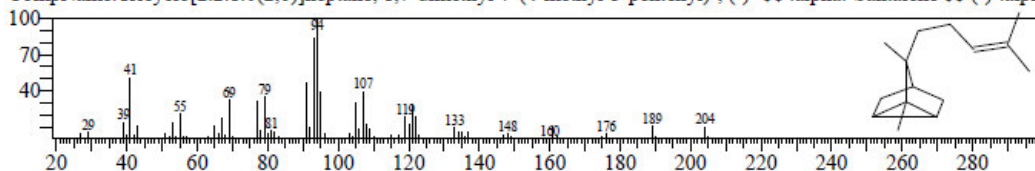
CompName:Cyclohexene, 4-ethenyl-4-methyl-3-(1-methylethenyl)-1-(1-methylethyl)-, (3R-trans)- \$\$ p-Menth-3-ene, 2-



Hit#:5 Entry:19098 Library:NIST14s.lib

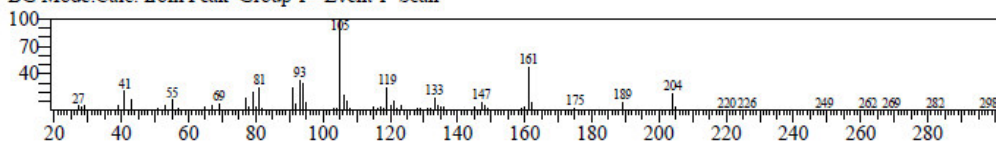
SI:85 Formula:C15H24 CAS:512-61-8 MolWeight:204 RetIndex:1211

CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,7-dimethyl-7-(4-methyl-3-pentenyl)-, (-)- \$\$ alpha.-Santalene \$\$ (-)-.alph

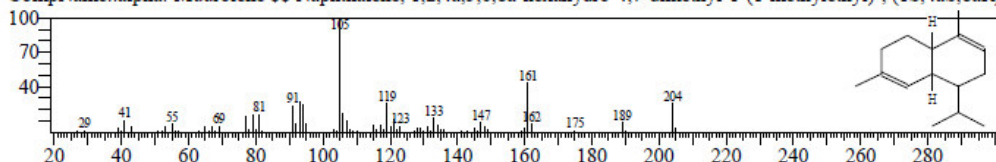


<< Target >>

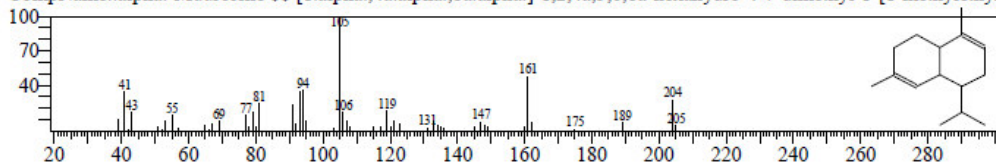
Line#:32 R.Time:61.440(Scan#:11689) MassPeaks:176
RawMode:Averaged 61.435-61.445(11688-11690) BasePeak:105.05(11507)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



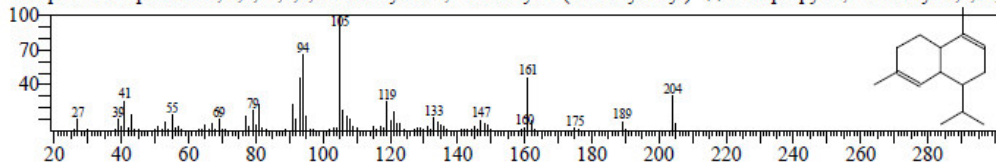
Hit#:1 Entry:19119 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:10208-80-7 MolWeight:204 RefIndex:1440
CompName:.alpha.-Muurolene \$\$ Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S,4aS,8aR)



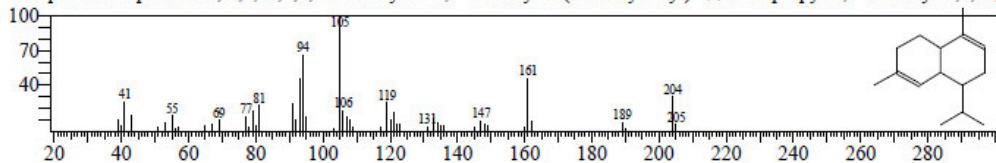
Hit#:2 Entry:19120 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:31983-22-9 MolWeight:204 RefIndex:1440
CompName:.alpha.-Muurolene \$\$ [1.alpha.,4a.alpha.,8a.alpha.]-1,2,4a,5,6,8a-hexahydro-4-7-dimethyl-1-[1-methylethyl



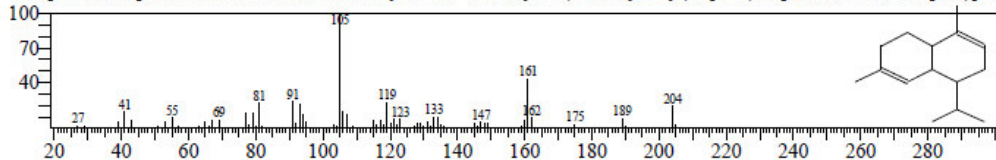
Hit#:3 Entry:19112 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:483-75-0 MolWeight:204 RefIndex:1440
CompName:Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)- \$\$ 1-Isopropyl-4,7-dimethyl-1,2,4a,



Hit#:4 Entry:19111 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:483-75-0 MolWeight:204 RefIndex:1440
CompName:Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)- \$\$ 1-Isopropyl-4,7-dimethyl-1,2,4a,

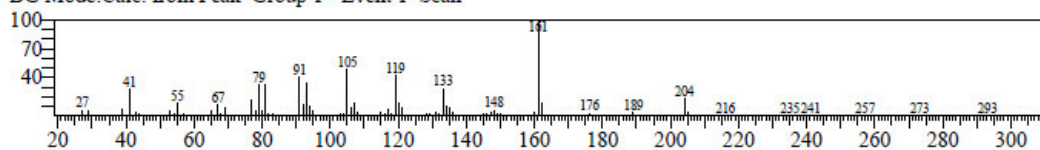


Hit#:5 Entry:19118 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:24406-05-1 MolWeight:204 RefIndex:1440
CompName:Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, [1S-(1.alpha.,4a.beta.,8a.alpha.)]-5

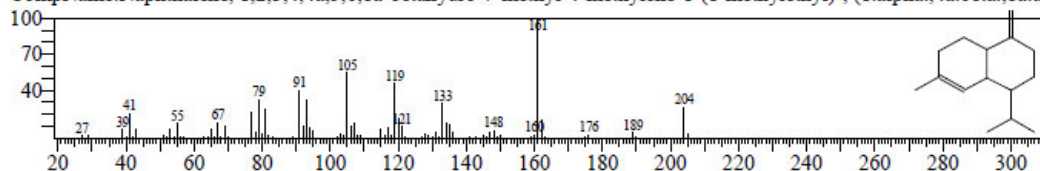


<< Target >>

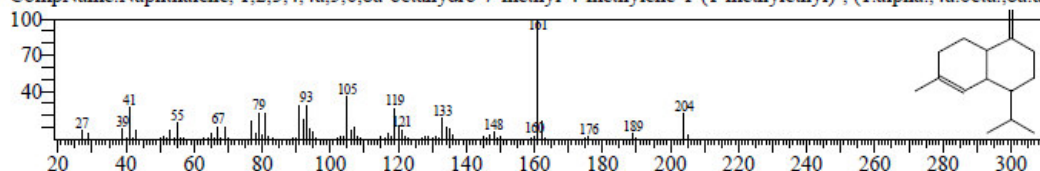
Line#:33 R.Time:61.995(Scan#:11800) MassPeaks:188
RawMode:Averaged 61.990-62.000(11799-11801) BasePeak:161.10(6876)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



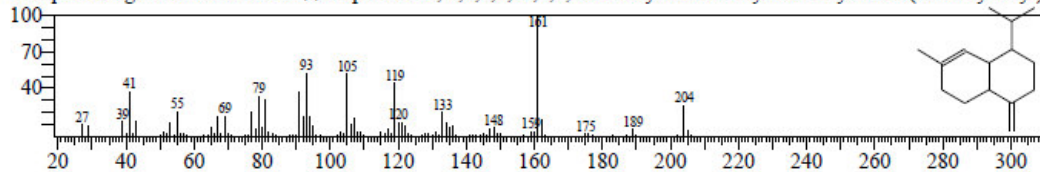
Hit#:1 Entry:19193 Library:NIST14s.lib
SI:95 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RefIndex:1435
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)



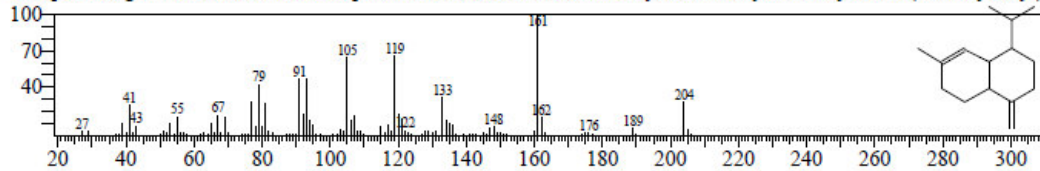
Hit#:2 Entry:19189 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:39029-41-9 MolWeight:204 RefIndex:1435
CompName:Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-, (1.alpha.,4a.beta.,8a.alpha.)



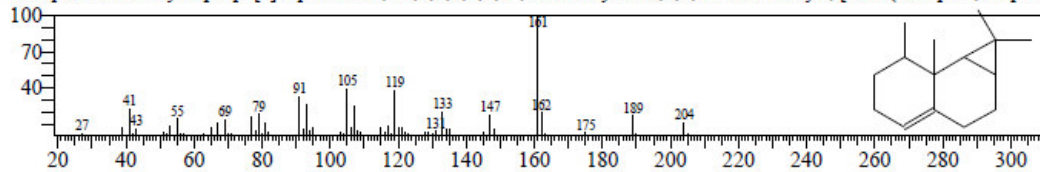
Hit#:3 Entry:19180 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435
CompName:gamma-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:4 Entry:19197 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:30021-74-0 MolWeight:204 RefIndex:1435
CompName:gamma-Muurolene \$\$ Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene-1-(1-methylethyl)-



Hit#:5 Entry:19190 Library:NIST14s.lib
SI:89 Formula:C15H24 CAS:17334-55-3 MolWeight:204 RefIndex:1403
CompName:1H-Cyclopropa[a]naphthalene, 1a,2,3,5,6,7,7a,7b-octahydro-1,1,7,7a-tetramethyl-, [1aR-(1a.alpha.,7.alpha.)

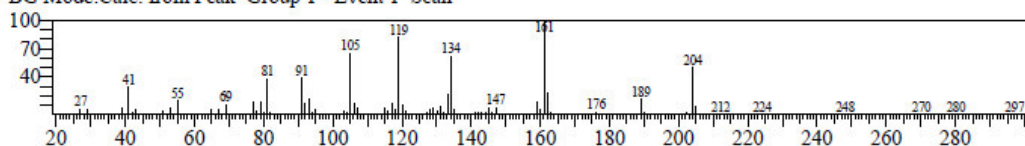


<< Target >>

Line#:34 R.Time:62.395(Scan#:11880) MassPeaks:196

RawMode:Averaged 62.390-62.400(11879-11881) BasePeak:161.10(27184)

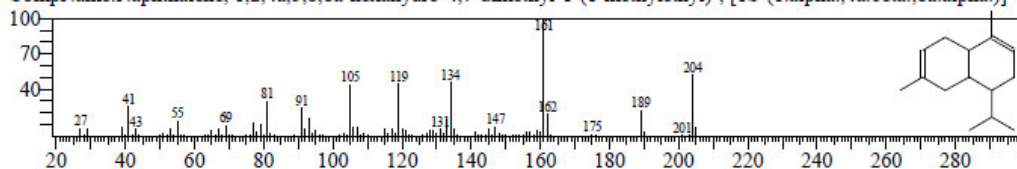
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:19214 Library:NIST14s.lib

SI:92 Formula:C15H24 CAS:523-47-7 MolWeight:204 RetIndex:1440

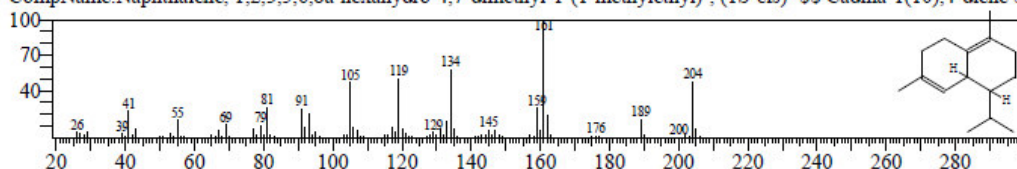
CompName:Naphthalene, 1,2,4a,5,8,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, [1S-(1.alpha.,4a.beta.,8a.alpha.)]-



Hit#:2 Entry:19201 Library:NIST14s.lib

SI:92 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469

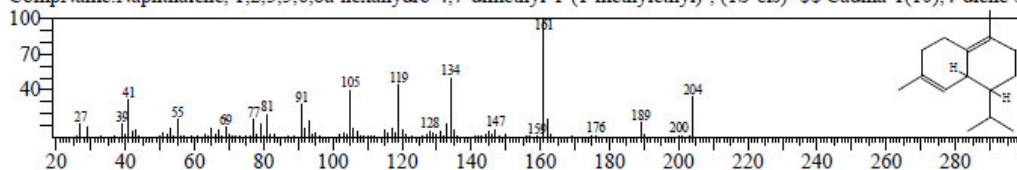
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)-



Hit#:3 Entry:19202 Library:NIST14s.lib

SI:90 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469

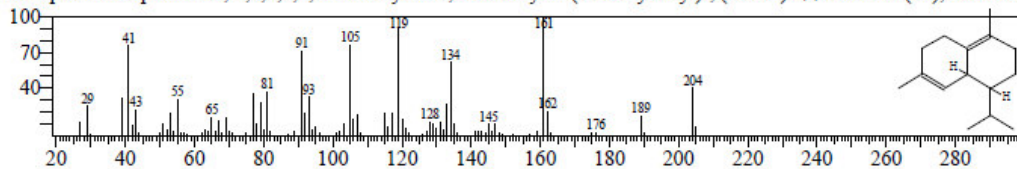
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)-



Hit#:4 Entry:19198 Library:NIST14s.lib

SI:87 Formula:C15H24 CAS:483-76-1 MolWeight:204 RetIndex:1469

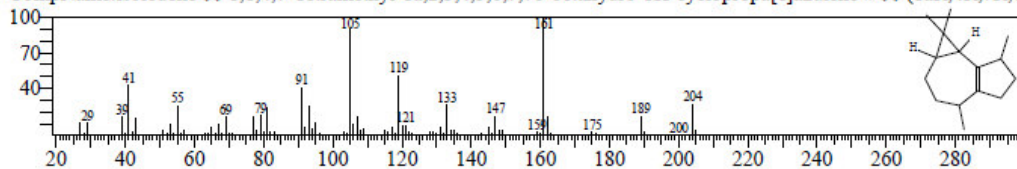
CompName:Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)-



Hit#:5 Entry:19194 Library:NIST14s.lib

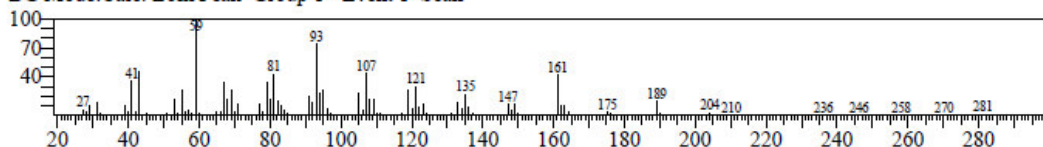
SI:87 Formula:C15H24 CAS:95910-36-4 MolWeight:204 RetIndex:0

CompName:isoledene

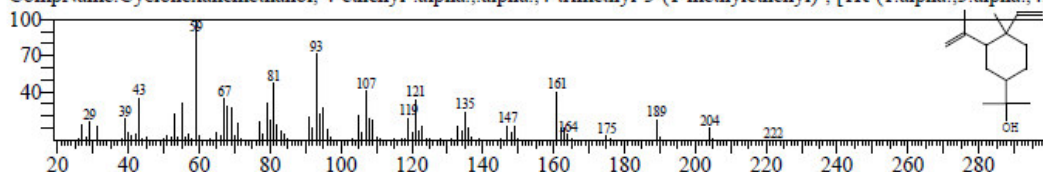


<< Target >>

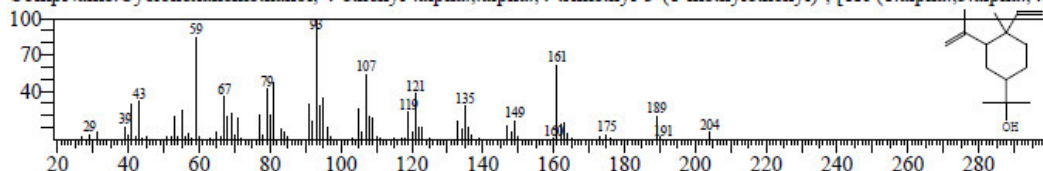
Line#:35 R.Time:63.460(Scan#:12093) MassPeaks:209
RawMode:Averaged 63.455-63.465(12092-12094) BasePeak:59.00(4887)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



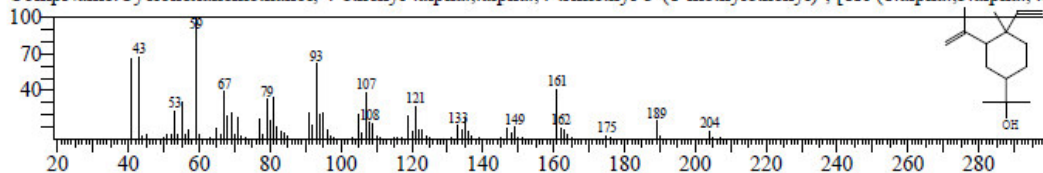
Hit#:1 Entry:21643 Library:NIST14s.lib
SI:94 Formula:C15H26O CAS:639-99-6 MolWeight:222 RefIndex:1522
CompName:Cyclohexanemethanol, 4-ethenyl-,alpha.,alpha.,4-trimethyl-3-(1-methylethenyl)-, [1R-(1.alpha.,3.alpha.,4.t



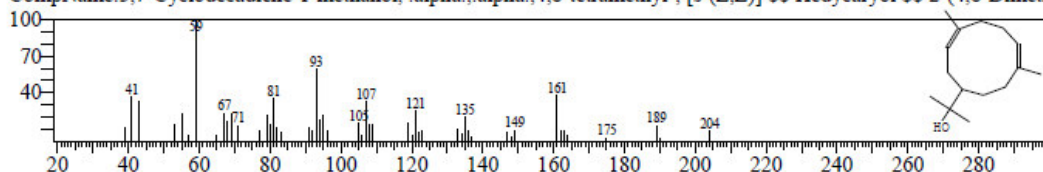
Hit#:2 Entry:21664 Library:NIST14s.lib
SI:93 Formula:C15H26O CAS:639-99-6 MolWeight:222 RefIndex:1522
CompName:Cyclohexanemethanol, 4-ethenyl-,alpha.,alpha.,4-trimethyl-3-(1-methylethenyl)-, [1R-(1.alpha.,3.alpha.,4.t



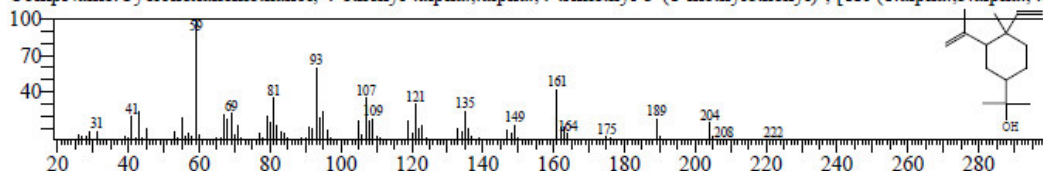
Hit#:3 Entry:21642 Library:NIST14s.lib
SI:92 Formula:C15H26O CAS:639-99-6 MolWeight:222 RefIndex:1522
CompName:Cyclohexanemethanol, 4-ethenyl-,alpha.,alpha.,4-trimethyl-3-(1-methylethenyl)-, [1R-(1.alpha.,3.alpha.,4.t



Hit#:4 Entry:21644 Library:NIST14s.lib
SI:92 Formula:C15H26O CAS:21657-90-9 MolWeight:222 RefIndex:1694
CompName:3,7-Cyclodecadiene-1-methanol, .alpha.,alpha.,4,8-tetramethyl-, [s-(Z,Z)] \$\$ Hedycaryol \$\$ 2-(4,8-Dimeth

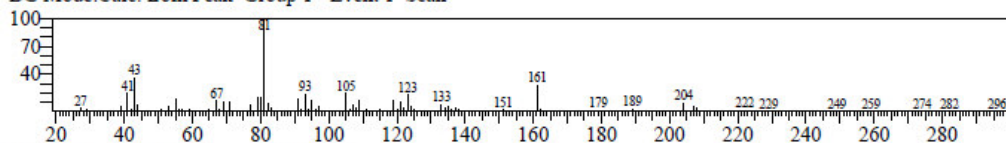


Hit#:5 Entry:21645 Library:NIST14s.lib
SI:91 Formula:C15H26O CAS:639-99-6 MolWeight:222 RefIndex:1522
CompName:Cyclohexanemethanol, 4-ethenyl-,alpha.,alpha.,4-trimethyl-3-(1-methylethenyl)-, [1R-(1.alpha.,3.alpha.,4.t

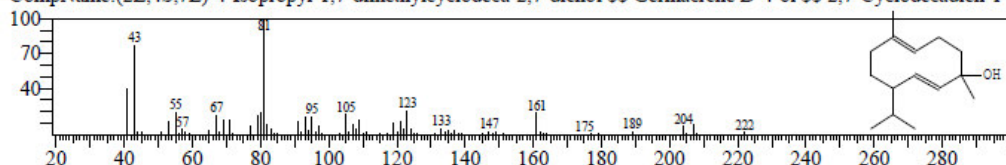


<< Target >>

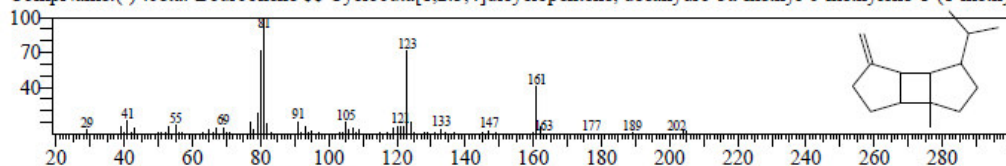
Line#:36 R.Time:64.565(Scan#:12314) MassPeaks:159
RawMode:Averaged 64.560-64.570(12313-12315) BasePeak:81.05(5447)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



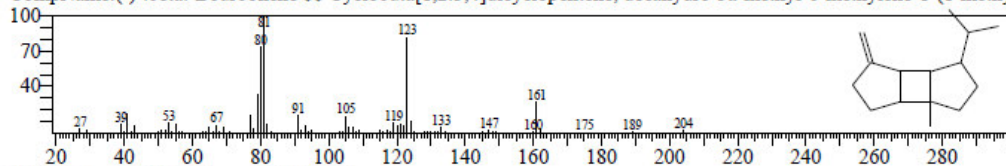
Hit#:1 Entry:21660 Library:NIST14s.lib
SI:90 Formula:C15H26O CAS:198991-79-6 MolWeight:222 RefIndex:0
CompName:(2E,4S,7E)-4-Isopropyl-1,7-dimethylcyclodeca-2,7-dienol \$\$ Germacrene D-4-ol \$\$ 2,7-Cyclodecadien-1-ol



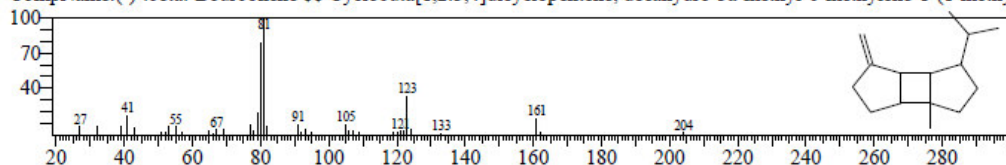
Hit#:2 Entry:19072 Library:NIST14s.lib
SI:79 Formula:C15H24 CAS:5208-59-3 MolWeight:204 RefIndex:1339
CompName:(-)-beta-Bourbonene \$\$ Cyclobuta[1.2:3,4]dicyclopentene, decahydro-3a-methyl-6-methylene-1-(1-methyl-2-propenyl)-



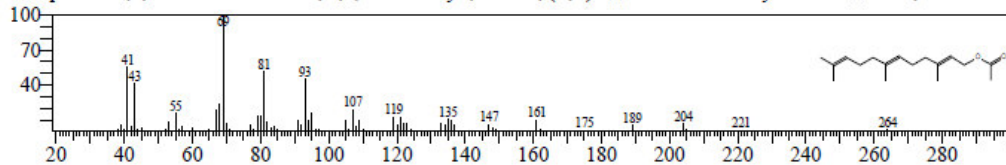
Hit#:3 Entry:19073 Library:NIST14s.lib
SI:79 Formula:C15H24 CAS:5208-59-3 MolWeight:204 RefIndex:1339
CompName:(-)-beta-Bourbonene \$\$ Cyclobuta[1.2:3,4]dicyclopentene, decahydro-3a-methyl-6-methylene-1-(1-methyl-2-propenyl)-



Hit#:4 Entry:19069 Library:NIST14s.lib
SI:78 Formula:C15H24 CAS:5208-59-3 MolWeight:204 RefIndex:1339
CompName:(-)-beta-Bourbonene \$\$ Cyclobuta[1.2:3,4]dicyclopentene, decahydro-3a-methyl-6-methylene-1-(1-methyl-2-propenyl)-

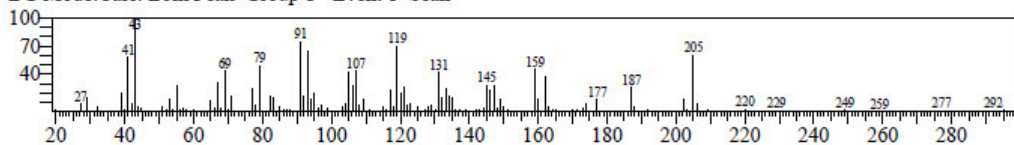


Hit#:5 Entry:25760 Library:NIST14s.lib
SI:76 Formula:C17H28O2 CAS:4128-17-0 MolWeight:264 RefIndex:1834
CompName:2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-, acetate, (E,E)- \$\$ all-trans-Farnesyl acetate \$\$ trans, trans-Farnesyl acetate

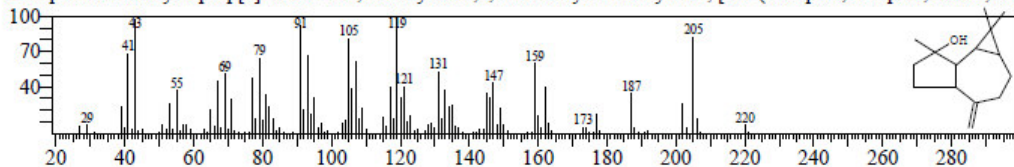


<< Target >>

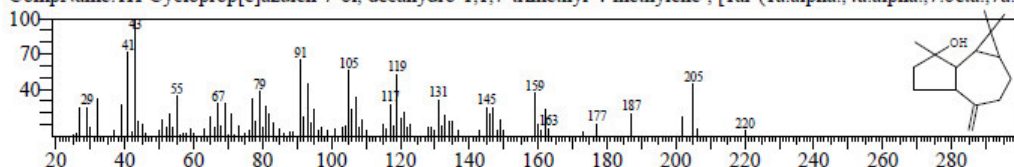
Line#:37 R.Time:64.695(Scan#:12340) MassPeaks:182
RawMode:Averaged 64.690-64.700(12339-12341) BasePeak:42.95(1618)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



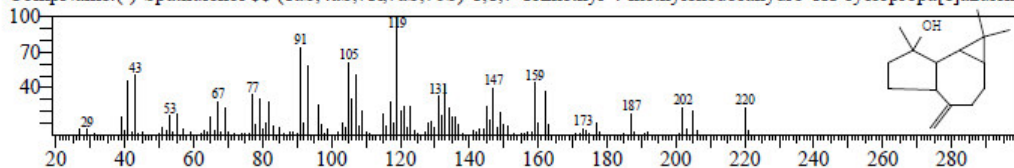
Hit#:1 Entry:21353 Library:NIST14s.lib
SI:89 Formula:C15H24O CAS:6750-60-3 MolWeight:220 RetIndex:1536
CompName:1H-Cycloprop[e]azulen-7-ol, decahydro-1,1,7-trimethyl-4-methylene-, [1ar-(1a.alpha.,4a.alpha.,7.beta.,7a.b



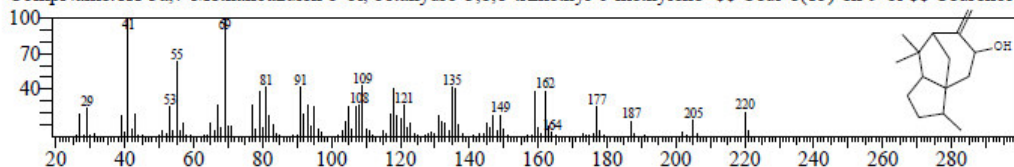
Hit#:2 Entry:21336 Library:NIST14s.lib
SI:89 Formula:C15H24O CAS:6750-60-3 MolWeight:220 RetIndex:1536
CompName:1H-Cycloprop[e]azulen-7-ol, decahydro-1,1,7-trimethyl-4-methylene-, [1ar-(1a.alpha.,4a.alpha.,7.beta.,7a.b



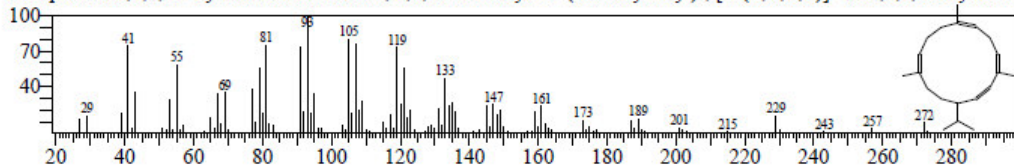
Hit#:3 Entry:21354 Library:NIST14s.lib
SI:83 Formula:C15H24O CAS:77171-55-2 MolWeight:220 RetIndex:1536
CompName:(-)-Spathulenol \$\$ (1aS,4aS,7R,7aS,7bS)-1,1,7-Trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulen-



Hit#:4 Entry:21332 Library:NIST14s.lib
SI:76 Formula:C15H24O CAS:28231-03-0 MolWeight:220 RetIndex:1586
CompName:1H-3a,7-Methanoazulen-5-ol, octahydro-3,8,8-trimethyl-6-methylene- \$\$ Cedr-8(15)-en-9-ol \$\$ Cedrenol \$



Hit#:5 Entry:26416 Library:NIST14s.lib
SI:75 Formula:C20H32 CAS:1898-13-1 MolWeight:272 RetIndex:2072
CompName:1,3,6,10-Cyclotetradecatetraene, 3,7,11-trimethyl-14-(1-methylethyl)-, [S-(E,Z,E,E)]- \$\$ 1,3,6,10-Cyclotetr



ANEXO 8 : Resultados del análisis de CG/EM del aceite esencial de las hojas de *Tagetes elliptica* Smith.

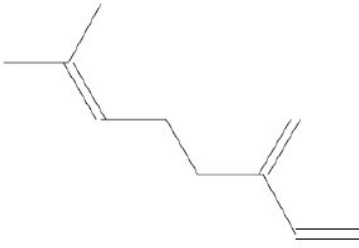


UNIVERSIDAD NACIONAL DE INGENIERÍA
FACULTAD DE CIENCIAS
LABICER (Laboratorio N° 12)
ANÁLISIS QUÍMICO, CONSULTORÍA E INVESTIGACIÓN



INFORME TÉCNICO N° 1277 – 18 – LABICER

- 1. DATOS DEL SOLICITANTE**
 - 1.1 NOMBRES DE LAS SOLICITANTES : JULIO REYNALDO RUIZ QUIROZ
 - 1.2 DNI : 07760326
- 2. CRONOGRAMA DE FECHAS**
 - 2.1 FECHA DE RECEPCIÓN : 24 / 07 / 2018
 - 2.2 FECHA DE ENSAYO : 25 / 07 / 2018
 - 2.3 FECHA DE EMISIÓN : 01 / 08 / 2018
- 3. ANÁLISIS SOLICITADO** : ANÁLISIS DE ACEITE ESENCIAL *TAGETES ELLIPTICA* CHINCHO
- 4. DATOS REFERENCIALES DE LA MUESTRA SEGÚN SOLICITANTE**
 - 4.1 IDENTIFICACIÓN DE LA MUESTRA : 01 MUESTRA DE ACEITE ESENCIAL DE "*TAGETES ELLIPTICA*" (CHINCHO)
- 5. LUGAR DE RECEPCIÓN** : LABORATORIO LABICER - FACULTAD DE CIENCIAS
- 6. CONDICIONES AMBIENTALES** : Temperatura: 20.1 °C; Humedad relativa: 65%
- 7. DOCUMENTO DE REFERENCIA** : Bilal Gurbuza, *et. al.* Rosemary (*Rosmarinus officinalis* L.) cultivation studies under Ankara ecological conditions. *Industrial Crops and Products* 88 (2016) 12–16.
- 8. EQUIPOS UTILIZADOS**
CROMATÓGRAFO DE GASES. SHIMADZU, GC-2010 Plus.
AUTOMUESTREADOR: SHIMADZU, AOC-6000.
Detector de espectrometría de masas: SHIMADZU, GCMS-QP210 Ultra.
COLUMNA GC: RESTEK. RTX-5MS, 30m x 0.25 mm ID x 0.25 µm df. Serial: 1346249.
- 9. RESULTADOS**

MUESTRA	COMPONENTE PRINCIPAL <i>Análisis de Componentes Volátiles - Inyección por Headspace (HS)</i>	MÉTODO UTILIZADO
Aceite esencial de " <i>Tagetes elliptica</i> " (chincho)	 <p>Componente mayoritario: Beta.-Myrcene</p>	Cromatografía de gases acoplado a espectrometría de masas

*Ver en Anexos (Tabla N°1) la lista de compuestos de la muestra, obtenido por el software del equipo GCMSsolution de SHIMADZU utilizando la librería NIST.

10. OBSERVACIONES

Se encontraron 33 componentes volátiles en la muestra de aceite esencial, siendo los componentes mayoritarios Beta. - Myrcene (71,26%), cis-Linalool oxide (10,07%) y trans-beta.-Ocimene (3,73%) (Porcentaje relativo calculado de las áreas del cromatograma de la muestra).

11. VALIDEZ DEL INFORME TÉCNICO

Los resultados de este Informe técnico son válido solo para la muestra proporcionada por el solicitante del servicio en las condiciones indicadas del presente informe técnico.

Bach. Jesús Utano Reyes
Analista
LABICER –UNI

MSc Otilia Acha de la Cruz
Responsable de Análisis
Jefa de laboratorio
CQP 202

El Laboratorio no se responsabiliza del muestreo ni de la procedencia de la muestra.

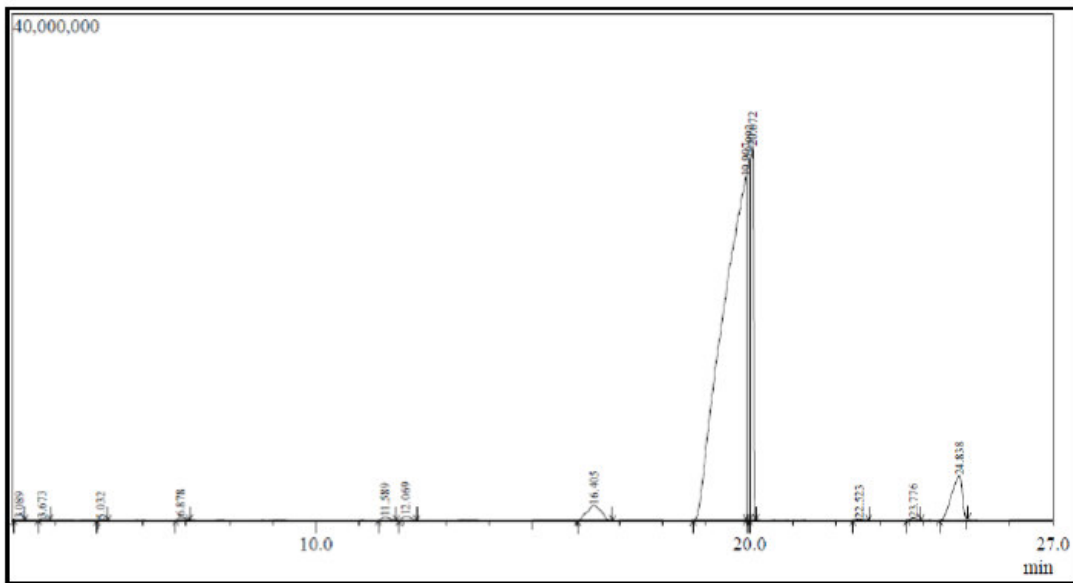


FIGURA N°1: PRIMERA PARTE DEL CROMATOGRÁMA DE 3 A 27 MINUTOS

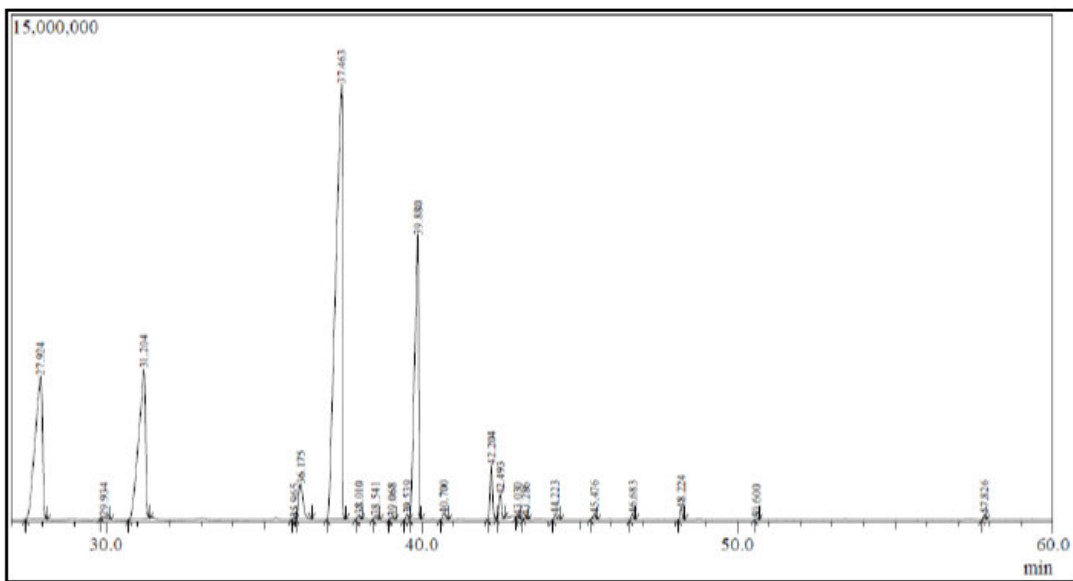


FIGURA N°2: SEGUNDA PARTE DEL CROMATOGRÁMA DE 27 A 60 MINUTOS

TABLA N°1: RESULTADOS DE COMPOSICIÓN DE ACEITE ESENCIAL DE CHINCHO

Peak#	R. Time	Area	Area%	Height	Height%	Name
1	3.089	419756	0.02	37876	0.03	Furan, 2-ethyl-
2	3.673	1259233	0.07	122812	0.10	Methyl Isobutyl Ketone
3	5.032	451458	0.02	48194	0.04	3-Penten-2-one, 4-methyl-
4	6.878	2492495	0.14	244892	0.19	Butanoic acid, 2-methyl-, ethyl ester
5	11.589	3126619	0.17	251708	0.20	Hexanoic acid, methyl ester
6	12.069	4172874	0.23	337055	0.27	.alpha.-Pinene
7	16.405	26311406	1.44	1222584	0.97	Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)-
8	19.907	1004661201	54.90	27074015	21.42	.beta.-Myrcene
9	19.992	142209397	7.77	28505215	22.55	Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)-
10	20.072	157216157	8.59	29509844	23.35	.beta.-Myrcene
11	22.523	1302522	0.07	126497	0.10	9,12-Octadecadienoic acid (Z,Z)-
12	23.776	1530263	0.08	156175	0.12	2,8-Decadiyne
13	24.838	57992223	3.17	3456220	2.73	D-Limonene
14	27.924	68213592	3.73	4258557	3.37	trans-.beta.-Ocimene
15	29.934	519111	0.03	52098	0.04	1,3,6-Octatriene, 3,7-dimethyl-, (Z)-
16	31.204	69648893	3.81	4430441	3.50	Pentanoic acid, 2-propenyl ester
17	35.965	312344	0.02	49226	0.04	Cyclohexene, 1-methyl-4-(1-methylethylidene)-
18	36.175	10732825	0.59	1037548	0.82	2,2-Dimethyl-3-heptanone
19	37.463	184323004	10.07	12904057	10.21	2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-t
20	38.010	759431	0.04	130537	0.10	Linalool
21	38.541	740454	0.04	116991	0.09	Butanoic acid, 2-methyl-, 2-methylbutyl ester
22	39.068	496032	0.03	85297	0.07	2,6-Dimethyl-8-(tetrahydropyran-2-yloxy)-octa-2,6-dien
23	39.539	952564	0.05	155378	0.12	3-Oxatricyclo[4.1.1.0(2,4)]octane, 2,7,7-trimethyl-
24	39.880	70727578	3.87	8422993	6.66	2-Octen-4-ol
25	40.700	1208536	0.07	173594	0.14	Octanoic acid, methyl ester
26	42.204	8367666	0.46	1610944	1.27	1,4-Pentadiene, 2,3,3-trimethyl-
27	42.493	4082325	0.22	694918	0.55	1-Octyn-3-ol
28	43.030	246739	0.01	54704	0.04	5,10-Dioxatricyclo[7.1.0.0(4,6)]decane
29	43.286	517546	0.03	107573	0.09	2,7-Octadiene-1,6-diol, 2,6-dimethyl-
30	44.223	868794	0.05	161644	0.13	1,1'-Bicycloheptyl
31	45.476	992939	0.05	165144	0.13	Cyclohexanemethanol, .alpha.,.alpha.,4-trimethyl-
32	46.683	744334	0.04	167615	0.13	Decanal
33	48.224	1470074	0.08	333410	0.26	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-
34	50.600	134048	0.01	32754	0.03	2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-t
35	57.826	668058	0.04	167324	0.13	Caryophyllene
		1829872491	100.00	126405834	100.00	

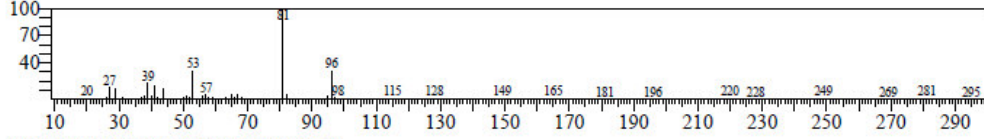
Library

<< Target >>

Line#:1 R.Time:3.090(Scan#:19) MassPeaks:140

RawMode:Averaged 3.085-3.095(18-20) BasePeak:81.00(14525)

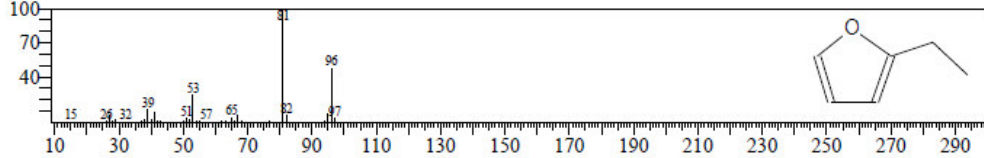
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:1430 Library:NIST14s.lib

SI:90 Formula:C6H8O CAS:3208-16-0 MolWeight:96 RetIndex:742

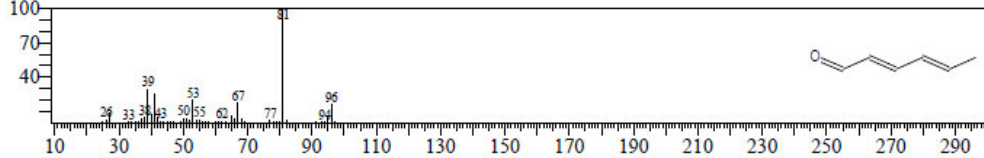
CompName:Furan, 2-ethyl- \$\$ Furan, .alpha.-ethyl- \$\$ 2-Ethylfuran \$\$



Hit#:2 Entry:1429 Library:NIST14s.lib

SI:86 Formula:C6H8O CAS:142-83-6 MolWeight:96 RetIndex:822

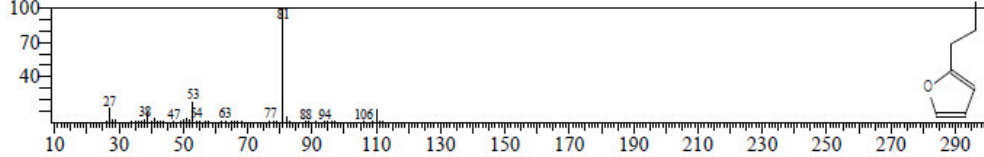
CompName:2,4-Hexadienal, (E,E)- \$\$ Sorbaldehyde \$\$ n-Hex-2,4-dienal, trans,trans- \$\$ Hexa-2,4-dienal, (E,E)- \$\$ So



Hit#:3 Entry:2773 Library:NIST14s.lib

SI:82 Formula:C7H10O CAS:4229-91-8 MolWeight:110 RetIndex:841

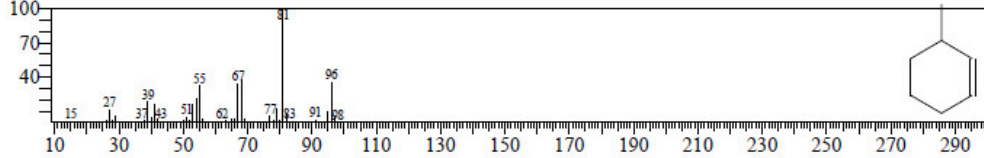
CompName:Furan, 2-propyl- \$\$ 2-Propylfuran \$\$ Furan, .alpha.-propyl- \$\$ 2-n-Propylfuran \$\$



Hit#:4 Entry:1475 Library:NIST14s.lib

SI:82 Formula:C7H12 CAS:591-48-0 MolWeight:96 RetIndex:763

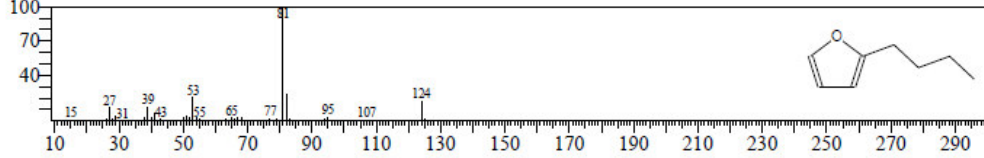
CompName:Cyclohexene, 3-methyl- \$\$ 3-Methyl-1-cyclohexene \$\$ 3-Methylcyclohexene \$\$ 3-Methylcyclohex-1-ene \$



Hit#:5 Entry:4671 Library:NIST14s.lib

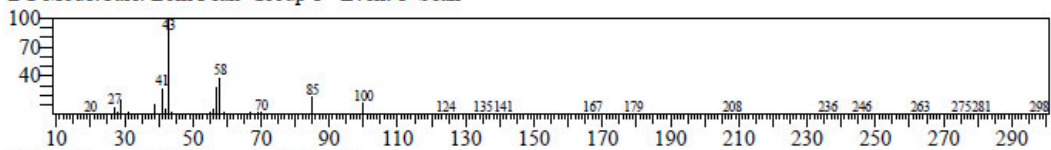
SI:82 Formula:C8H12O CAS:4466-24-4 MolWeight:124 RetIndex:941

CompName:2-n-Butyl furan \$\$ 2-Butylfuran \$\$ Furan, 2-butyl- \$\$ 2-n-Butylfuran \$\$

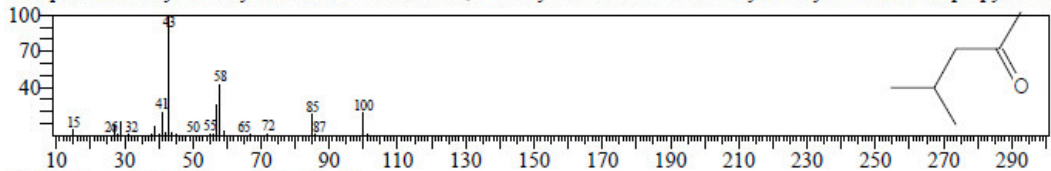


<< Target >>

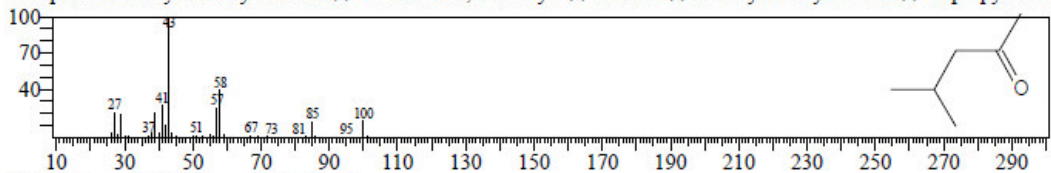
Line#:2 R.Time:3.675(Scan#:136) MassPeaks:160
RawMode:Averaged 3.670-3.680(135-137) BasePeak:42.95(43824)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



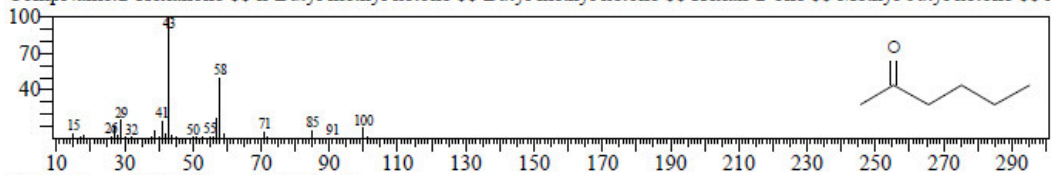
Hit#:1 Entry:1854 Library:NIST14s.lib
SI:96 Formula:C6H12O CAS:108-10-1 MolWeight:100 RetIndex:690
CompName:Methyl Isobutyl Ketone \$\$ 2-Pentanone, 4-methyl- \$\$ Hexone \$\$ Isobutyl methyl ketone \$\$ Isopropylacet



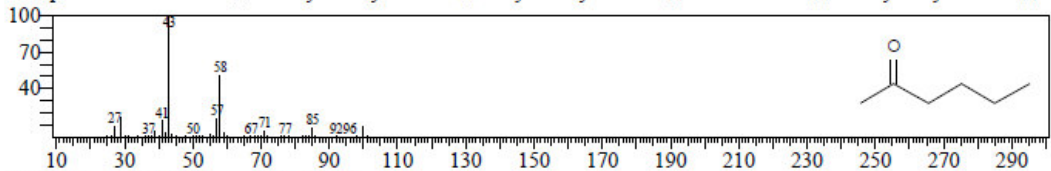
Hit#:2 Entry:1853 Library:NIST14s.lib
SI:94 Formula:C6H12O CAS:108-10-1 MolWeight:100 RetIndex:690
CompName:Methyl Isobutyl Ketone \$\$ 2-Pentanone, 4-methyl- \$\$ Hexone \$\$ Isobutyl methyl ketone \$\$ Isopropylacet



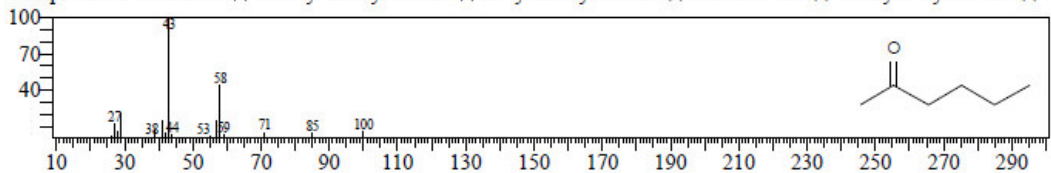
Hit#:3 Entry:1856 Library:NIST14s.lib
SI:92 Formula:C6H12O CAS:591-78-6 MolWeight:100 RetIndex:754
CompName:2-Hexanone \$\$ n-Butyl methyl ketone \$\$ Butyl methyl ketone \$\$ Hexan-2-one \$\$ Methyl butyl ketone \$\$ 1



Hit#:4 Entry:1849 Library:NIST14s.lib
SI:92 Formula:C6H12O CAS:591-78-6 MolWeight:100 RetIndex:754
CompName:2-Hexanone \$\$ n-Butyl methyl ketone \$\$ Butyl methyl ketone \$\$ Hexan-2-one \$\$ Methyl butyl ketone \$\$ 1

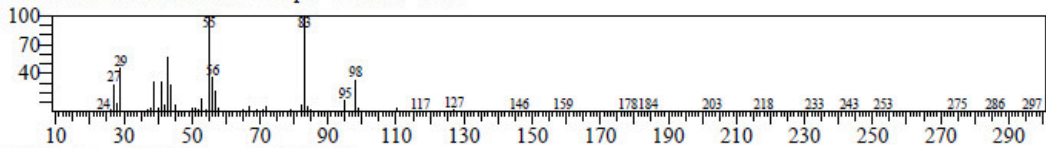


Hit#:5 Entry:1848 Library:NIST14s.lib
SI:91 Formula:C6H12O CAS:591-78-6 MolWeight:100 RetIndex:754
CompName:2-Hexanone \$\$ n-Butyl methyl ketone \$\$ Butyl methyl ketone \$\$ Hexan-2-one \$\$ Methyl butyl ketone \$\$ 1

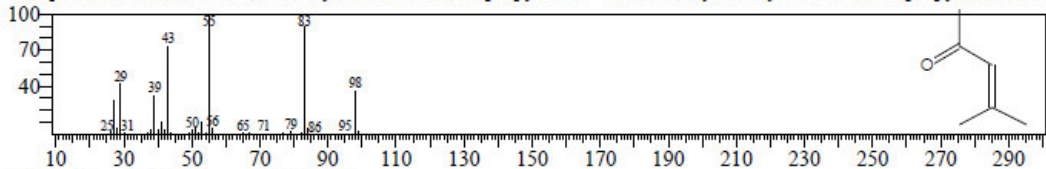


<< Target >>

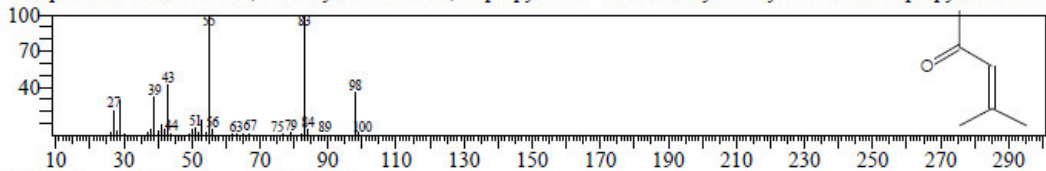
Line#:3 R Time:5.030(Scan#:407) MassPeaks:143
RawMode:Averaged 5.025-5.035(406-408) BasePeak:83.00(7577)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



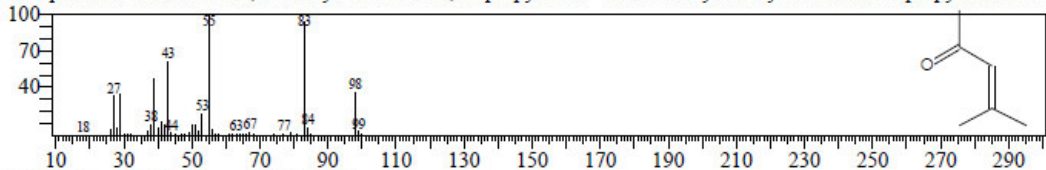
Hit#:1 Entry:1588 Library:NIST14s.lib
SI:90 Formula:C6H10O CAS:141-79-7 MolWeight:98 RetIndex:739
CompName:3-Penten-2-one, 4-methyl- \$\$ Acetone, isopropylidene- \$\$ Isobutenyl methyl ketone \$\$ Isopropylideneacet



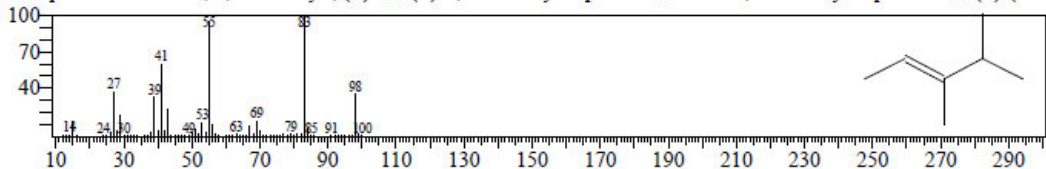
Hit#:2 Entry:1617 Library:NIST14s.lib
SI:89 Formula:C6H10O CAS:141-79-7 MolWeight:98 RetIndex:739
CompName:3-Penten-2-one, 4-methyl- \$\$ Acetone, isopropylidene- \$\$ Isobutenyl methyl ketone \$\$ Isopropylideneacet



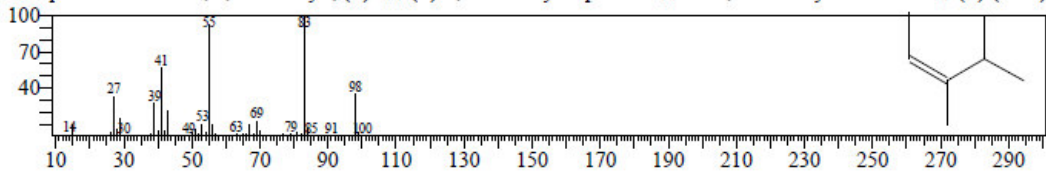
Hit#:3 Entry:1589 Library:NIST14s.lib
SI:88 Formula:C6H10O CAS:141-79-7 MolWeight:98 RetIndex:739
CompName:3-Penten-2-one, 4-methyl- \$\$ Acetone, isopropylidene- \$\$ Isobutenyl methyl ketone \$\$ Isopropylideneacet



Hit#:4 Entry:1685 Library:NIST14s.lib
SI:87 Formula:C7H14 CAS:4914-92-5 MolWeight:98 RetIndex:638
CompName:2-Pentene, 3,4-dimethyl-, (E)- \$\$ (E)-3,4-Dimethyl-2-pentene \$\$ trans-3,4-Dimethyl-2-pentene \$\$ (E)-(CH

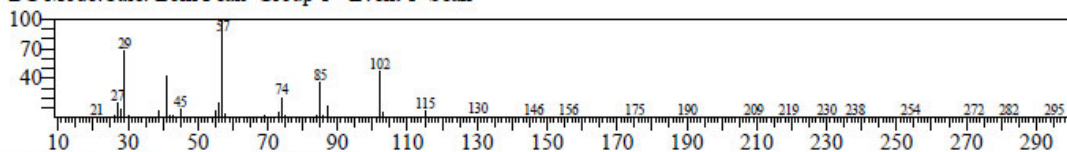


Hit#:5 Entry:1684 Library:NIST14s.lib
SI:86 Formula:C7H14 CAS:4914-91-4 MolWeight:98 RetIndex:638
CompName:2-Pentene, 3,4-dimethyl-, (Z)- \$\$ (Z)-3,4-Dimethyl-2-pentene \$\$ cis-3,4-Dimethyl-2-Pentene \$\$ (Z)-(CH3)

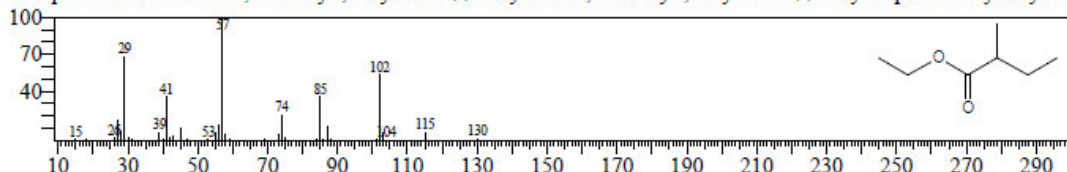


<< Target >>

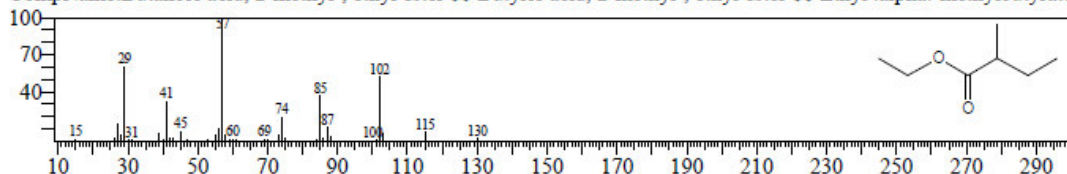
Line#:4 R.Time:6.880(Scan#:777) MassPeaks:165
RawMode:Averaged 6.875-6.885(776-778) BasePeak:57.05(56450)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



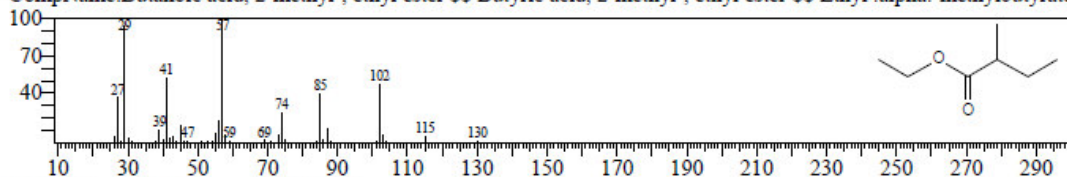
Hit#:1 Entry:5686 Library:NIST14s.lib
SI:98 Formula:C7H14O2 CAS:7452-79-1 MolWeight:130 RetIndex:820
CompName:Butanoic acid, 2-methyl-, ethyl ester \$\$ Butyric acid, 2-methyl-, ethyl ester \$\$ Ethyl .alpha.-methylbutyrate



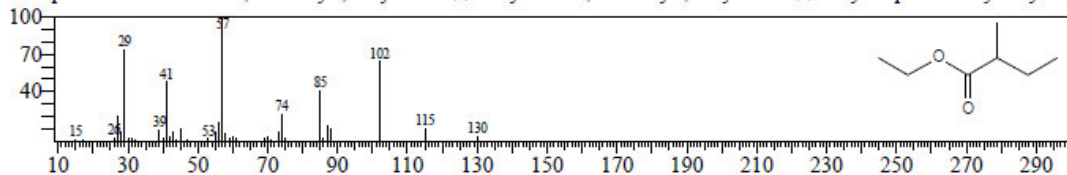
Hit#:2 Entry:5687 Library:NIST14s.lib
SI:96 Formula:C7H14O2 CAS:7452-79-1 MolWeight:130 RetIndex:820
CompName:Butanoic acid, 2-methyl-, ethyl ester \$\$ Butyric acid, 2-methyl-, ethyl ester \$\$ Ethyl .alpha.-methylbutyrate



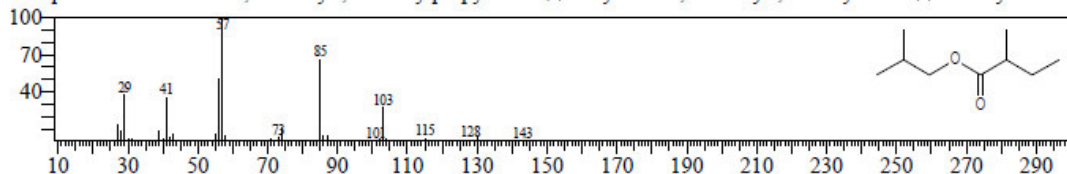
Hit#:3 Entry:5679 Library:NIST14s.lib
SI:94 Formula:C7H14O2 CAS:7452-79-1 MolWeight:130 RetIndex:820
CompName:Butanoic acid, 2-methyl-, ethyl ester \$\$ Butyric acid, 2-methyl-, ethyl ester \$\$ Ethyl .alpha.-methylbutyrate



Hit#:4 Entry:5685 Library:NIST14s.lib
SI:93 Formula:C7H14O2 CAS:7452-79-1 MolWeight:130 RetIndex:820
CompName:Butanoic acid, 2-methyl-, ethyl ester \$\$ Butyric acid, 2-methyl-, ethyl ester \$\$ Ethyl .alpha.-methylbutyrate

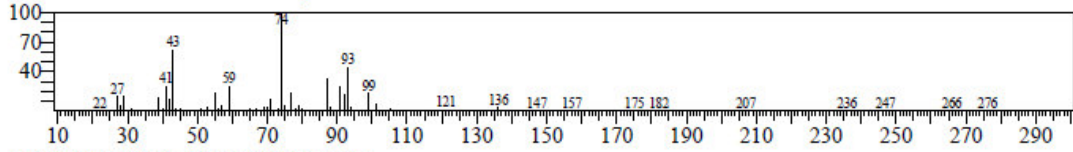


Hit#:5 Entry:11032 Library:NIST14s.lib
SI:86 Formula:C9H18O2 CAS:2445-67-2 MolWeight:158 RetIndex:955
CompName:Butanoic acid, 2-methyl-, 2-methylpropyl ester \$\$ Butyric acid, 2-methyl-, isobutyl ester \$\$ Isobutyl 2-methylbutyrate

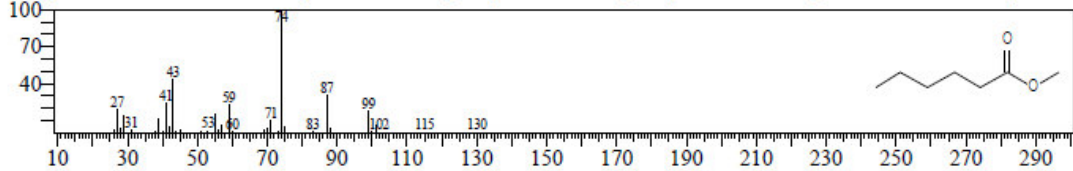


<< Target >>

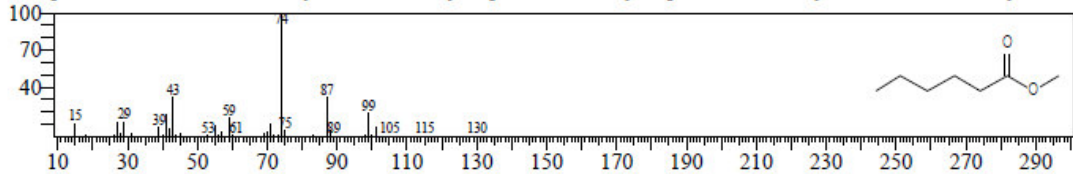
Line# 5 R.Time:11.590(Scan#:1719) MassPeaks:180
RawMode:Averaged 11.585-11.595(1718-1720) BasePeak:74.00(45679)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



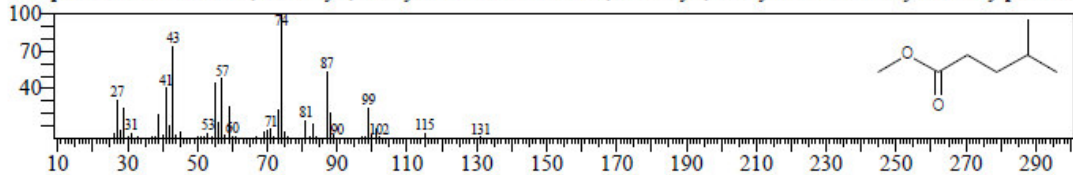
Hit#1 Entry:5705 Library:NIST14s.lib
SI:83 Formula:C7H14O2 CAS:106-70-7 MolWeight:130 RetIndex:884
CompName:Hexanoic acid, methyl ester \$\$ Methyl caproate \$\$ Methyl capronate \$\$ Methyl hexanoate \$\$ Methyl hexoate



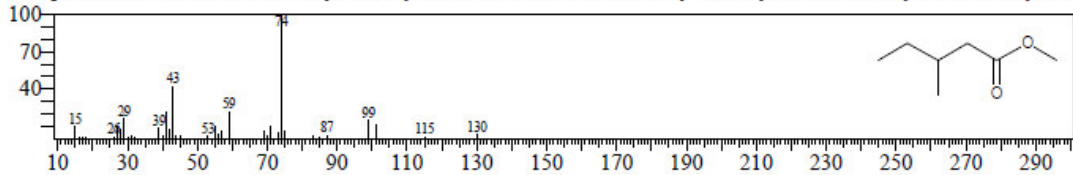
Hit#2 Entry:5707 Library:NIST14s.lib
SI:79 Formula:C7H14O2 CAS:106-70-7 MolWeight:130 RetIndex:884
CompName:Hexanoic acid, methyl ester \$\$ Methyl caproate \$\$ Methyl capronate \$\$ Methyl hexanoate \$\$ Methyl hexoate



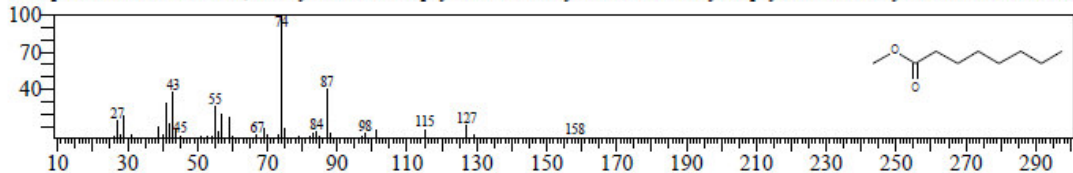
Hit#3 Entry:5703 Library:NIST14s.lib
SI:78 Formula:C7H14O2 CAS:2412-80-8 MolWeight:130 RetIndex:820
CompName:Hexanoic acid, 4-methyl-, methyl ester \$\$ Valeric acid, 4-methyl-, methyl ester \$\$ Methyl 4-methylpentanoate



Hit#4 Entry:5702 Library:NIST14s.lib
SI:77 Formula:C7H14O2 CAS:2177-78-8 MolWeight:130 RetIndex:820
CompName:Hexanoic acid, 3-methyl-, methyl ester \$\$ Valeric acid, 3-methyl-, methyl ester \$\$ Methyl .beta.-methylvalerate

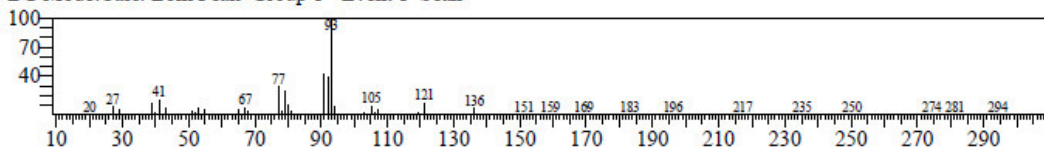


Hit#5 Entry:11045 Library:NIST14s.lib
SI:76 Formula:C9H18O2 CAS:111-11-5 MolWeight:158 RetIndex:1083
CompName:Octanoic acid, methyl ester \$\$ Caprylic acid methyl ester \$\$ Methyl caprylate \$\$ Methyl n-octanoate \$\$ Methyl octanoate

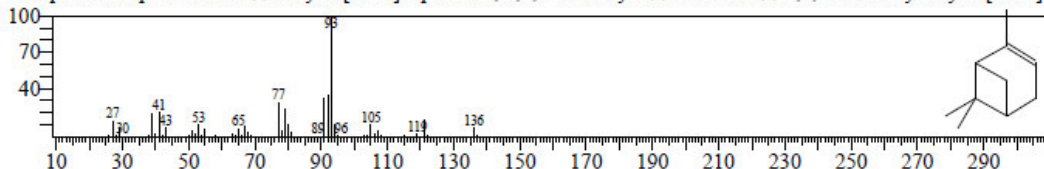


<< Target >>

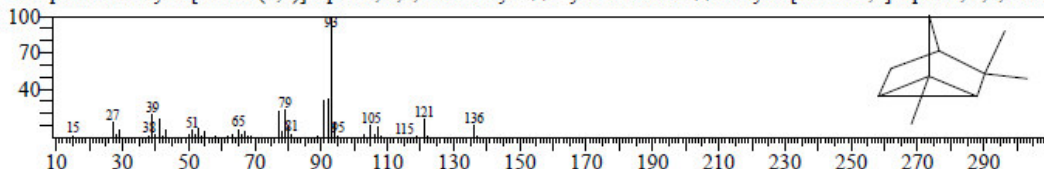
Line#:6 R.Time:12.070(Scan#:1815) MassPeaks:185
RawMode:Averaged 12.065-12.075(1814-1816) BasePeak:93.05(83625)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



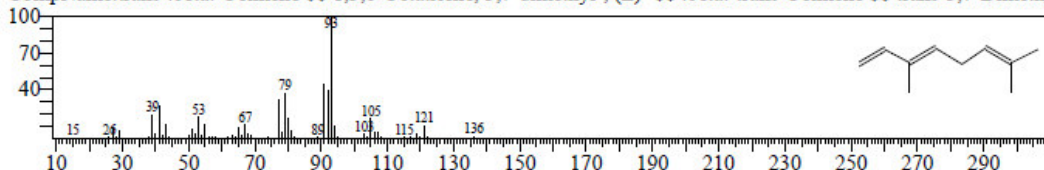
Hit#:1 Entry:6850 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:alpha-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



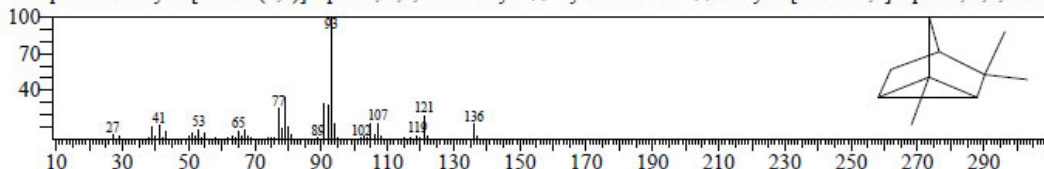
Hit#:2 Entry:6848 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim



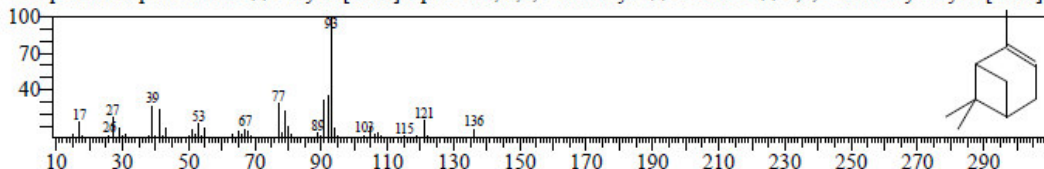
Hit#:3 Entry:6844 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-beta-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$ beta-trans-Ocimene \$\$ trans-3,7-Dimethyl



Hit#:4 Entry:6828 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:488-97-1 MolWeight:136 RetIndex:729
CompName:Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trimethyl- \$\$ Cyclofenchene \$\$ Tricyclo[2.2.1.0(2,6)]heptane, 1,3,3-trim

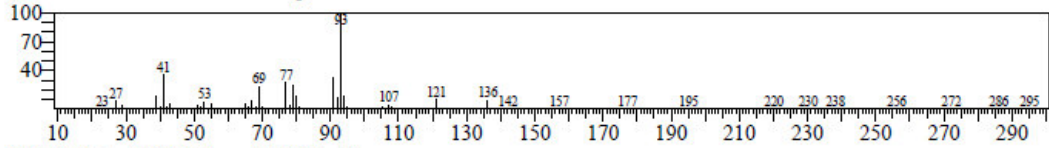


Hit#:5 Entry:6849 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:alpha-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h

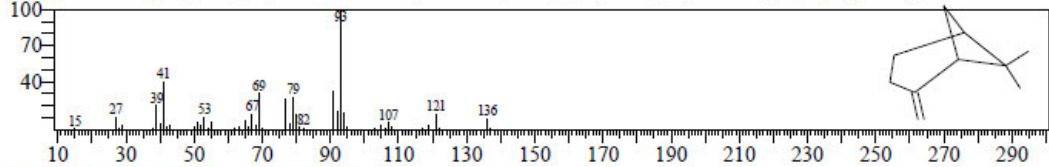


<< Target >>

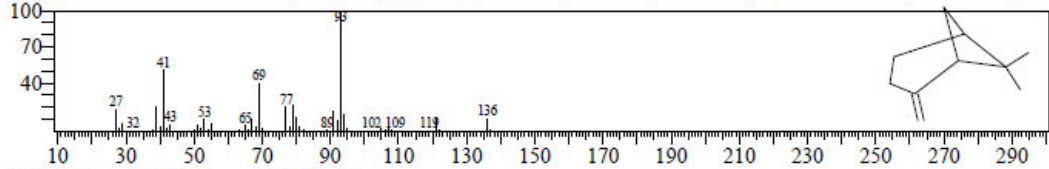
Line#:7 R.Time:16.405(Scan#:2682) MassPeaks:176
RawMode:Averaged 16.400-16.410(2681-2683) BasePeak:93.05(303348)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



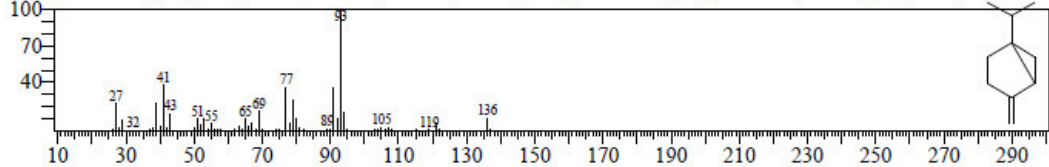
Hit#:1 Entry:6816 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:18172-67-3 MolWeight:136 RefIndex:943
CompName:Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)- \$\$ 2(10)-Pinene, (1S,5S)-(-)- \$\$ (-)-beta.-Pinene



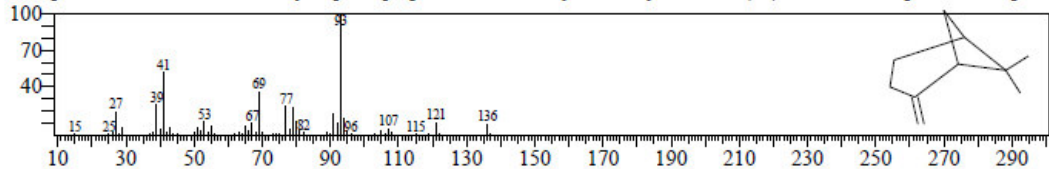
Hit#:2 Entry:6809 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinen \$\$ Nopine



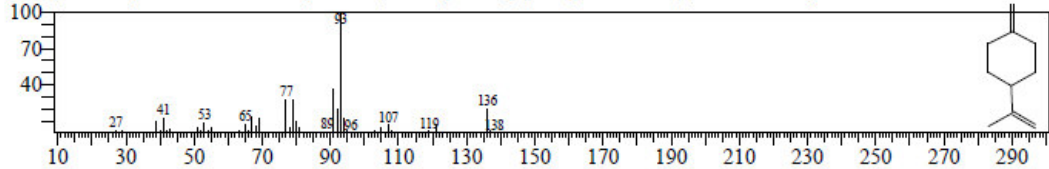
Hit#:3 Entry:6817 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RefIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$



Hit#:4 Entry:6808 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinen \$\$ Nopine

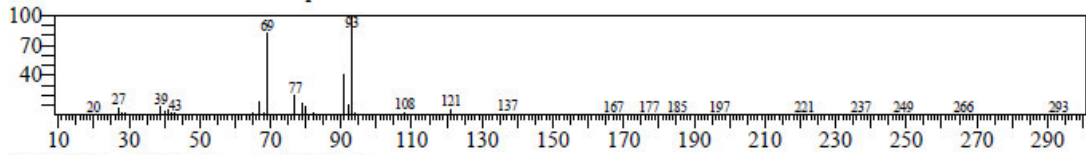


Hit#:5 Entry:6833 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:499-97-8 MolWeight:136 RefIndex:1013
CompName:Cyclohexane, 1-methylene-4-(1-methylethenyl)- \$\$ p-Mentha-1(7),8-diene \$\$ psi.-Limonene \$\$ Pseudolin

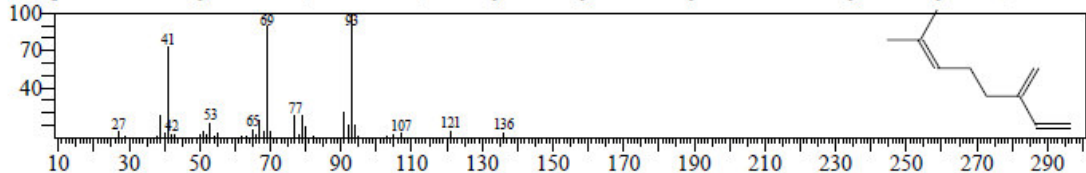


<< Target >>

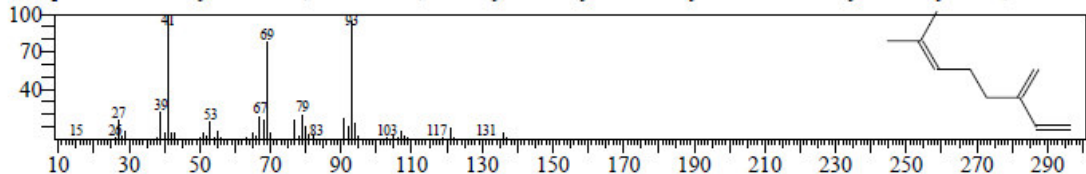
Line# 8 R.Time: 19.905 (Scan#: 3382) MassPeaks: 169
RawMode: Averaged 19.900-19.910 (3381-3383) BasePeak: 93.05 (97403)
BG Mode: Calc. from Peak Group 1 - Event 1 Scan



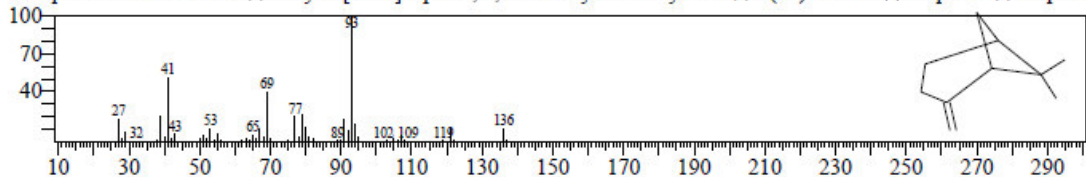
Hit# 1 Entry: 6820 Library: NIST14s.lib
SI: 86 Formula: C₁₀H₁₆ CAS: 123-35-3 MolWeight: 136 RetIndex: 958
CompName: .beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadiene



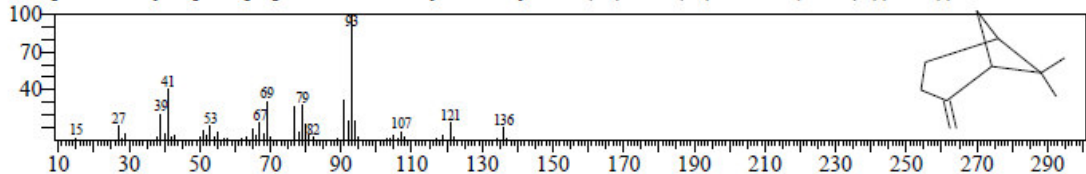
Hit# 2 Entry: 6778 Library: NIST14s.lib
SI: 83 Formula: C₁₀H₁₆ CAS: 123-35-3 MolWeight: 136 RetIndex: 958
CompName: .beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadiene



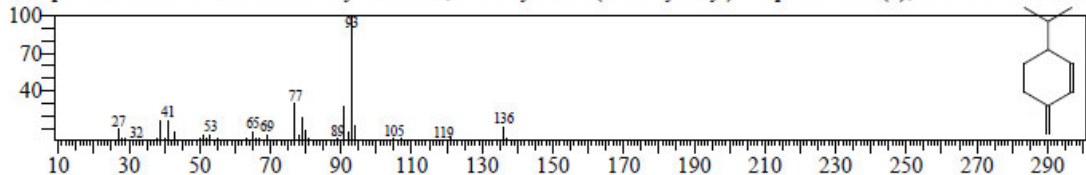
Hit# 3 Entry: 6809 Library: NIST14s.lib
SI: 82 Formula: C₁₀H₁₆ CAS: 127-91-3 MolWeight: 136 RetIndex: 943
CompName: .beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopine



Hit# 4 Entry: 6816 Library: NIST14s.lib
SI: 82 Formula: C₁₀H₁₆ CAS: 18172-67-3 MolWeight: 136 RetIndex: 943
CompName: Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene-, (1S)- \$\$ 2(10)-Pinene, (1S,5S)-(-) \$\$ (-)-.beta.-Pinene

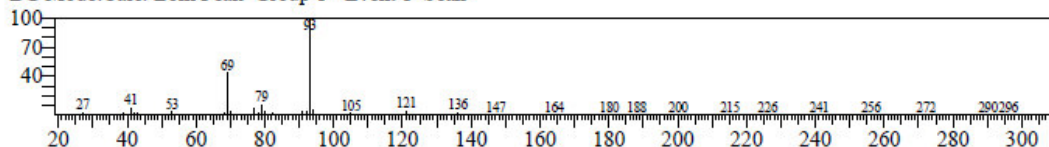


Hit# 5 Entry: 6822 Library: NIST14s.lib
SI: 82 Formula: C₁₀H₁₆ CAS: 555-10-2 MolWeight: 136 RetIndex: 964
CompName: .beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phellandrene

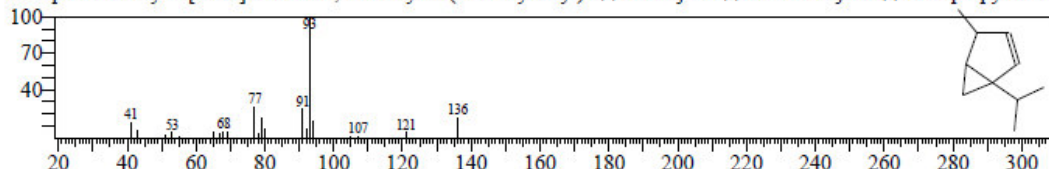


<< Target >>

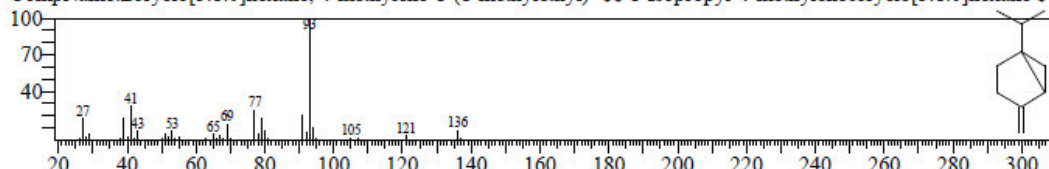
Line#:9 R.Time:19.990(Scan#:3399) MassPeaks:147
RawMode:Averaged 19.985-19.995(3398-3400) BasePeak:93.05(164993)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



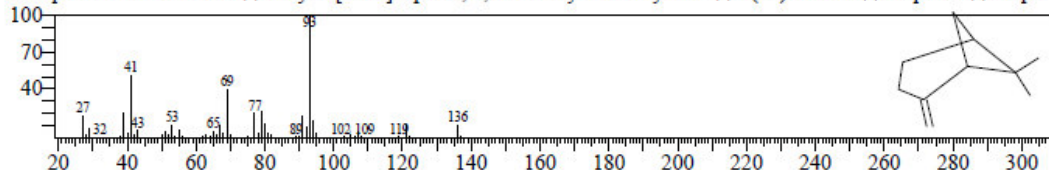
Hit#:1 Entry:6821 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:28634-89-1 MolWeight:136 RetIndex:873
CompName:Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)- \$\$ 2-Thujene \$\$.beta.-Thujene \$\$ 1-Isopropyl-4-me



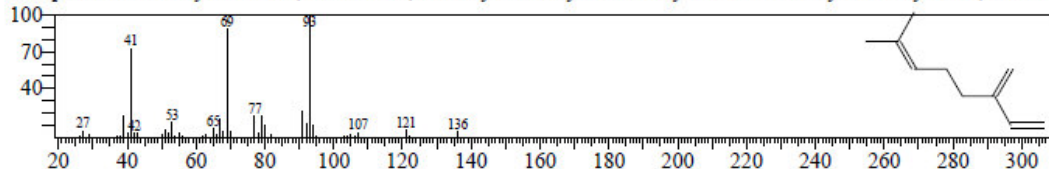
Hit#:2 Entry:6811 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:3387-41-5 MolWeight:136 RetIndex:897
CompName:Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)- \$\$ 1-Isopropyl-4-methylenebicyclo[3.1.0]hexane \$\$



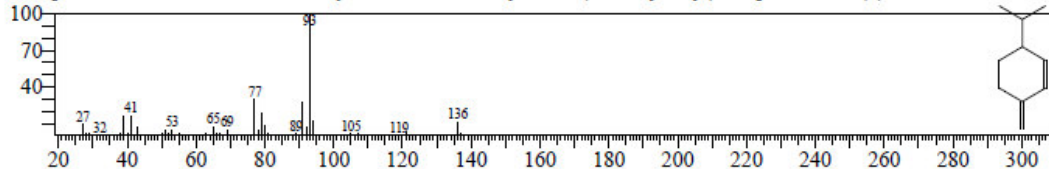
Hit#:3 Entry:6809 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:127-91-3 MolWeight:136 RetIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinen \$\$ Nopine



Hit#:4 Entry:6820 Library:NIST14s.lib
SI:80 Formula:C10H16 CAS:123-35-3 MolWeight:136 RetIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadie

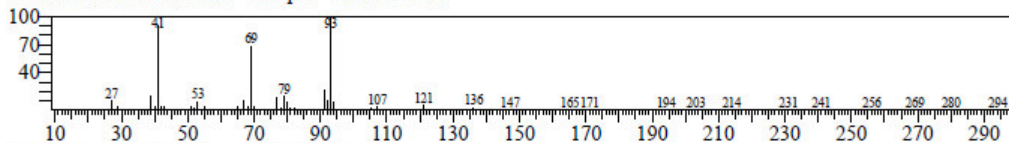


Hit#:5 Entry:6822 Library:NIST14s.lib
SI:80 Formula:C10H16 CAS:555-10-2 MolWeight:136 RetIndex:964
CompName:.beta.-Phellandrene \$\$ Cyclohexene, 3-methylene-6-(1-methylethyl)- \$\$ p-Mentha-1(7),2-diene \$\$ Phelland

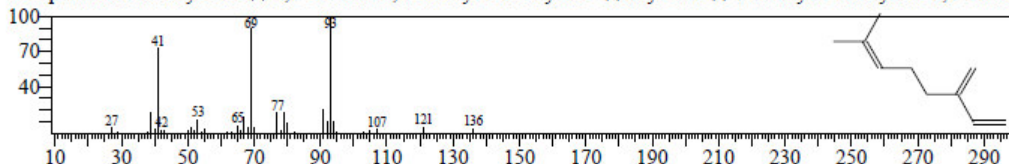


<< Target >>

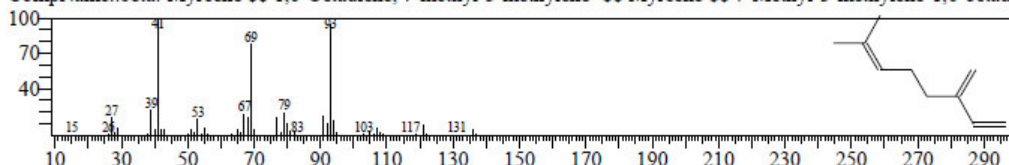
Line#:10 R.Time:20.070(Scan#:3415) MassPeaks:199
RawMode:Averaged 20.065-20.075(3414-3416) BasePeak:93.05(3213725)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



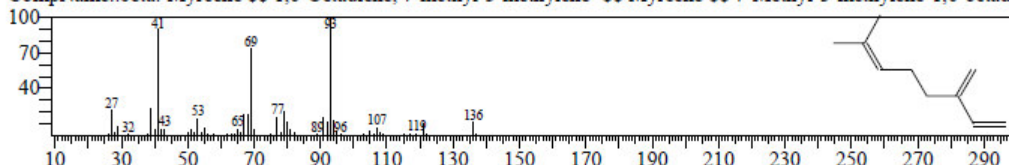
Hit#:1 Entry:6820 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadi



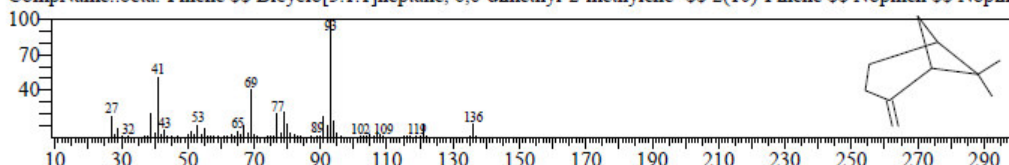
Hit#:2 Entry:6778 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadi



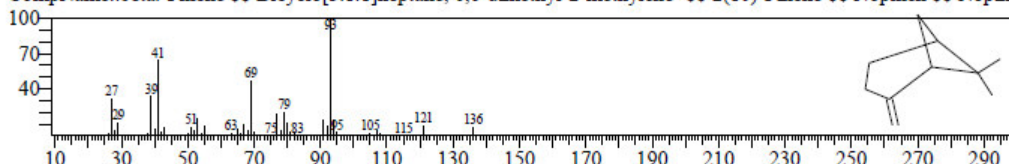
Hit#:3 Entry:6810 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:123-35-3 MolWeight:136 RefIndex:958
CompName:.beta.-Myrcene \$\$ 1,6-Octadiene, 7-methyl-3-methylene- \$\$ Myrcene \$\$ 7-Methyl-3-methylene-1,6-octadi



Hit#:4 Entry:6809 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopinene

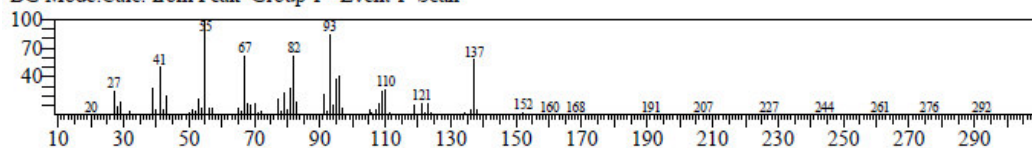


Hit#:5 Entry:6807 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:127-91-3 MolWeight:136 RefIndex:943
CompName:.beta.-Pinene \$\$ Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- \$\$ 2(10)-Pinene \$\$ Nopinene \$\$ Nopinene

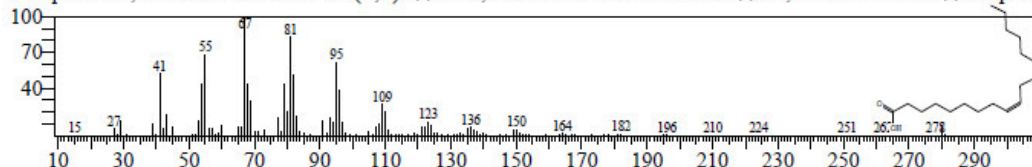


<< Target >>

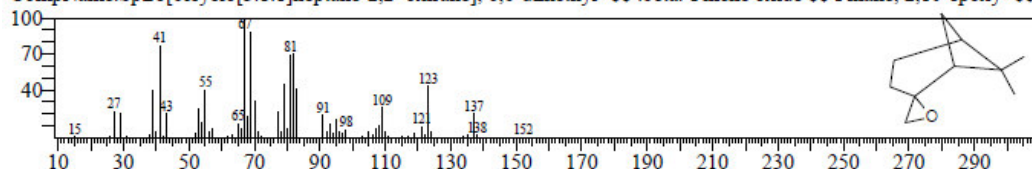
Line#:11 R.Time:22.525(Scan#:3906) MassPeaks:157
RawMode:Averaged 22.520-22.530(3905-3907) BasePeak:55.00(12881)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



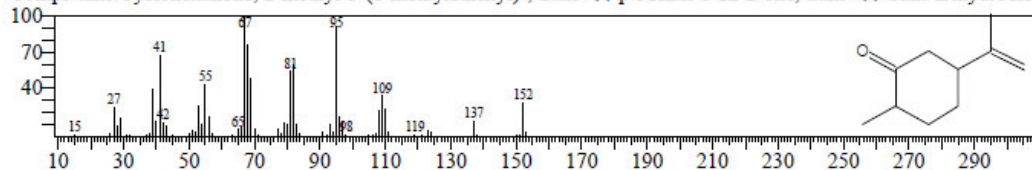
Hit#:1 Entry:26960 Library:NIST14s.lib
SI:81 Formula:C18H32O2 CAS:60-33-3 MolWeight:280 RetIndex:2183
CompName:9,12-Octadecadienoic acid (Z,Z)- \$\$ cis-9,cis-12-Octadecadienoic acid \$\$ cis,cis-Linoleic acid \$\$ Grape se



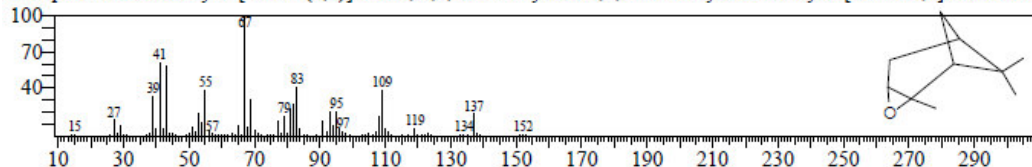
Hit#:2 Entry:9807 Library:NIST14s.lib
SI:81 Formula:C10H16O CAS:6931-54-0 MolWeight:152 RetIndex:1020
CompName:Spiro[bicyclo[3.1.1]heptane-2,2'-oxirane], 6,6-dimethyl- \$\$.beta.-Pinene oxide \$\$ Pinane, 2,10-epoxy- \$\$



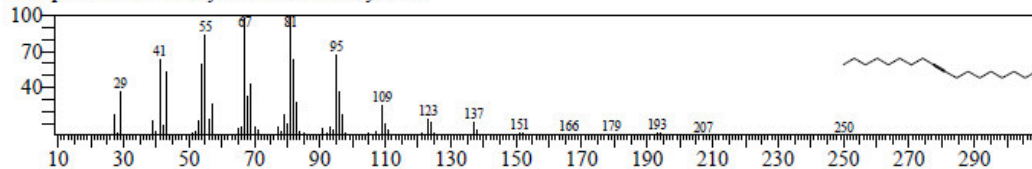
Hit#:3 Entry:9813 Library:NIST14s.lib
SI:81 Formula:C10H16O CAS:5948-04-9 MolWeight:152 RetIndex:1179
CompName:Cyclohexanone, 2-methyl-5-(1-methylethenyl)-, trans- \$\$ p-Menth-8-en-2-one, trans- \$\$ trans-Dihydrocarv



Hit#:4 Entry:9806 Library:NIST14s.lib
SI:81 Formula:C10H16O CAS:1686-14-2 MolWeight:152 RetIndex:961
CompName:3-Oxatricyclo[4.1.1.0(2,4)]octane, 2,7,7-trimethyl- \$\$ 2,7,7-Trimethyl-3-oxatricyclo[4.1.1.0(2,4)]octane \$\$ P

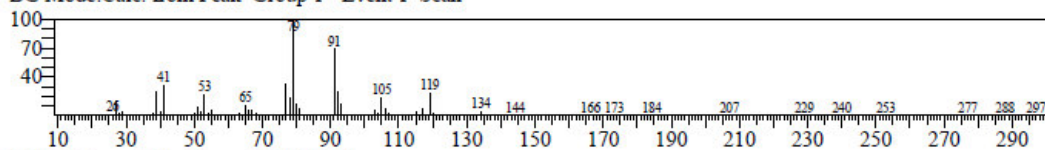


Hit#:5 Entry:24588 Library:NIST14s.lib
SI:81 Formula:C18H34 CAS:35365-59-4 MolWeight:250 RetIndex:1828
CompName:9-Octadecyne \$\$ Octadec-9-yne \$\$

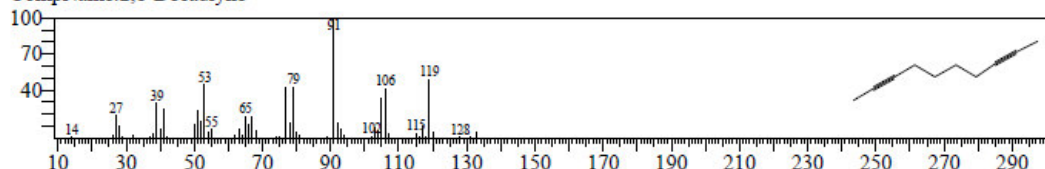


<< Target >>

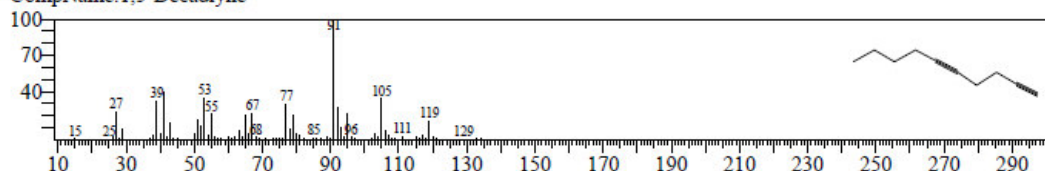
Line#:12 R.Time:23.775(Scan#:4156) MassPeaks:151
RawMode:Averaged 23.770-23.780(4155-4157) BasePeak:79.00(30591)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



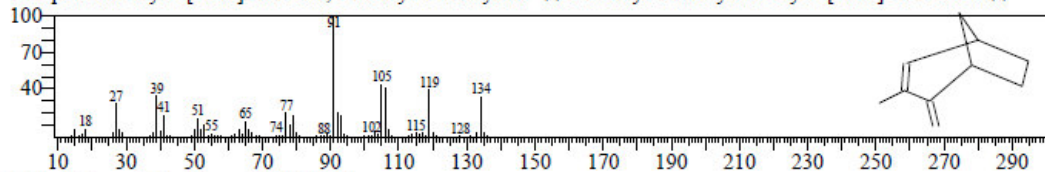
Hit#:1 Entry:6342 Library:NIST14s.lib
SI:84 Formula:C10H14 CAS:4116-93-2 MolWeight:134 RetIndex:1050
CompName:2,8-Decadiyne



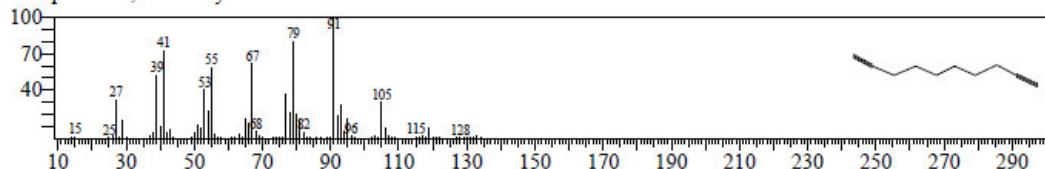
Hit#:2 Entry:6330 Library:NIST14s.lib
SI:83 Formula:C10H14 CAS:53963-03-4 MolWeight:134 RetIndex:1030
CompName:1,5-Decadiyne



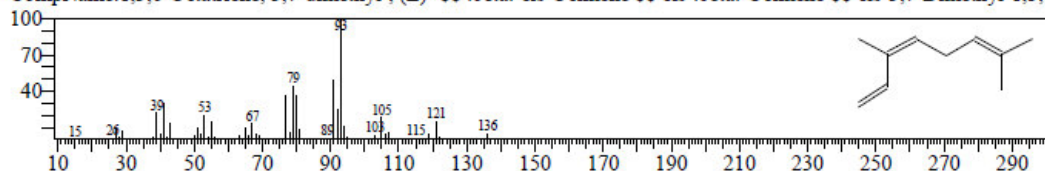
Hit#:3 Entry:6341 Library:NIST14s.lib
SI:82 Formula:C10H14 CAS:49826-53-1 MolWeight:134 RetIndex:1000
CompName:Bicyclo[3.2.1]oct-2-ene, 3-methyl-4-methylene- \$\$ 3-Methyl-4-methylenebicyclo[3.2.1]oct-2-ene # \$\$



Hit#:4 Entry:6331 Library:NIST14s.lib
SI:81 Formula:C10H14 CAS:1720-38-3 MolWeight:134 RetIndex:1011
CompName:1,9-Decadiyne

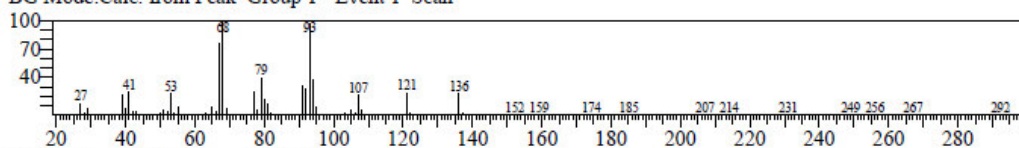


Hit#:5 Entry:6842 Library:NIST14s.lib
SI:81 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6

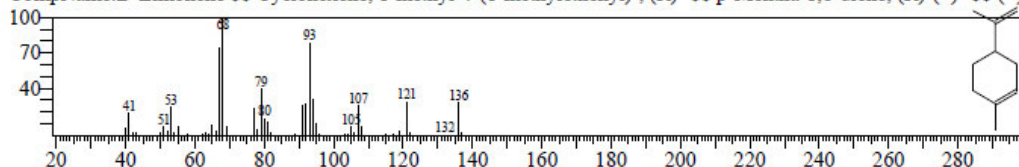


<< Target >>

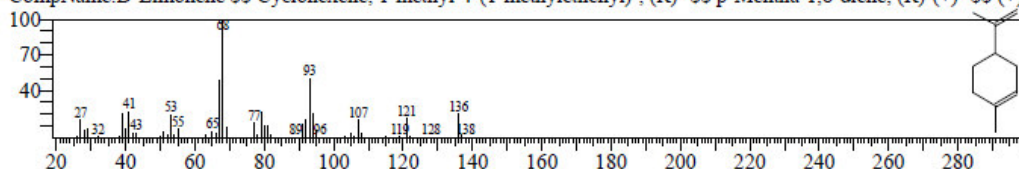
Line#:13 R.Time:24.840(Scan#:4369) MassPeaks:184
RawMode:Averaged 24.835-24.845(4368-4370) BasePeak:68.00(481501)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



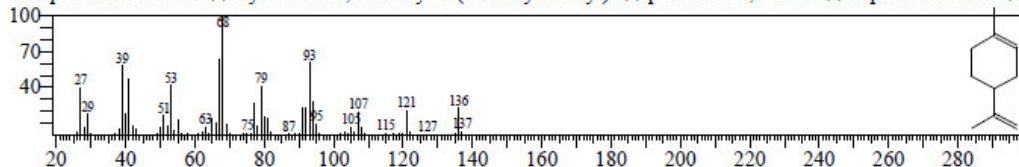
Hit#:1 Entry:6793 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



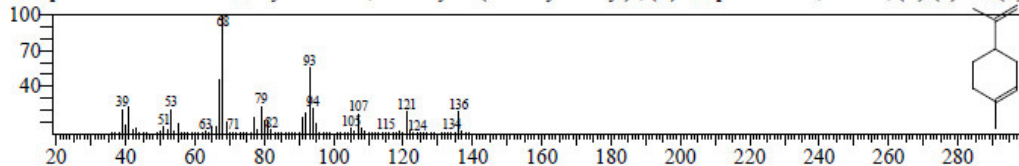
Hit#:2 Entry:6792 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-



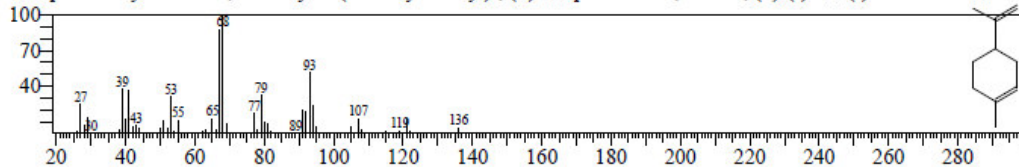
Hit#:3 Entry:6786 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:138-86-3 MolWeight:136 RetIndex:1018
CompName:Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)- \$\$ p-Mentha-1,8-diene \$\$.alpha.-Limonene \$\$



Hit#:4 Entry:6791 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:5989-27-5 MolWeight:136 RetIndex:1018
CompName:D-Limonene \$\$ Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- \$\$ p-Mentha-1,8-diene, (R)-(+)- \$\$ (+)-

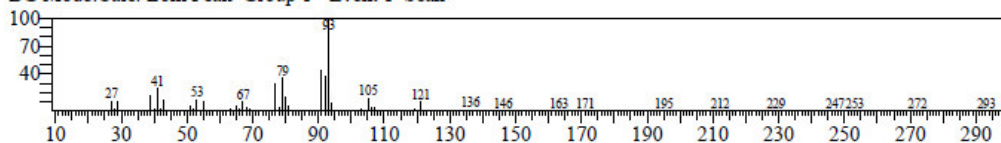


Hit#:5 Entry:6787 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:5989-54-8 MolWeight:136 RetIndex:1018
CompName:Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)- \$\$ p-Mentha-1,8-diene, (S)-(-)- \$\$ (-)-Limonene \$\$ L-Li

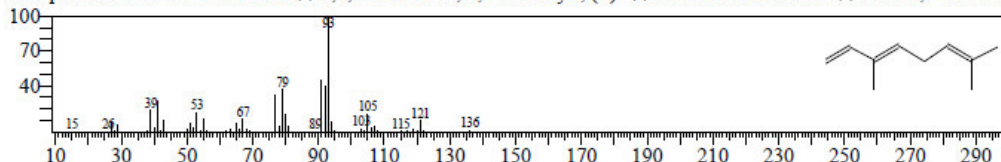


<< Target >>

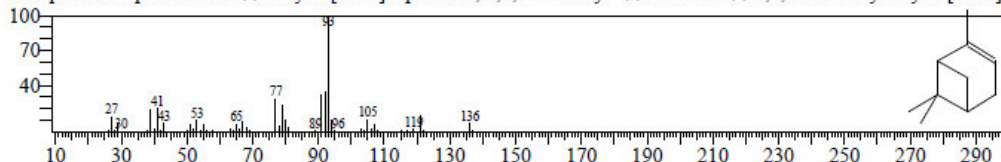
Line#:14 R.Time:27.925(Scan#:4986) MassPeaks:156
RawMode:Averaged 27.920-27.930(4985-4987) BasePeak:93.05(918269)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



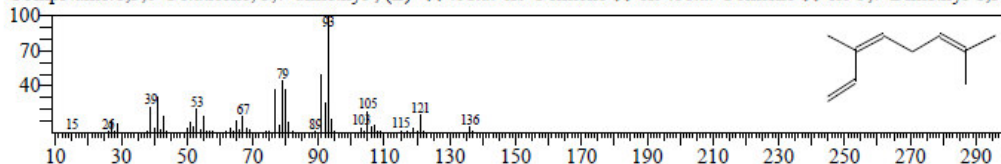
Hit#:1 Entry:6844 Library:NIST14s.lib
SI:97 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethyl-



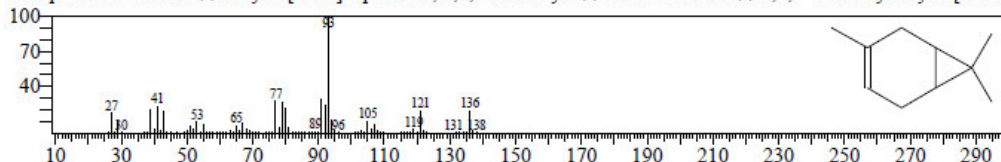
Hit#:2 Entry:6850 Library:NIST14s.lib
SI:95 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h



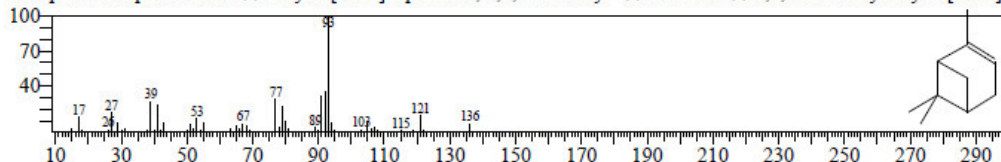
Hit#:3 Entry:6842 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6-



Hit#:4 Entry:6838 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:13466-78-9 MolWeight:136 RetIndex:948
CompName:3-Carene \$\$ Bicyclo[4.1.0]hept-3-ene, 3,7,7-trimethyl- \$\$ delta-3-Carene \$\$ 3,7,7-Trimethylbicyclo[4.1.0]

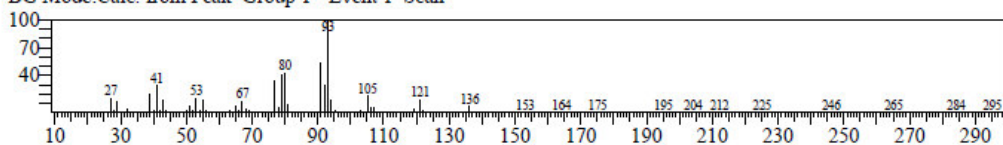


Hit#:5 Entry:6849 Library:NIST14s.lib
SI:93 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h

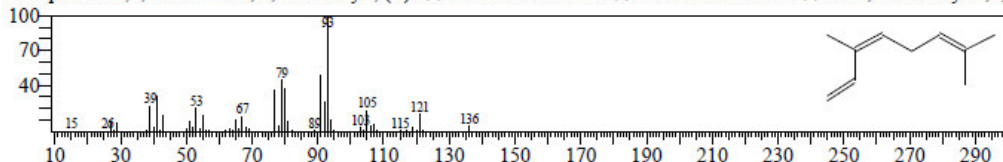


<< Target >>

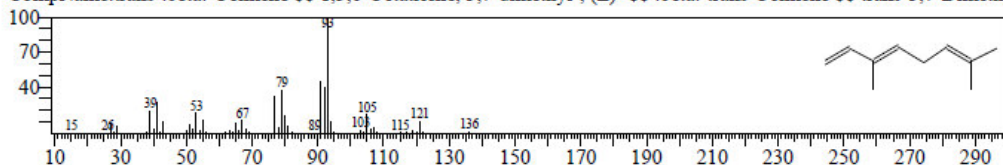
Line#:15 R.Time:29.935(Scan#:5388) MassPeaks:167
RawMode:Averaged 29.930-29.940(5387-5389) BasePeak:93.05(9052)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



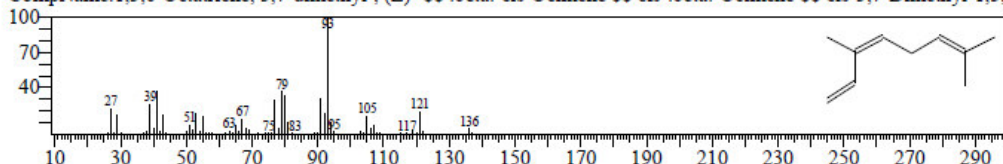
Hit#:1 Entry:6842 Library:NIST14s.lib
SI:96 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6-



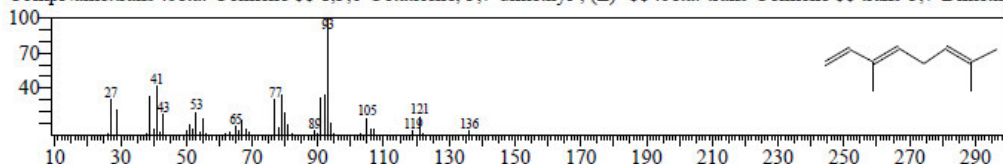
Hit#:2 Entry:6844 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethyl-



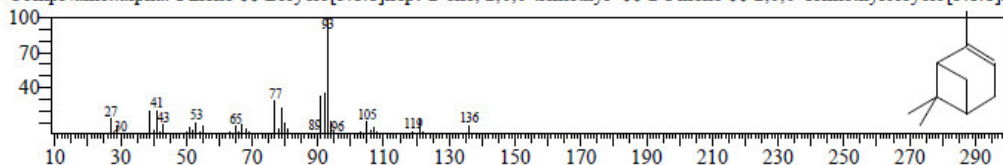
Hit#:3 Entry:6814 Library:NIST14s.lib
SI:94 Formula:C10H16 CAS:3338-55-4 MolWeight:136 RetIndex:976
CompName:1,3,6-Octatriene, 3,7-dimethyl-, (Z)- \$\$.beta.-cis-Ocimene \$\$ cis-.beta.-Ocimene \$\$ cis-3,7-Dimethyl-1,3,6-



Hit#:4 Entry:6813 Library:NIST14s.lib
SI:92 Formula:C10H16 CAS:3779-61-1 MolWeight:136 RetIndex:976
CompName:trans-.beta.-Ocimene \$\$ 1,3,6-Octatriene, 3,7-dimethyl-, (E)- \$\$.beta.-trans-Ocimene \$\$ trans-3,7-Dimethyl-



Hit#:5 Entry:6850 Library:NIST14s.lib
SI:91 Formula:C10H16 CAS:80-56-8 MolWeight:136 RetIndex:948
CompName:.alpha.-Pinene \$\$ Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- \$\$ 2-Pinene \$\$ 2,6,6-Trimethylbicyclo[3.1.1]h

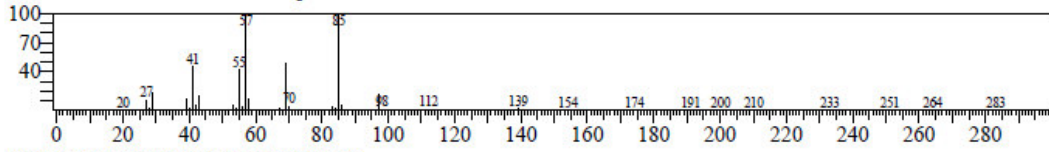


<< Target >>

Line#:16 R.Time:31.205(Scan#:5642) MassPeaks:183

RawMode:Averaged 31.200-31.210(5641-5643) BasePeak:57.05(932873)

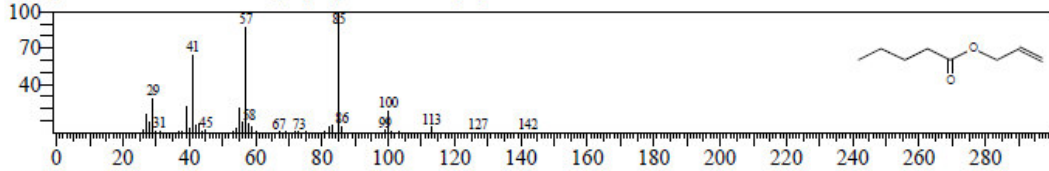
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:7834 Library:NIST14s.lib

SI:86 Formula:C8H14O2 CAS:6321-45-5 MolWeight:142 RetIndex:974

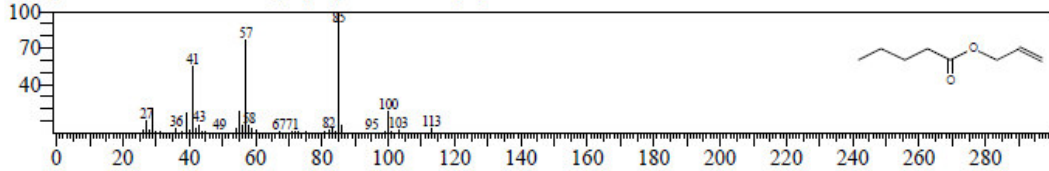
CompName: Pentanoic acid, 2-propenyl ester \$\$ Allyl pentanoate # \$\$



Hit#:2 Entry:7835 Library:NIST14s.lib

SI:85 Formula:C8H14O2 CAS:6321-45-5 MolWeight:142 RetIndex:974

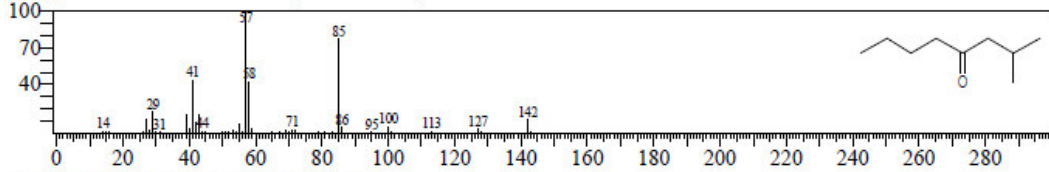
CompName: Pentanoic acid, 2-propenyl ester \$\$ Allyl pentanoate # \$\$



Hit#:3 Entry:7891 Library:NIST14s.lib

SI:85 Formula:C9H18O CAS:7492-38-8 MolWeight:142 RetIndex:988

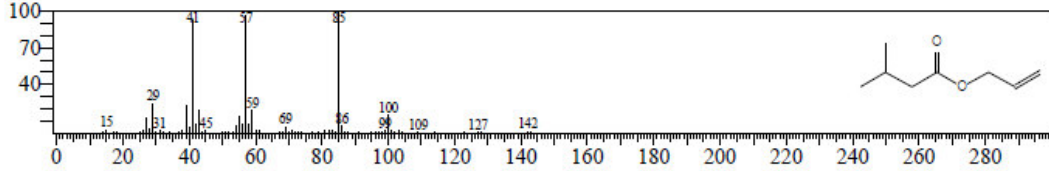
CompName: 4-Octanone, 2-methyl- \$\$ 2-Methyl-4-octanone \$\$



Hit#:4 Entry:7836 Library:NIST14s.lib

SI:85 Formula:C8H14O2 CAS:2835-39-4 MolWeight:142 RetIndex:910

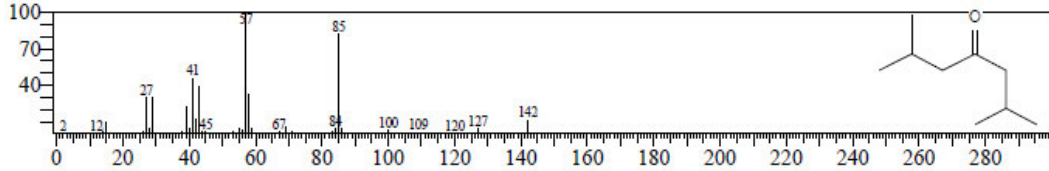
CompName: Allyl isovalerate \$\$ Butanoic acid, 3-methyl-, 2-propenyl ester \$\$ Isovaleric acid, allyl ester \$\$ Butyric acid



Hit#:5 Entry:7892 Library:NIST14s.lib

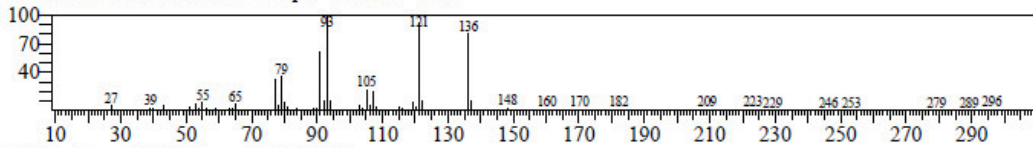
SI:84 Formula:C9H18O CAS:108-83-8 MolWeight:142 RetIndex:924

CompName: 4-Heptanone, 2,6-dimethyl- \$\$ Diisobutyl ketone \$\$ s-Diisopropylacetone \$\$ DIBK \$\$ Isobutyl ketone \$\$

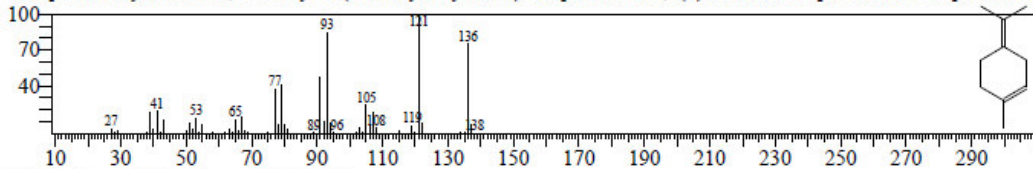


<< Target >>

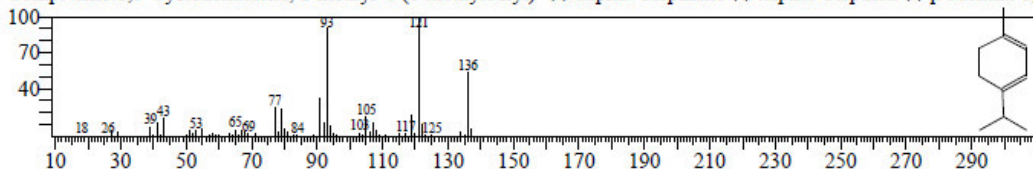
Line#:17 R.Time:35.965(Scan#:6594) MassPeaks:158
RawMode:Averaged 35.960-35.970(6593-6595) BasePeak:93.05(3642)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



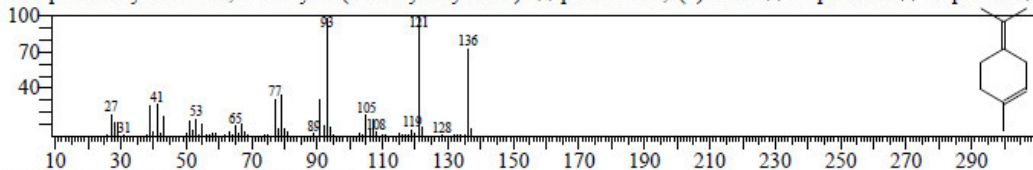
Hit#:1 Entry:6867 Library:NIST14s.lib
SI:90 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



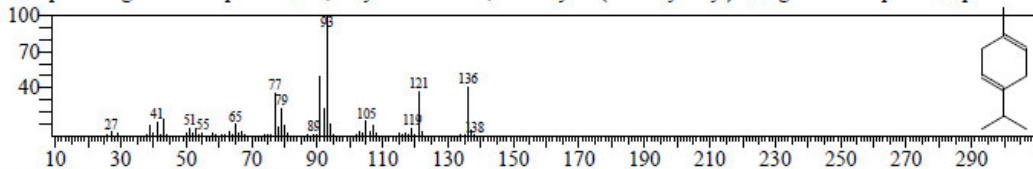
Hit#:2 Entry:6862 Library:NIST14s.lib
SI:87 Formula:C10H16 CAS:99-86-5 MolWeight:136 RetIndex:998
CompName:1,3-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$ alpha-Terpinene \$\$ alpha-Terpinen \$\$ p-Mentha-1,4(8)-diene



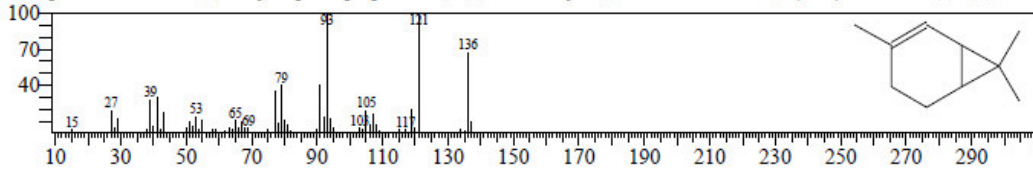
Hit#:3 Entry:6866 Library:NIST14s.lib
SI:87 Formula:C10H16 CAS:586-62-9 MolWeight:136 RetIndex:1052
CompName:Cyclohexene, 1-methyl-4-(1-methylethylidene)- \$\$ p-Mentha-1,4(8)-diene \$\$ Terpinolene \$\$ Terpinolen \$\$



Hit#:4 Entry:6846 Library:NIST14s.lib
SI:86 Formula:C10H16 CAS:99-85-4 MolWeight:136 RetIndex:998
CompName:gamma-Terpinene \$\$ 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)- \$\$ gamma-Terpinen \$\$ p-Mentha-1,4(8)-diene

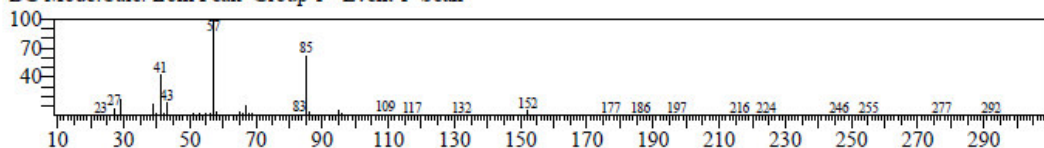


Hit#:5 Entry:6859 Library:NIST14s.lib
SI:85 Formula:C10H16 CAS:554-61-0 MolWeight:136 RetIndex:948
CompName:2-Carene \$\$ Bicyclo[4.1.0]hept-2-ene, 3,7,7-trimethyl- \$\$ delta-2-Carene \$\$ (+/-)-2-Carene \$\$ 3,7,7-Trimethyl-2-carene

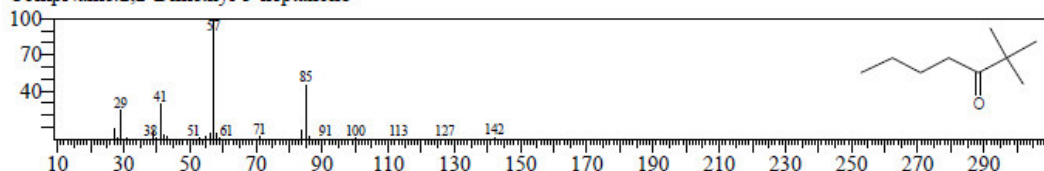


<< Target >>

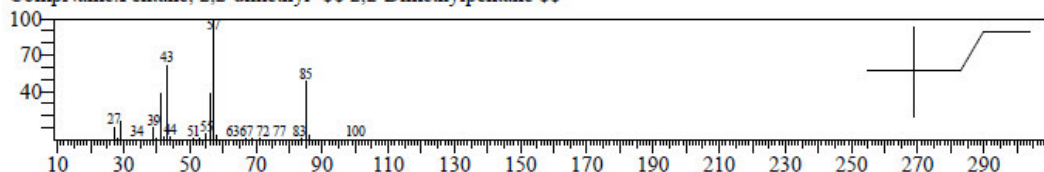
Line#:18 R.Time:36.175(Scan#:6636) MassPeaks:218
RawMode:Averaged 36.170-36.180(6635-6637) BasePeak:57.05(318194)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



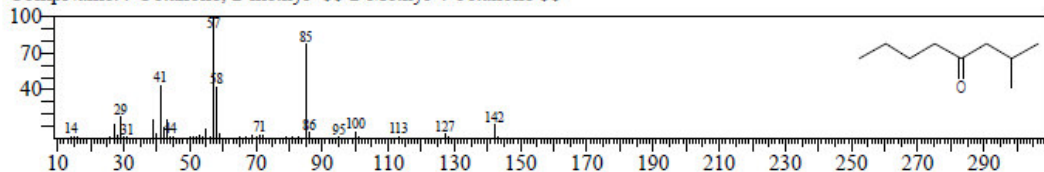
Hit#:1 Entry:7893 Library:NIST14s.lib
SI:87 Formula:C9H18O CAS:19078-97-8 MolWeight:142 RefIndex:967
CompName:2,2-Dimethyl-3-heptanone



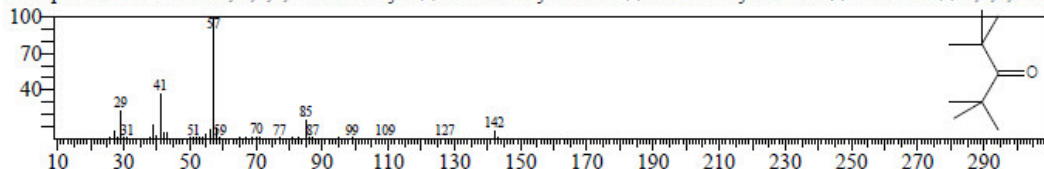
Hit#:2 Entry:1943 Library:NIST14s.lib
SI:87 Formula:C7H16 CAS:590-35-2 MolWeight:100 RefIndex:633
CompName:2,2-Dimethylpentane



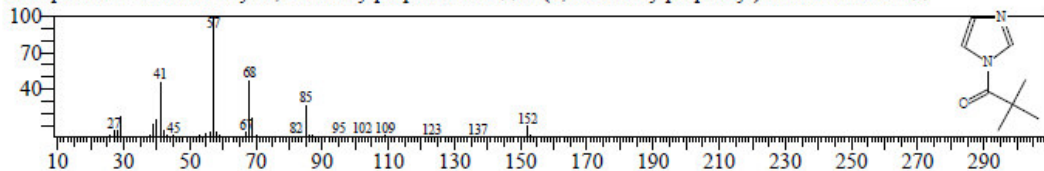
Hit#:3 Entry:7891 Library:NIST14s.lib
SI:86 Formula:C9H18O CAS:7492-38-8 MolWeight:142 RefIndex:988
CompName:2-Methyl-4-octanone



Hit#:4 Entry:7875 Library:NIST14s.lib
SI:86 Formula:C9H18O CAS:815-24-7 MolWeight:142 RefIndex:883
CompName:2,2,4,4-Tetramethyl-3-pentanone

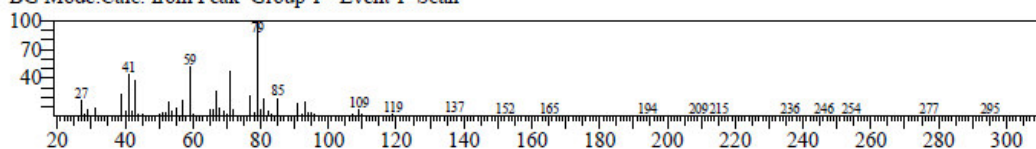


Hit#:5 Entry:9704 Library:NIST14s.lib
SI:86 Formula:C8H12N2O CAS:4195-19-1 MolWeight:152 RefIndex:1164
CompName:1-(2,2-Dimethylpropanoyl)-1H-imidazole

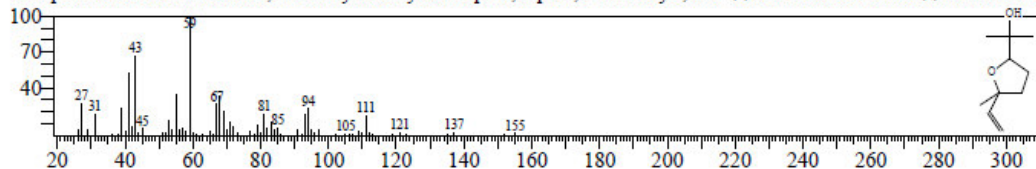


<< Target >>

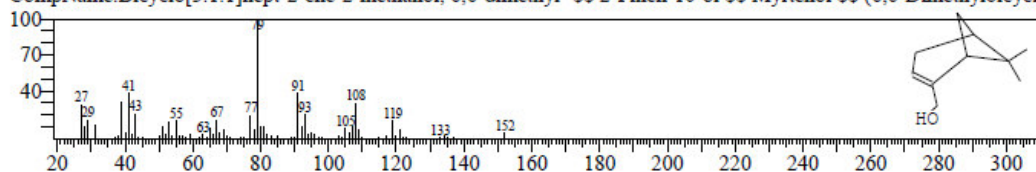
Line#:19 R.Time:37.465(Scan#:6894) MassPeaks:209
RawMode:Averaged 37.460-37.470(6893-6895) BasePeak:79.00(2115149)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



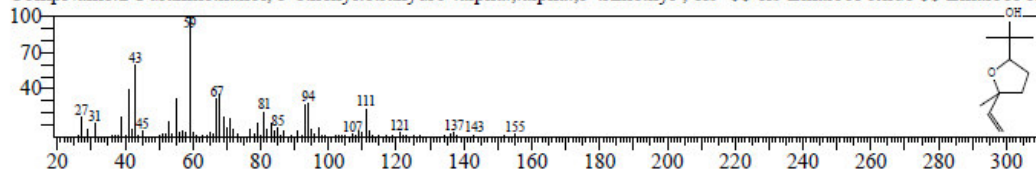
Hit#:1 Entry:13270 Library:NIST14s.lib
SI:79 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



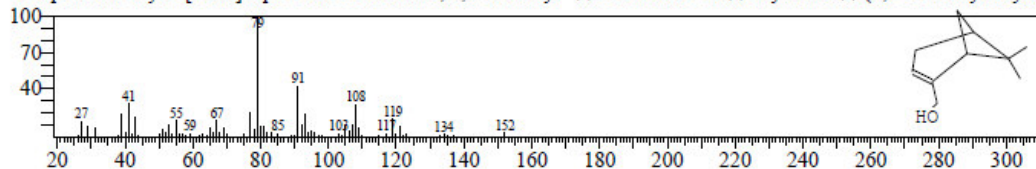
Hit#:2 Entry:9836 Library:NIST14s.lib
SI:78 Formula:C10H16O CAS:515-00-4 MolWeight:152 RetIndex:1191
CompName:Bicyclo[3.1.1]hept-2-ene-2-methanol, 6,6-dimethyl- \$\$ 2-Pinen-10-ol \$\$ Myrtenol \$\$ (6,6-Dimethylbicycl



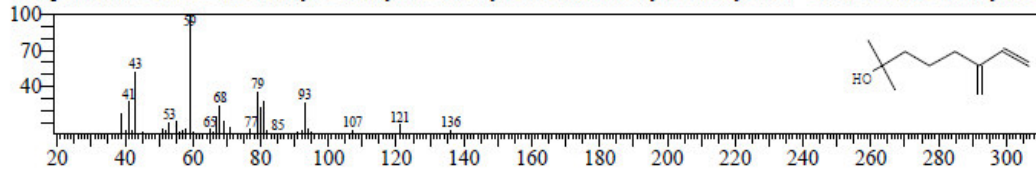
Hit#:3 Entry:13269 Library:NIST14s.lib
SI:77 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



Hit#:4 Entry:9835 Library:NIST14s.lib
SI:77 Formula:C10H16O CAS:515-00-4 MolWeight:152 RetIndex:1191
CompName:Bicyclo[3.1.1]hept-2-ene-2-methanol, 6,6-dimethyl- \$\$ 2-Pinen-10-ol \$\$ Myrtenol \$\$ (6,6-Dimethylbicycl

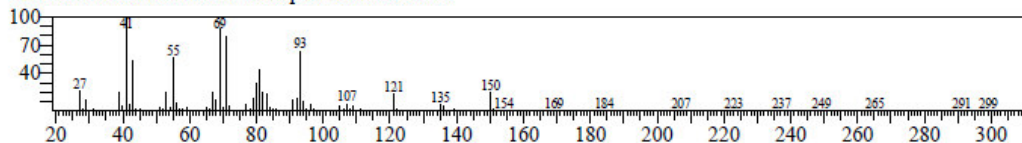


Hit#:5 Entry:10324 Library:NIST14s.lib
SI:77 Formula:C10H18O CAS:543-39-5 MolWeight:154 RetIndex:1064
CompName:7-Octen-2-ol, 2-methyl-6-methylene- \$\$ Myrcenol \$\$ 2-Methyl-6-methylene-7-octen-2-ol \$\$ 3-Methylene-

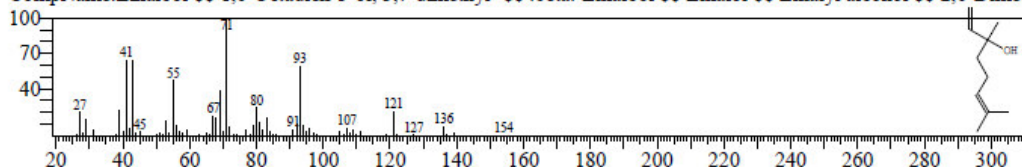


<< Target >>

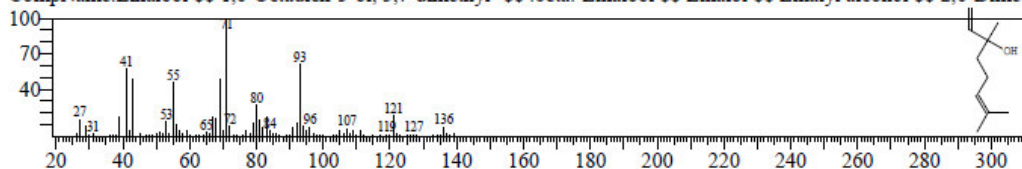
Line#:20 R.Time:38.010(Scan#:7003) MassPeaks:191
RawMode:Averaged 38.005-38.015(7002-7004) BasePeak:41.00(14630)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



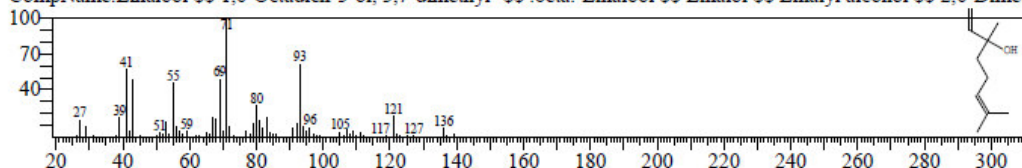
Hit#:1 Entry:10353 Library:NIST14s.lib
SI:90 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



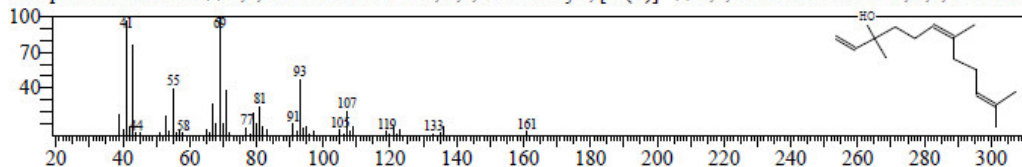
Hit#:2 Entry:10360 Library:NIST14s.lib
SI:89 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



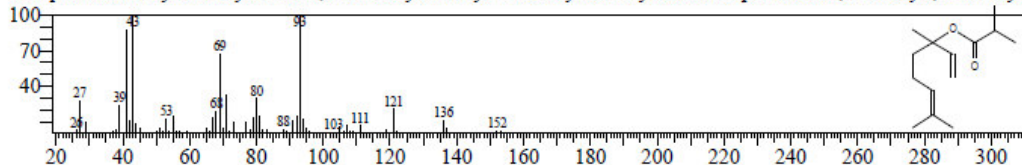
Hit#:3 Entry:10359 Library:NIST14s.lib
SI:89 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$\$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$\$.beta.-Linalool \$\$ Linalol \$\$ Linalyl alcohol \$\$ 2,6-Dimet



Hit#:4 Entry:21651 Library:NIST14s.lib
SI:85 Formula:C15H26O CAS:142-50-7 MolWeight:222 RetIndex:1564
CompName:Nerolidol \$\$ 1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-, [S-(Z)]- \$\$ 1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-



Hit#:5 Entry:21906 Library:NIST14s.lib
SI:84 Formula:C14H24O2 CAS:78-35-3 MolWeight:224 RetIndex:1407
CompName:Linalyl isobutyrate \$\$ 1,5-Dimethyl-1-vinyl-4-hexenyl isobutyrate \$\$ Propanoic acid, 2-methyl-, 1-ethenyl-

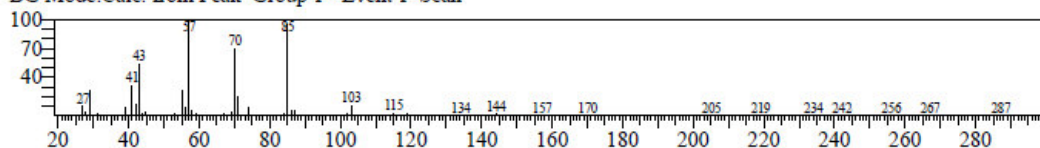


<< Target >>

Line#:21 R.Time:38.540(Scan#:7109) MassPeaks:153

RawMode:Averaged 38.535-38.545(7108-7110) BasePeak:57.05(21410)

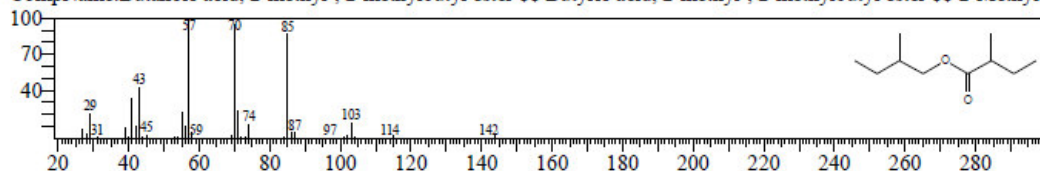
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:13640 Library:NIST14s.lib

SI:95 Formula:C10H20O2 CAS:2445-78-5 MolWeight:172 RefIndex:1054

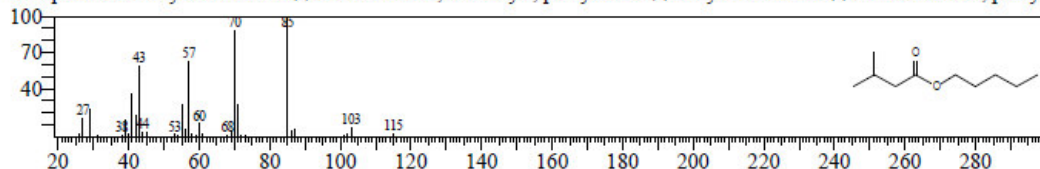
CompName:Butanoic acid, 2-methyl-, 2-methylbutyl ester \$\$ Butyric acid, 2-methyl-, 2-methylbutyl ester \$\$ 2-Methylb



Hit#:2 Entry:13679 Library:NIST14s.lib

SI:91 Formula:C10H20O2 CAS:25415-62-7 MolWeight:172 RefIndex:1118

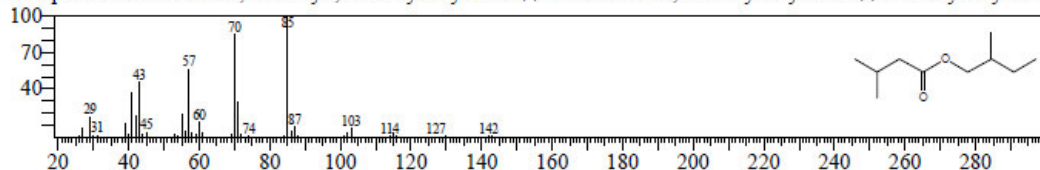
CompName:n-Amyl isovalerate \$\$ Butanoic acid, 3-methyl-, pentyl ester \$\$ Amyl isovalerate \$\$ Isovaleric acid, pentyl



Hit#:3 Entry:13680 Library:NIST14s.lib

SI:89 Formula:C10H20O2 CAS:2445-77-4 MolWeight:172 RefIndex:1054

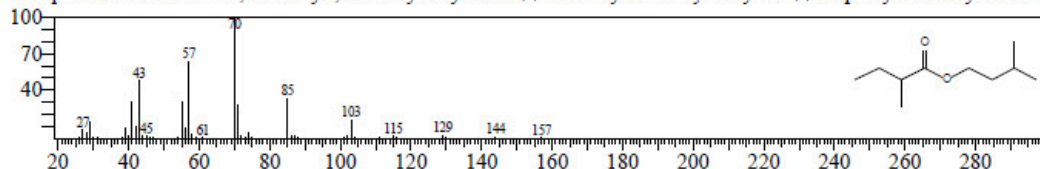
CompName:Butanoic acid, 3-methyl-, 2-methylbutyl ester \$\$ Isovaleric acid, 2-methylbutyl ester \$\$ 2-Methylbutyl isov



Hit#:4 Entry:13657 Library:NIST14s.lib

SI:88 Formula:C10H20O2 CAS:27625-35-0 MolWeight:172 RefIndex:1054

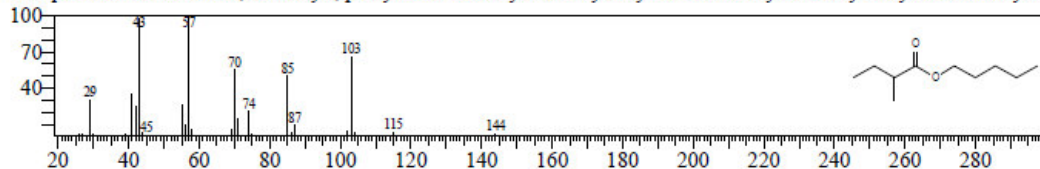
CompName:Butanoic acid, 2-methyl-, 3-methylbutyl ester \$\$ iso-Amyl 2-methyl butyrate \$\$ Isopentyl 2-methylbutanoa



Hit#:5 Entry:13637 Library:NIST14s.lib

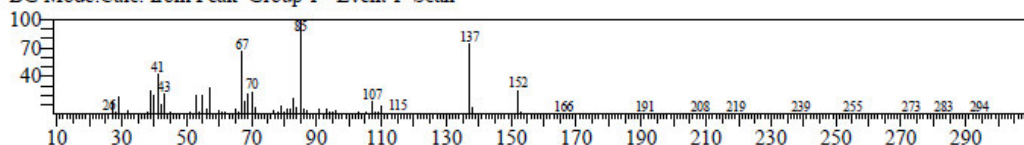
SI:87 Formula:C10H20O2 CAS:68039-26-9 MolWeight:172 RefIndex:1118

CompName:Butanoic acid, 2-methyl-, pentyl ester \$\$ Amyl 2-methylbutyrate \$\$ N-Amyl 2-methyl butyrate \$\$ Pentyl 2-

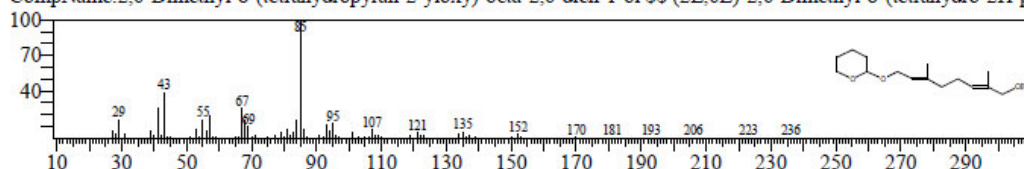


<< Target >>

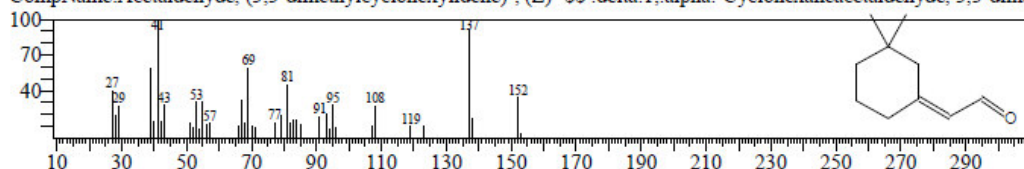
Line#:22 R.Time:39.070(Scan#:7215) MassPeaks:184
RawMode:Averaged 39.065-39.075(7214-7216) BasePeak:85.05(11727)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



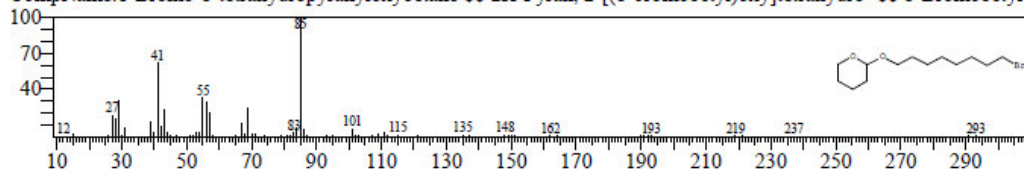
Hit#:1 Entry:24881 Library:NIST14s.lib
SI:77 Formula:C15H26O3 CAS:38290-53-8 MolWeight:254 RetIndex:1953
CompName:2,6-Dimethyl-8-(tetrahydropyran-2-yloxy)-octa-2,6-dien-1-ol



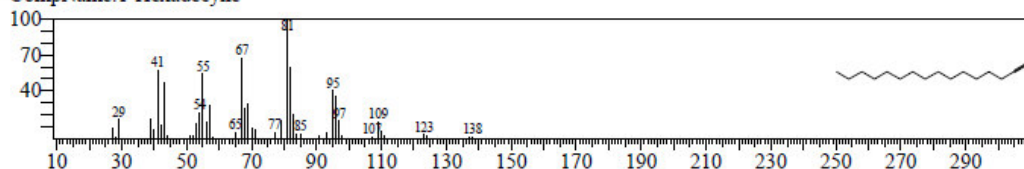
Hit#:2 Entry:9793 Library:NIST14s.lib
SI:77 Formula:C10H16O CAS:26532-24-1 MolWeight:152 RetIndex:1226
CompName:Acetaldehyde, (3,3-dimethylcyclohexylidene)-, (Z)-



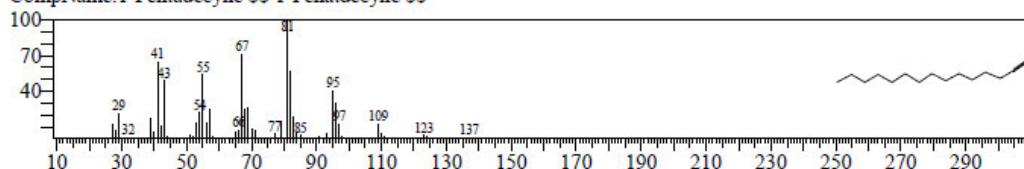
Hit#:3 Entry:27841 Library:NIST14s.lib
SI:74 Formula:C13H25BrO2 CAS:50816-20-1 MolWeight:292 RetIndex:1837
CompName:1-Bromo-8-(tetrahydropyran-2-yloxy)octane



Hit#:4 Entry:21709 Library:NIST14s.lib
SI:73 Formula:C16H30 CAS:629-74-3 MolWeight:222 RetIndex:1609
CompName:1-Hexadecyne



Hit#:5 Entry:19798 Library:NIST14s.lib
SI:73 Formula:C15H28 CAS:765-13-9 MolWeight:208 RetIndex:1510
CompName:1-Pentadecyne

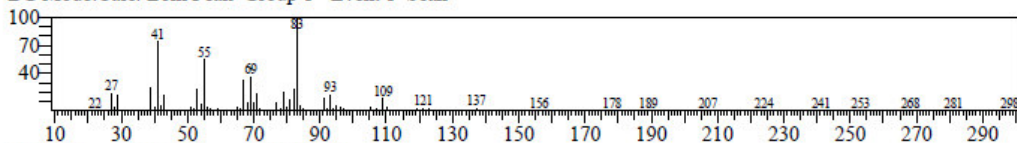


<< Target >>

Line#:23 R.Time:39.540(Scan#:7309) MassPeaks:204

RawMode:Averaged 39.535-39.545(7308-7310) BasePeak:83.00(19016)

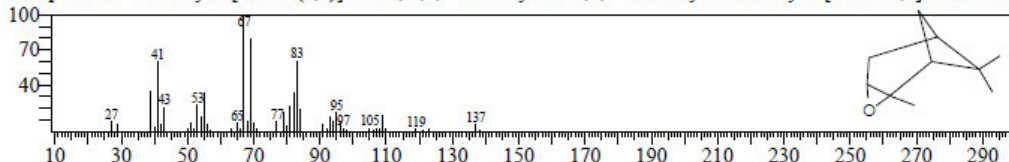
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:9808 Library:NIST14s.lib

SI:86 Formula:C10H16O CAS:1686-14-2 MolWeight:152 RetIndex:961

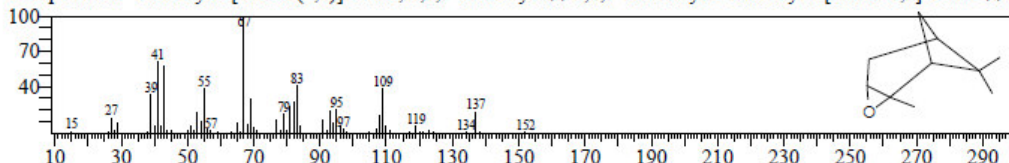
CompName:3-Oxatricyclo[4.1.1.0(2,4)]octane, 2,7,7-trimethyl- \$\$ 2,7,7-Trimethyl-3-oxatricyclo[4.1.1.0(2,4)]octane \$\$ P



Hit#:2 Entry:9806 Library:NIST14s.lib

SI:83 Formula:C10H16O CAS:1686-14-2 MolWeight:152 RetIndex:961

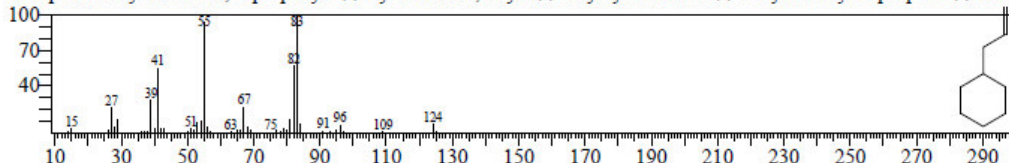
CompName:3-Oxatricyclo[4.1.1.0(2,4)]octane, 2,7,7-trimethyl- \$\$ 2,7,7-Trimethyl-3-oxatricyclo[4.1.1.0(2,4)]octane \$\$ P



Hit#:3 Entry:4717 Library:NIST14s.lib

SI:83 Formula:C9H16 CAS:2114-42-3 MolWeight:124 RetIndex:969

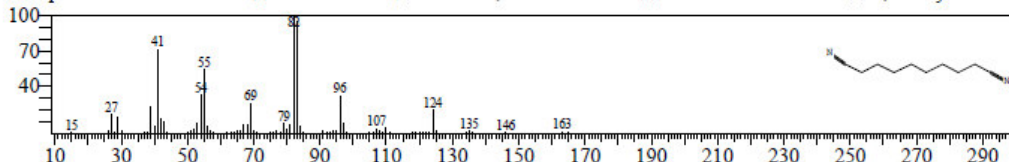
CompName:Cyclohexane, 2-propenyl- \$\$ Cyclohexane, allyl- \$\$ Allylcyclohexane \$\$ 1-Cyclohexyl-2-propene \$\$ 1-Pr



Hit#:4 Entry:12149 Library:NIST14s.lib

SI:82 Formula:C10H16N2 CAS:1871-96-1 MolWeight:164 RetIndex:1506

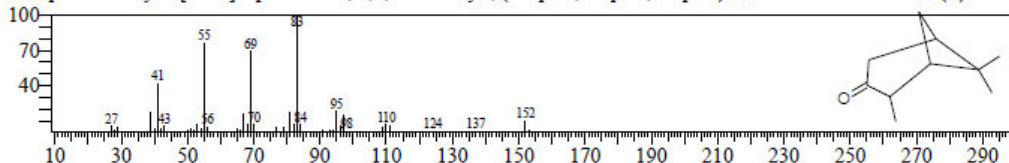
CompName:Decanedinitrile \$\$ Sebaconitrile \$\$ Octane-1,8-dicarbonitrile \$\$ Sebacic acid dinitrile \$\$ 1,8-Dicyanoctan



Hit#:5 Entry:9873 Library:NIST14s.lib

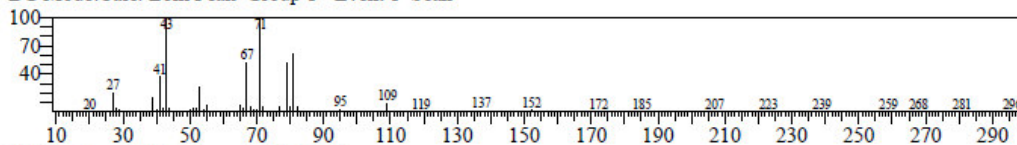
SI:82 Formula:C10H16O CAS:547-60-4 MolWeight:152 RetIndex:1109

CompName:Bicyclo[3.1.1]heptan-3-one, 2,6,6-trimethyl-, (1.alpha.,2.alpha.,5.alpha.)- \$\$ trans-3-Pinanone \$\$ (E)-Pinoc

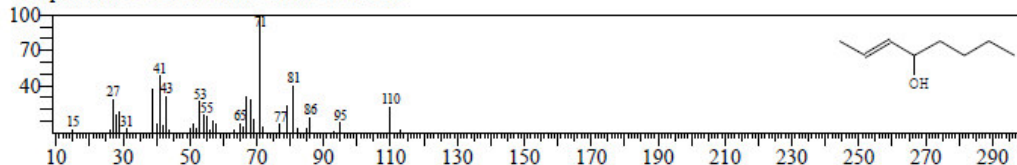


<< Target >>

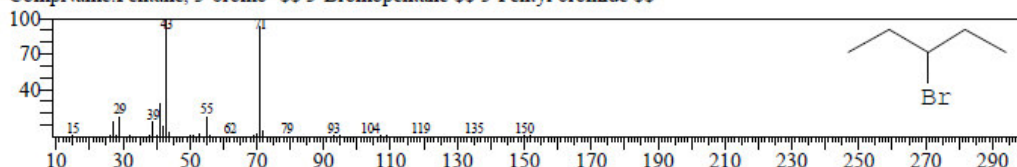
Line#:24 R.Time:39.880(Scan#:7377) MassPeaks:208
RawMode:Averaged 39.875-39.885(7376-7378) BasePeak:43.00(1474613)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



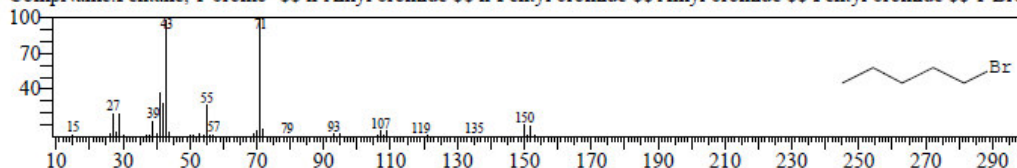
Hit#:1 Entry:5345 Library:NIST14s.lib
SI:82 Formula:C8H16O CAS:4798-61-2 MolWeight:128 RefIndex:987
CompName:2-Octen-4-ol \$\$ Octene-2-ol-4 \$\$



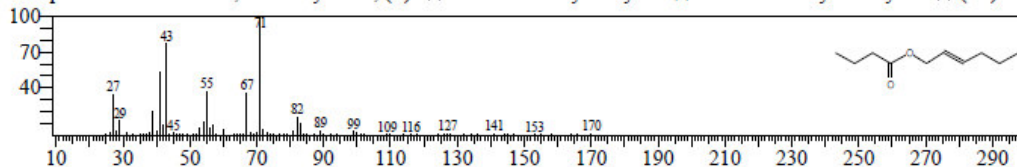
Hit#:2 Entry:9057 Library:NIST14s.lib
SI:81 Formula:C5H11Br CAS:1809-10-5 MolWeight:150 RefIndex:750
CompName:3-bromo- \$\$ 3-Bromopentane \$\$ 3-Pentyl bromide \$\$



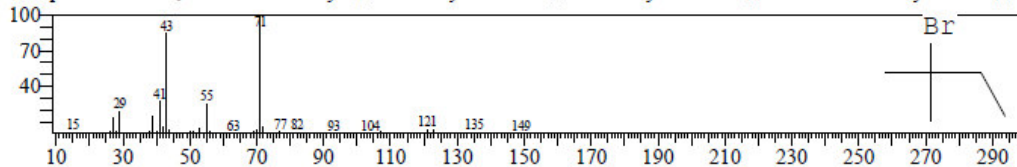
Hit#:3 Entry:9067 Library:NIST14s.lib
SI:81 Formula:C5H11Br CAS:110-53-2 MolWeight:150 RefIndex:814
CompName:1-bromo- \$\$ n-Amyl bromide \$\$ n-Pentyl bromide \$\$ Amyl bromide \$\$ Pentyl bromide \$\$ 1-Brom



Hit#:4 Entry:13285 Library:NIST14s.lib
SI:80 Formula:C10H18O2 CAS:53398-83-7 MolWeight:170 RefIndex:1191
CompName:Butanoic acid, 2-hexenyl ester, (E)- \$\$ trans-2-Hexenyl Butyrate \$\$ trans-2-Hexenyl n-butyrate \$\$ (2E)-2-H

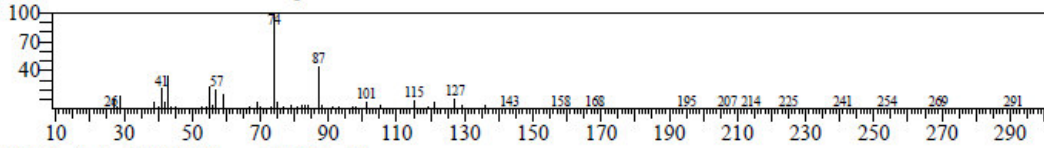


Hit#:5 Entry:9070 Library:NIST14s.lib
SI:80 Formula:C5H11Br CAS:507-36-8 MolWeight:150 RefIndex:730
CompName:2-bromo-2-methyl- \$\$ tert-Amyl bromide \$\$ tert-Pentyl bromide \$\$ 2-Bromo-2-methylbutane \$\$ 2

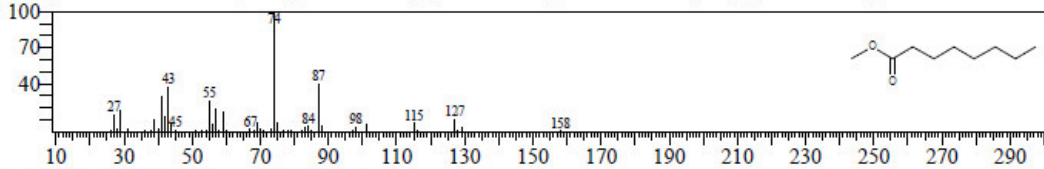


<< Target >>

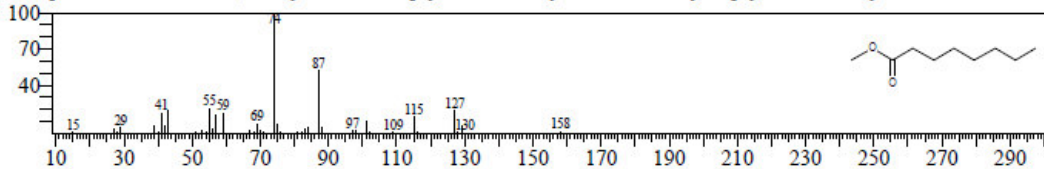
Line#:25 R.Time:40.700(Scan#:7541) MassPeaks:183
RawMode:Averaged 40.695-40.705(7540-7542) BasePeak:74.00(40779)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



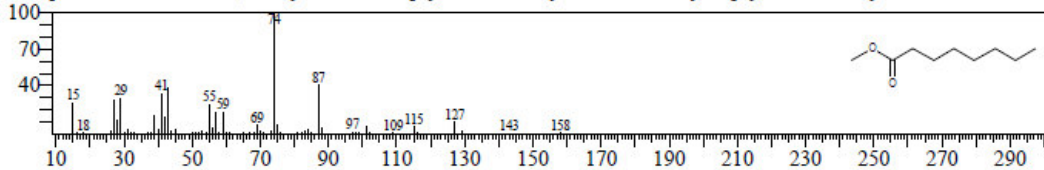
Hit#:1 Entry:11045 Library:NIST14s.lib
SI:92 Formula:C9H18O2 CAS:111-11-5 MolWeight:158 RetIndex:1083
CompName:Octanoic acid, methyl ester \$\$\$\$ Caprylic acid methyl ester \$\$\$\$ Methyl caprylate \$\$\$\$ Methyl n-octanoate \$\$\$\$ M



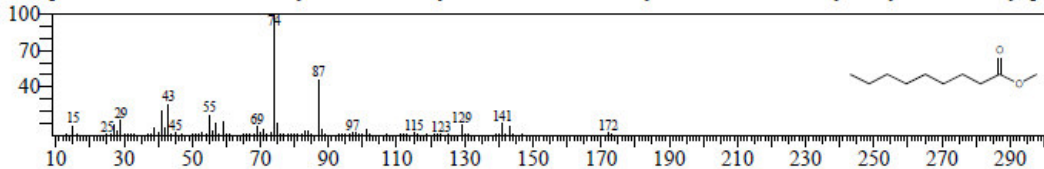
Hit#:2 Entry:11046 Library:NIST14s.lib
SI:90 Formula:C9H18O2 CAS:111-11-5 MolWeight:158 RetIndex:1083
CompName:Octanoic acid, methyl ester \$\$\$\$ Caprylic acid methyl ester \$\$\$\$ Methyl caprylate \$\$\$\$ Methyl n-octanoate \$\$\$\$ M



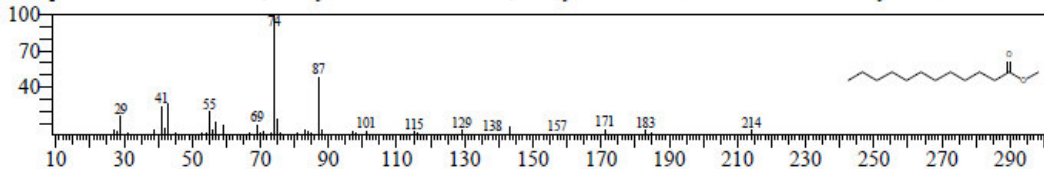
Hit#:3 Entry:11044 Library:NIST14s.lib
SI:90 Formula:C9H18O2 CAS:111-11-5 MolWeight:158 RetIndex:1083
CompName:Octanoic acid, methyl ester \$\$\$\$ Caprylic acid methyl ester \$\$\$\$ Methyl caprylate \$\$\$\$ Methyl n-octanoate \$\$\$\$ M



Hit#:4 Entry:13673 Library:NIST14s.lib
SI:87 Formula:C10H20O2 CAS:1731-84-6 MolWeight:172 RetIndex:1183
CompName:Nonanoic acid, methyl ester \$\$\$\$ Methyl n-nonanoate \$\$\$\$ Methyl nonanoate \$\$\$\$ Methyl nonylate \$\$\$\$ Methyl pe

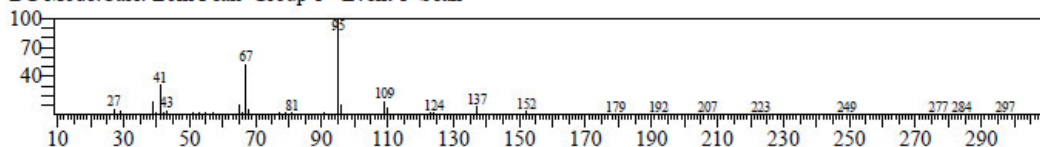


Hit#:5 Entry:20656 Library:NIST14s.lib
SI:85 Formula:C13H26O2 CAS:111-82-0 MolWeight:214 RetIndex:1481
CompName:Dodecanoic acid, methyl ester \$\$\$\$ Lauric acid, methyl ester \$\$\$\$ Metholene 2296 \$\$\$\$ Methyl dodecanoate \$\$\$\$ M

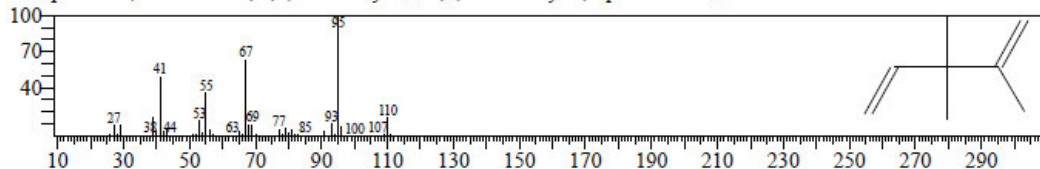


<< Target >>

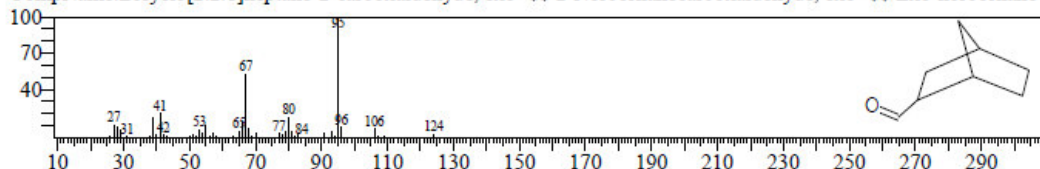
Line#:26 R.Time:42.205(Scan#:7842) MassPeaks:209
RawMode:Averaged 42.200-42.210(7841-7843) BasePeak:95.00(510901)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



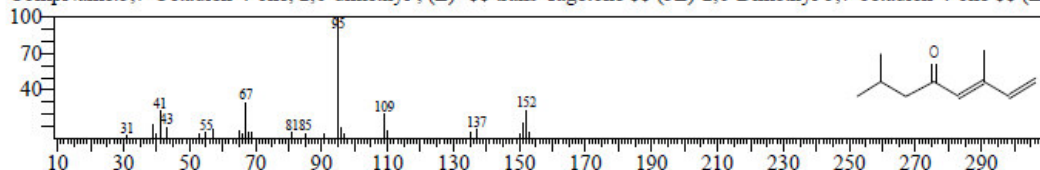
Hit#:1 Entry:2838 Library:NIST14s.lib
SI:86 Formula:C8H14 CAS:756-02-5 MolWeight:110 RefIndex:689
CompName:1,4-Pentadiene, 2,3,3-trimethyl- \$\$ 2,3,3-Trimethyl-1,4-pentadiene \$\$



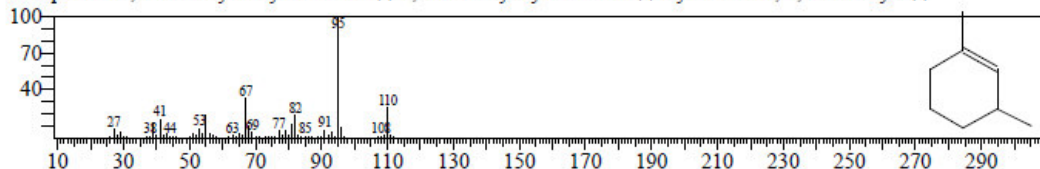
Hit#:2 Entry:4680 Library:NIST14s.lib
SI:85 Formula:C8H12O CAS:3574-55-8 MolWeight:124 RefIndex:991
CompName:Bicyclo[2.2.1]heptane-2-carboxaldehyde, exo- \$\$ 2-Norbornanecarboxaldehyde, exo- \$\$ Exo-norbornane-2



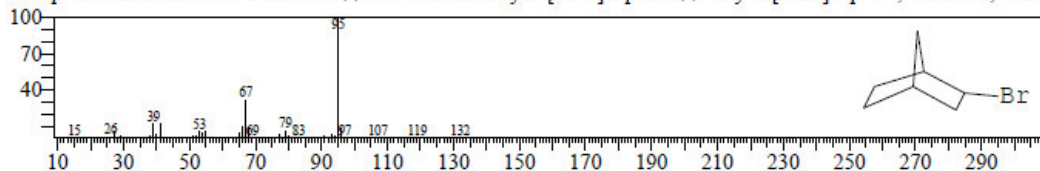
Hit#:3 Entry:9888 Library:NIST14s.lib
SI:84 Formula:C10H16O CAS:6752-80-3 MolWeight:152 RefIndex:1062
CompName:5,7-Octadien-4-one, 2,6-dimethyl-, (E)- \$\$ trans-Tagetone \$\$ (5E)-2,6-Dimethyl-5,7-octadien-4-one \$\$ (E)



Hit#:4 Entry:2844 Library:NIST14s.lib
SI:84 Formula:C8H14 CAS:2808-76-6 MolWeight:110 RefIndex:852
CompName:1,3-Dimethyl-1-cyclohexene \$\$ 1,3-Dimethyl cyclohexene \$\$ Cyclohexene, 1,3-dimethyl- \$\$

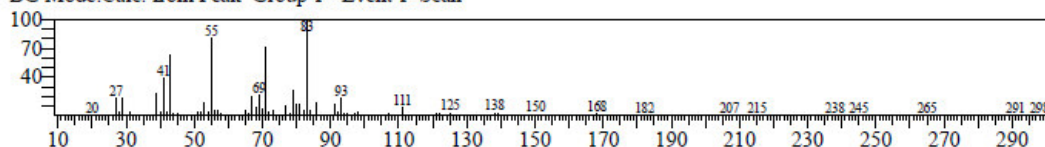


Hit#:5 Entry:13874 Library:NIST14s.lib
SI:84 Formula:C7H11Br CAS:2534-77-2 MolWeight:174 RefIndex:999
CompName:exo-2-Bromonorbornane \$\$ exo-2-Bromobicyclo[2.2.1]heptane \$\$ Bicyclo[2.2.1]heptane, 2-bromo-, exo-

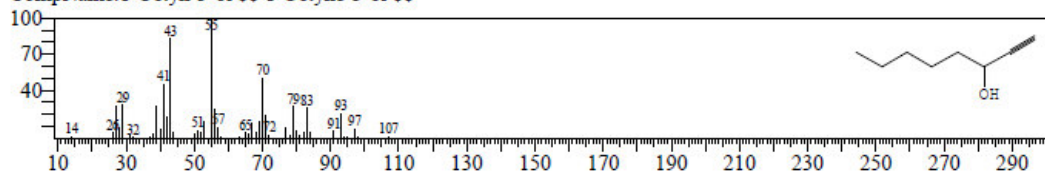


<< Target >>

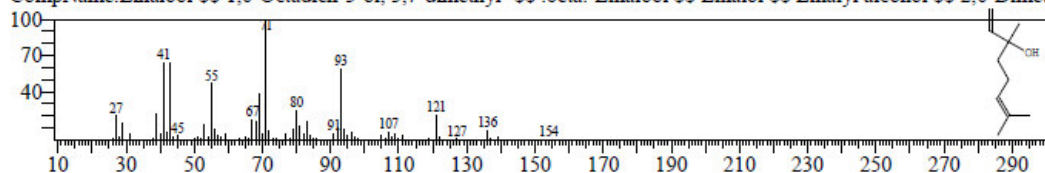
Line#:27 R.Time:42.495(Scan#:7900) MassPeaks:209
RawMode:Averaged 42.490-42.500(7899-7901) BasePeak:83.00(96436)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



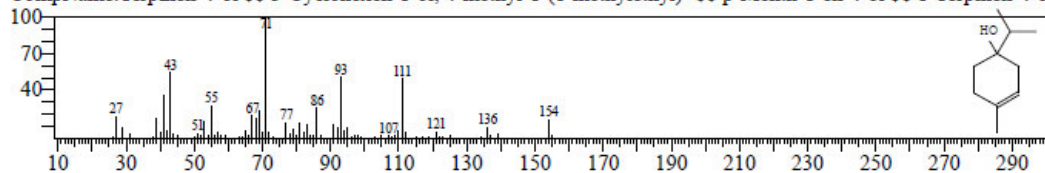
Hit#:1 Entry:4937 Library:NIST14s.lib
SI:83 Formula:C8H14O CAS:818-72-4 MolWeight:126 RetIndex:977
CompName:1-Octyn-3-ol \$ 1-Octyne-3-ol \$



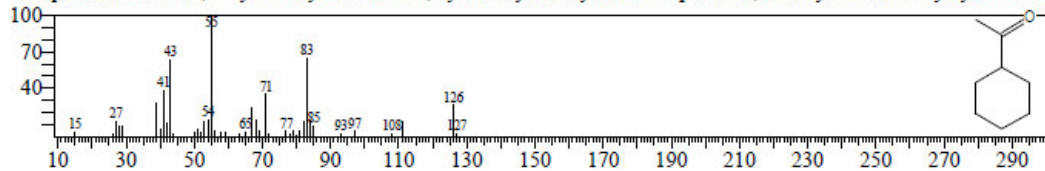
Hit#:2 Entry:10353 Library:NIST14s.lib
SI:81 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$.beta.-Linalool \$ Linalol \$ Linalyl alcohol \$ 2,6-Dimet



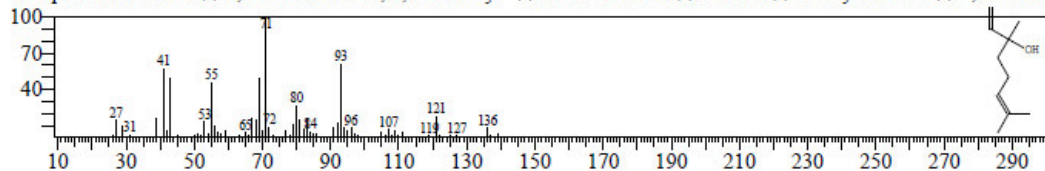
Hit#:3 Entry:10355 Library:NIST14s.lib
SI:81 Formula:C10H18O CAS:562-74-3 MolWeight:154 RetIndex:1137
CompName:Terpinen-4-ol \$ 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)- \$ p-Menth-1-en-4-ol \$ 1-Terpinen-4-ol



Hit#:4 Entry:4940 Library:NIST14s.lib
SI:81 Formula:C8H14O CAS:823-76-7 MolWeight:126 RetIndex:1016
CompName:Ethanone, 1-cyclohexyl- \$ Ketone, cyclohexyl methyl \$ Acetophenone, hexahydro- \$ Acetylcyclohexan

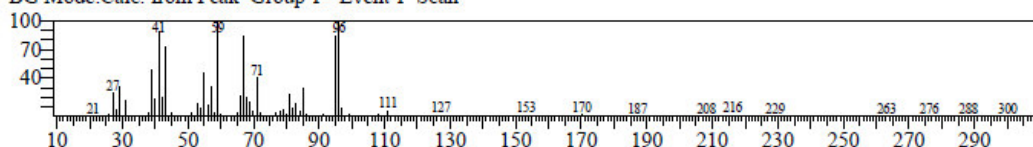


Hit#:5 Entry:10360 Library:NIST14s.lib
SI:80 Formula:C10H18O CAS:78-70-6 MolWeight:154 RetIndex:1082
CompName:Linalool \$ 1,6-Octadien-3-ol, 3,7-dimethyl- \$.beta.-Linalool \$ Linalol \$ Linalyl alcohol \$ 2,6-Dimet

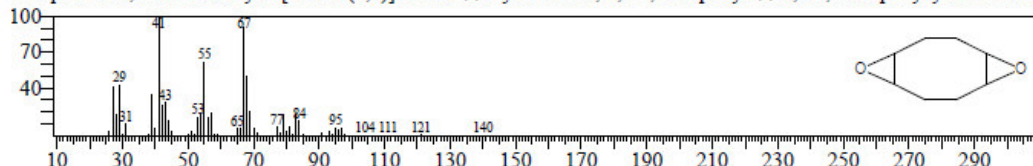


<< Target >>

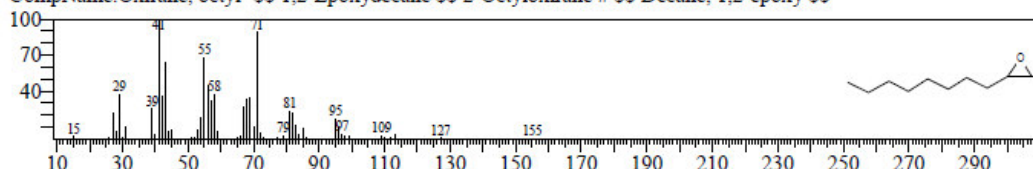
Line#:28 R.Time:43.030(Scan#:8007) MassPeaks:177
RawMode:Averaged 43.025-43.035(8006-8008) BasePeak:59.00(5153)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



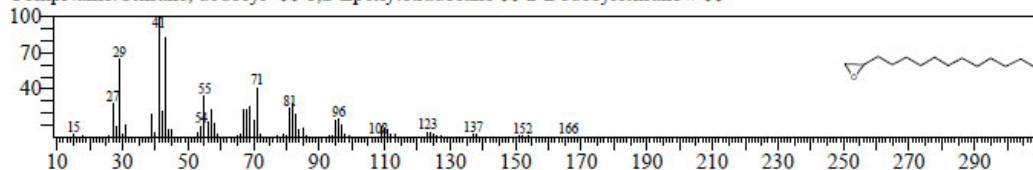
Hit#:1 Entry:7452 Library:NIST14s.lib
SI:80 Formula:C8H12O2 CAS:286-75-9 MolWeight:140 RefIndex:981
CompName:5,10-Dioxatricyclo[7.1.0.0(4,6)]decane \$\$ Cyclooctane, 1,2:5,6-diepoxy- \$\$ 1,2:5,6-Diepoxyoctane \$



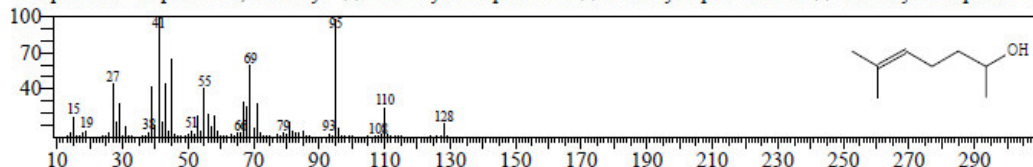
Hit#:2 Entry:10715 Library:NIST14s.lib
SI:80 Formula:C10H20O CAS:2404-44-6 MolWeight:156 RefIndex:1106
CompName:Oxirane, octyl- \$\$ 1,2-Epoxydecane \$\$ 2-Octyloxirane # \$\$ Decane, 1,2-epoxy \$\$



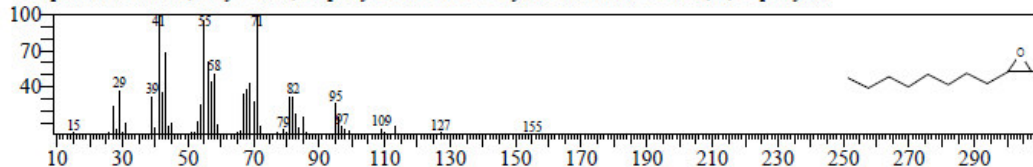
Hit#:3 Entry:20368 Library:NIST14s.lib
SI:80 Formula:C14H28O CAS:3234-28-4 MolWeight:212 RefIndex:1503
CompName:Oxirane, dodecyl- \$\$ 1,2-Epoxytetradecane \$\$ 2-Dodecyloxirane # \$\$



Hit#:4 Entry:5280 Library:NIST14s.lib
SI:80 Formula:C8H16O CAS:1569-60-4 MolWeight:128 RefIndex:964
CompName:5-Hepten-2-ol, 6-methyl- \$\$ 6-Methyl-5-hepten-2-ol \$\$ 6-methylhept-5-en-2-ol \$\$ 2-Methyl-2-hepten-6-ol

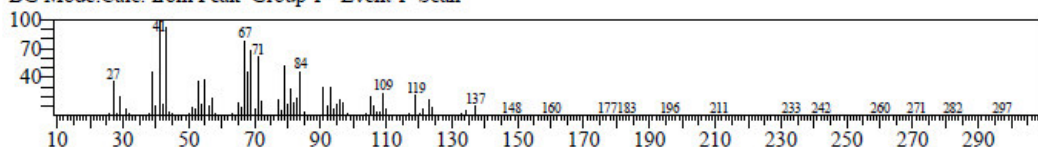


Hit#:5 Entry:10716 Library:NIST14s.lib
SI:80 Formula:C10H20O CAS:2404-44-6 MolWeight:156 RefIndex:1106
CompName:Oxirane, octyl- \$\$ 1,2-Epoxydecane \$\$ 2-Octyloxirane # \$\$ Decane, 1,2-epoxy \$\$

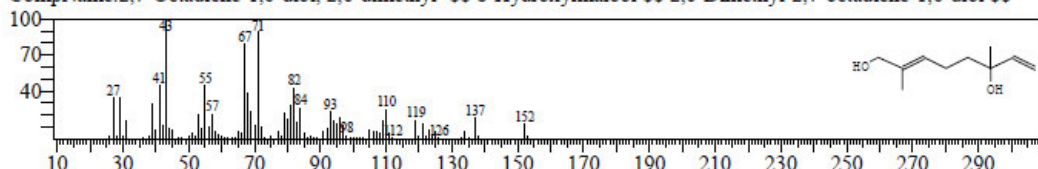


<< Target >>

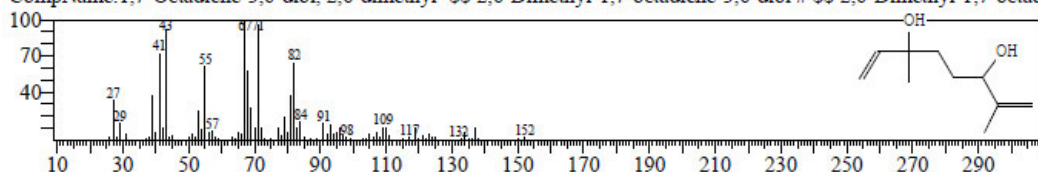
Line#:29 R.Time:43.285(Scan#:8058) MassPeaks:183
RawMode:Averaged 43.280-43.290(8057-8059) BasePeak:41.00(8586)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



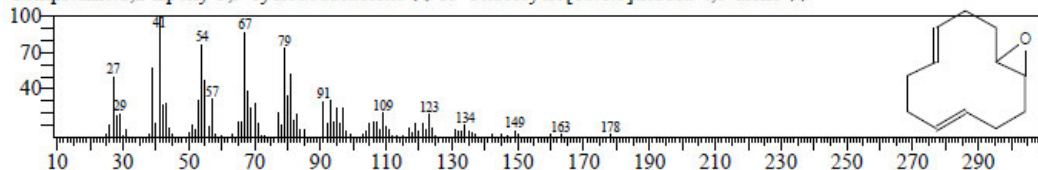
Hit#:1 Entry:13260 Library:NIST14s.lib
SI:87 Formula:C10H18O2 CAS:64142-78-5 MolWeight:170 RetIndex:1325
CompName:2,7-Octadiene-1,6-diol, 2,6-dimethyl- \$\$ 8-Hydroxylinalool \$\$ 2,6-Dimethyl-2,7-octadiene-1,6-diol \$\$



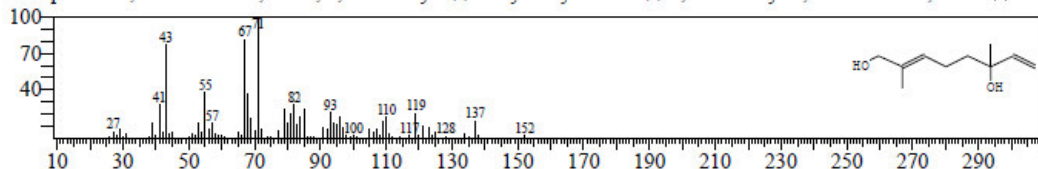
Hit#:2 Entry:13275 Library:NIST14s.lib
SI:87 Formula:C10H18O2 CAS:51276-33-6 MolWeight:170 RetIndex:1227
CompName:1,7-Octadiene-3,6-diol, 2,6-dimethyl- \$\$ 2,6-Dimethyl-1,7-octadiene-3,6-diol # \$\$ 2,6-Dimethyl-1,7-octadiene-3,6-diol #



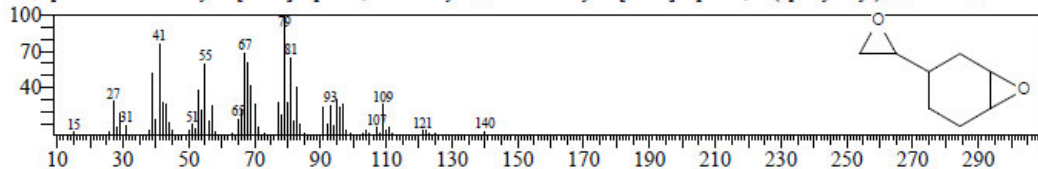
Hit#:3 Entry:14679 Library:NIST14s.lib
SI:86 Formula:C12H18O CAS:943-93-1 MolWeight:178 RetIndex:1414
CompName:1,2-Epoxy-5,9-cyclododecadiene \$\$ 13-Oxabicyclo[10.1.0]trideca-4,8-diene \$\$



Hit#:4 Entry:13290 Library:NIST14s.lib
SI:82 Formula:C10H18O2 CAS:64142-78-5 MolWeight:170 RetIndex:1325
CompName:2,7-Octadiene-1,6-diol, 2,6-dimethyl- \$\$ 8-Hydroxylinalool \$\$ 2,6-Dimethyl-2,7-octadiene-1,6-diol \$\$

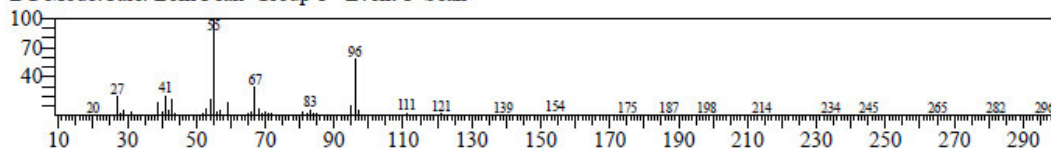


Hit#:5 Entry:7463 Library:NIST14s.lib
SI:82 Formula:C8H12O2 CAS:106-87-6 MolWeight:140 RetIndex:981
CompName:7-Oxabicyclo[4.1.0]heptane, 3-oxiranyl- \$\$ 7-Oxabicyclo[4.1.0]heptane, 3-(epoxyethyl)- \$\$ RD4 \$\$ Unox

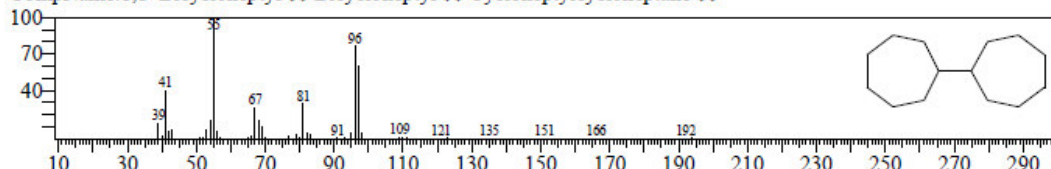


<< Target >>

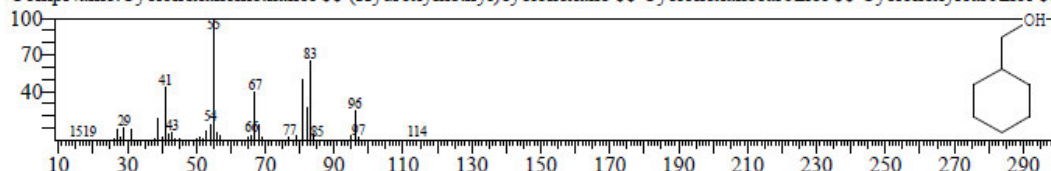
Line#:30 R.Time:44.225(Scan#:8246) MassPeaks:179
RawMode:Averaged 44.220-44.230(8245-8247) BasePeak:55.00(39817)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



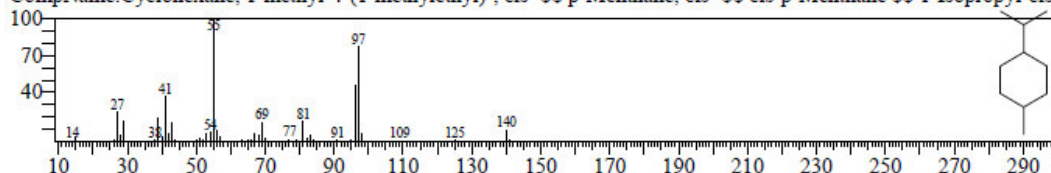
Hit#:1 Entry:17456 Library:NIST14s.lib
SI:82 Formula:C14H26 CAS:23183-11-1 MolWeight:194 RetIndex:1581
CompName:1,1'-Bicycloheptyl \$\$ Bicycloheptyl \$\$ Cycloheptylcycloheptane \$\$



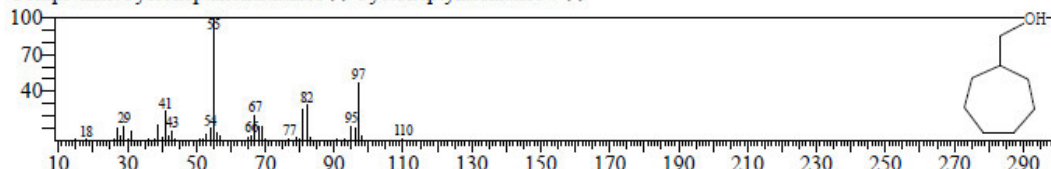
Hit#:2 Entry:3417 Library:NIST14s.lib
SI:82 Formula:C7H14O CAS:100-49-2 MolWeight:114 RetIndex:1023
CompName:Cyclohexanemethanol \$\$ (Hydroxymethyl)cyclohexane \$\$ Cyclohexanecarbinol \$\$ Cyclohexylcarbinol \$\$



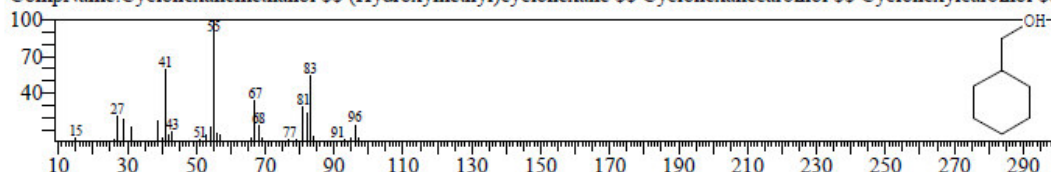
Hit#:3 Entry:7546 Library:NIST14s.lib
SI:82 Formula:C10H20 CAS:6069-98-3 MolWeight:140 RetIndex:976
CompName:Cyclohexane, 1-methyl-4-(1-methylethyl)-, cis- \$\$ p-Menthane, cis- \$\$ cis-p-Menthane \$\$ 1-Isopropyl-cis-



Hit#:4 Entry:5315 Library:NIST14s.lib
SI:81 Formula:C8H16O CAS:4448-75-3 MolWeight:128 RetIndex:1143
CompName:Cycloheptanemethanol \$\$ Cycloheptylmethanol # \$\$

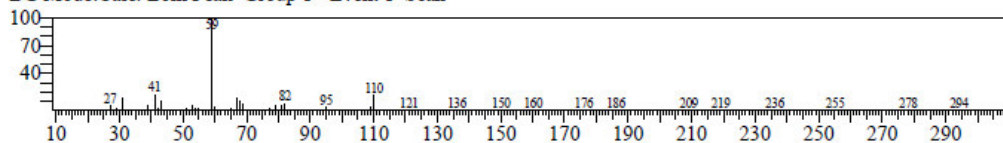


Hit#:5 Entry:3413 Library:NIST14s.lib
SI:81 Formula:C7H14O CAS:100-49-2 MolWeight:114 RetIndex:1023
CompName:Cyclohexanemethanol \$\$ (Hydroxymethyl)cyclohexane \$\$ Cyclohexanecarbinol \$\$ Cyclohexylcarbinol \$\$

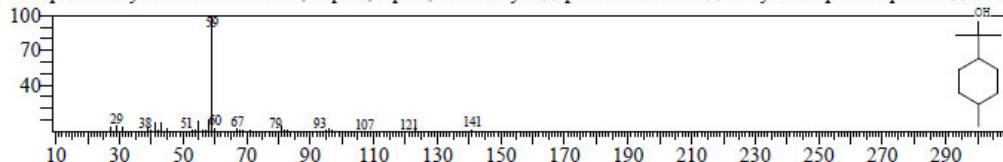


<< Target >>

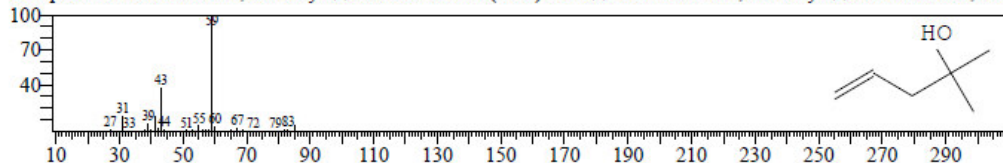
Line#:31 R.Time:45.475(Scan#:8496) MassPeaks:181
RawMode:Averaged 45.470-45.480(8495-8497) BasePeak:59.00(62856)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



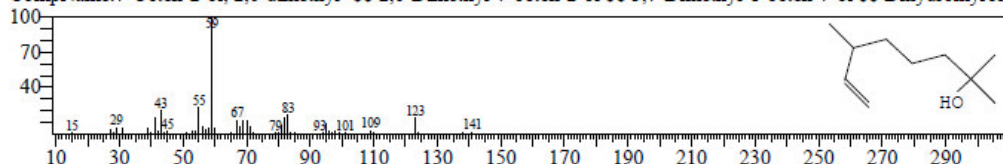
Hit#:1 Entry:10748 Library:NIST14s.lib
SI:82 Formula:C10H20O CAS:498-81-7 MolWeight:156 RetIndex:1132
CompName:Cyclohexanemethanol, .alpha.,.alpha.,4-trimethyl- \$\$ p-Menthan-8-ol \$\$ Dihydro-.alpha.-terpineol \$\$ 1-Me



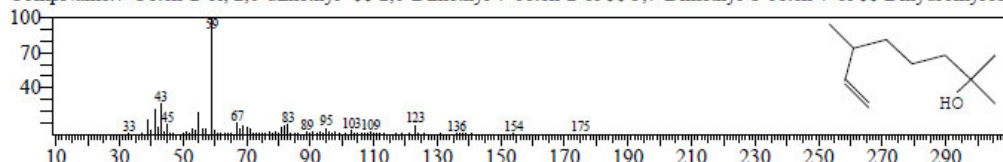
Hit#:2 Entry:1899 Library:NIST14s.lib
SI:82 Formula:C6H12O CAS:624-97-5 MolWeight:100 RetIndex:699
CompName:4-Pentene-2-ol, 2-methyl \$\$ CH2=CHCH2C(CH3)2OH \$\$ 1-Pentene-4-ol, 4-methyl \$\$ 4-Pentene-2-ol, 2-m



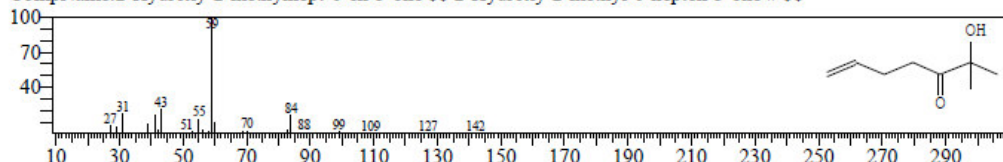
Hit#:3 Entry:10746 Library:NIST14s.lib
SI:82 Formula:C10H20O CAS:18479-58-8 MolWeight:156 RetIndex:1033
CompName:7-Octen-2-ol, 2,6-dimethyl- \$\$ 2,6-Dimethyl-7-octen-2-ol \$\$ 3,7-Dimethyl-1-octen-7-ol \$\$ Dihydromyrcen



Hit#:4 Entry:10744 Library:NIST14s.lib
SI:81 Formula:C10H20O CAS:18479-58-8 MolWeight:156 RetIndex:1033
CompName:7-Octen-2-ol, 2,6-dimethyl- \$\$ 2,6-Dimethyl-7-octen-2-ol \$\$ 3,7-Dimethyl-1-octen-7-ol \$\$ Dihydromyrcen

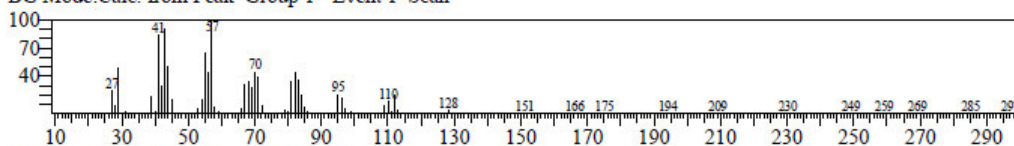


Hit#:5 Entry:7815 Library:NIST14s.lib
SI:80 Formula:C8H14O2 CAS:996-61-2 MolWeight:142 RetIndex:1034
CompName:2-Hydroxy-2-methylhept-6-en-3-one \$\$ 2-Hydroxy-2-methyl-6-hepten-3-one # \$\$

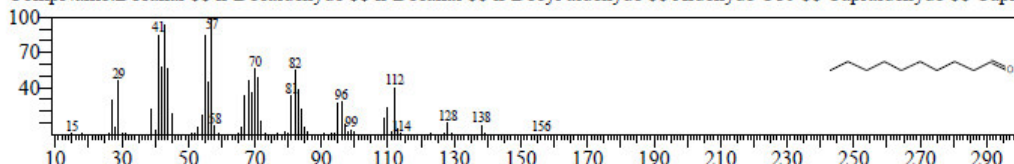


<< Target >>

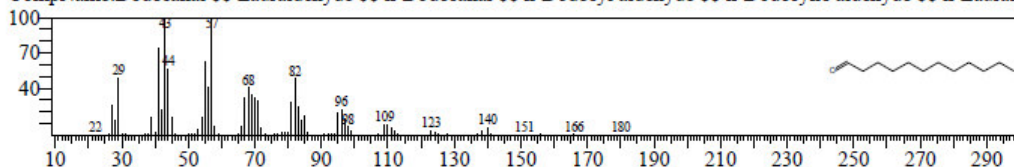
Line#:32 R.Time:46.685(Scan#:8738) MassPeaks:186
RawMode:Averaged 46.680-46.690(8737-8739) BasePeak:57.05(15662)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



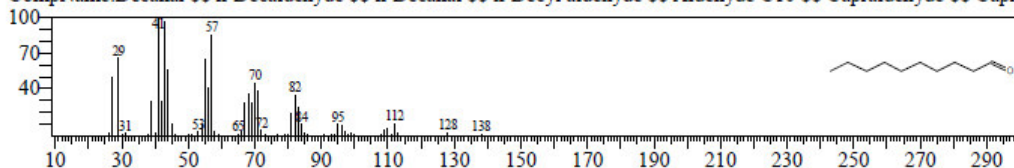
Hit# 1 Entry:10728 Library:NIST14s.lib
SI:95 Formula:C10H20O CAS:112-31-2 MolWeight:156 RefIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri



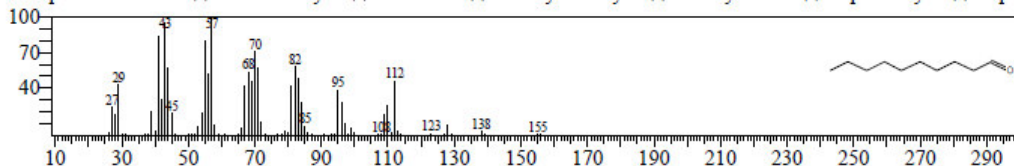
Hit# 2 Entry:15786 Library:NIST14s.lib
SI:94 Formula:C12H24O CAS:112-54-9 MolWeight:184 RefIndex:1402
CompName:Dodecanal \$ Lauraldehyde \$ n-Dodecanal \$ n-Dodecyl aldehyde \$ n-Dodecylc aldehyde \$ n-Laural



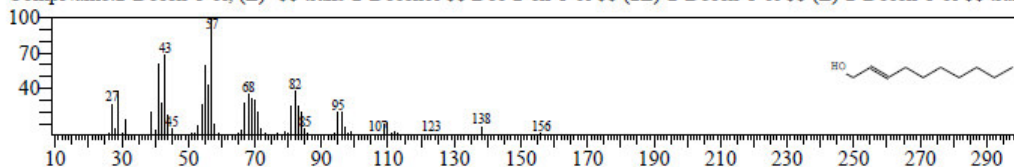
Hit# 3 Entry:10710 Library:NIST14s.lib
SI:94 Formula:C10H20O CAS:112-31-2 MolWeight:156 RefIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri



Hit# 4 Entry:10729 Library:NIST14s.lib
SI:93 Formula:C10H20O CAS:112-31-2 MolWeight:156 RefIndex:1204
CompName:Decanal \$ n-Decaldehyde \$ n-Decanal \$ n-Decyl aldehyde \$ Aldehyde C10 \$ Capraldehyde \$ Capri



Hit# 5 Entry:10731 Library:NIST14s.lib
SI:93 Formula:C10H20O CAS:18409-18-2 MolWeight:156 RefIndex:1266
CompName:2-Decen-1-ol, (E)- \$ trans-2-Decenol \$ Dec-2-en-1-ol \$ (2E)-2-Decen-1-ol \$ (E)-2-Decen-1-ol \$ tran

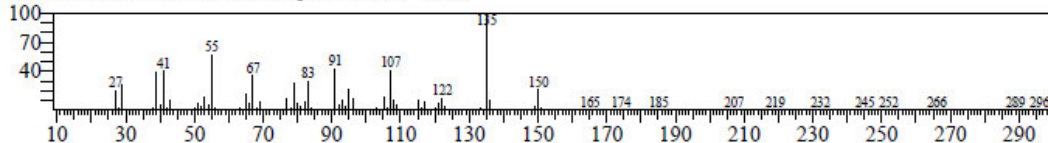


<< Target >>

Line#:33 R.Time:48.225(Scan#:9046) MassPeaks:213

RawMode:Averaged 48.220-48.230(9045-9047) BasePeak:135.05(42374)

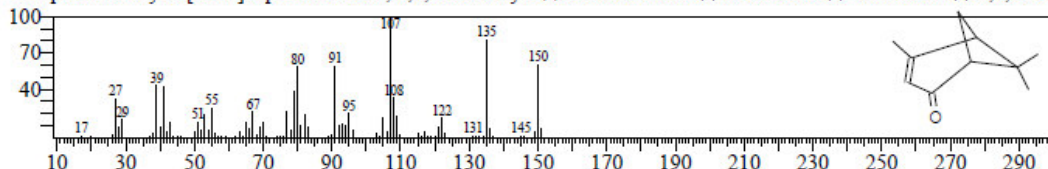
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



Hit#:1 Entry:9327 Library:NIST14s.lib

SI:85 Formula:C10H14O CAS:80-57-9 MolWeight:150 RetIndex:1119

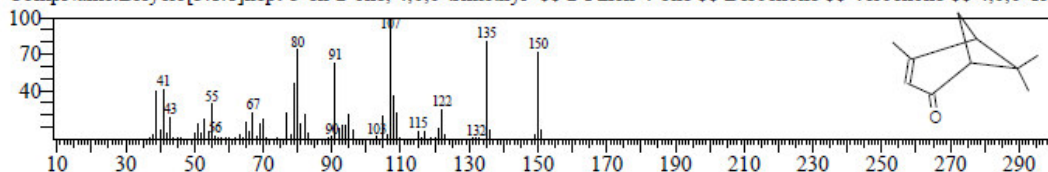
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl- \$\$ 2-Pinen-4-one \$\$ Berberone \$\$ Verbenone \$\$ 4,6,6-Tri



Hit#:2 Entry:9325 Library:NIST14s.lib

SI:82 Formula:C10H14O CAS:80-57-9 MolWeight:150 RetIndex:1119

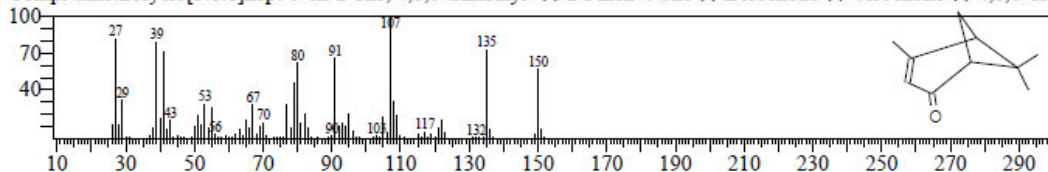
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl- \$\$ 2-Pinen-4-one \$\$ Berberone \$\$ Verbenone \$\$ 4,6,6-Tri



Hit#:3 Entry:9316 Library:NIST14s.lib

SI:82 Formula:C10H14O CAS:80-57-9 MolWeight:150 RetIndex:1119

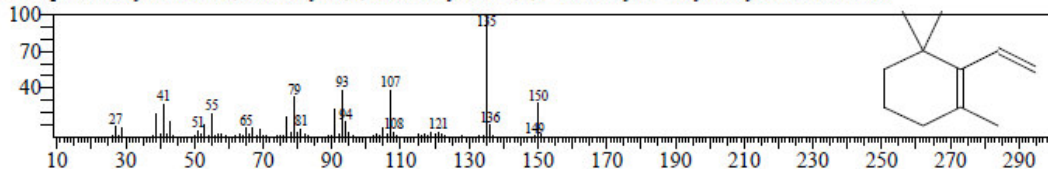
CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl- \$\$ 2-Pinen-4-one \$\$ Berberone \$\$ Verbenone \$\$ 4,6,6-Tri



Hit#:4 Entry:9373 Library:NIST14s.lib

SI:81 Formula:C11H18 CAS:5293-90-3 MolWeight:150 RetIndex:1105

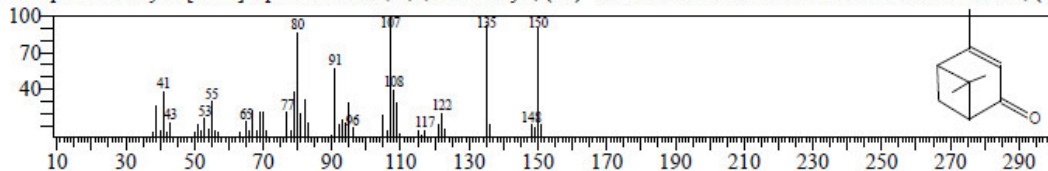
CompName:Cyclohexene, 2-ethenyl-1,3,3-trimethyl- \$\$ 1,3,3-Trimethyl-2-vinyl-1-cyclohexene # \$\$



Hit#:5 Entry:9328 Library:NIST14s.lib

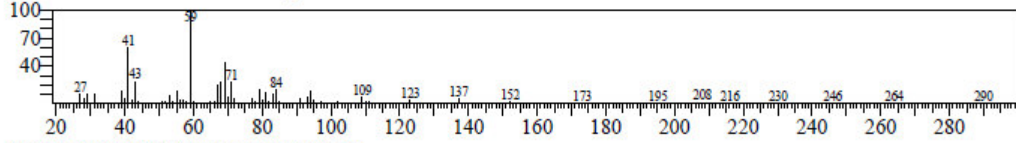
SI:80 Formula:C10H14O CAS:1196-01-6 MolWeight:150 RetIndex:1119

CompName:Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)- \$\$ Levoverbenone \$\$ 1-Verbenone \$\$ Verbenone, (L)

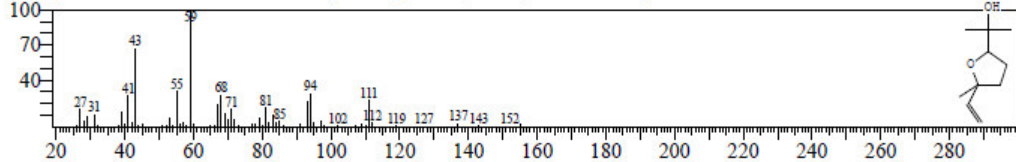


<< Target >>

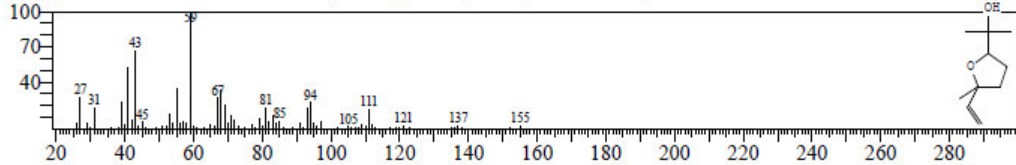
Line#:34 R.Time:50.600(Scan#:9521) MassPeaks:174
RawMode:Averaged 50.595-50.605(9520-9522) BasePeak:59.00(5830)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



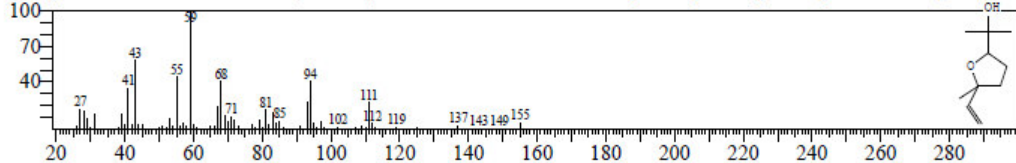
Hit#:1 Entry:13272 Library:NIST14s.lib
SI:86 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



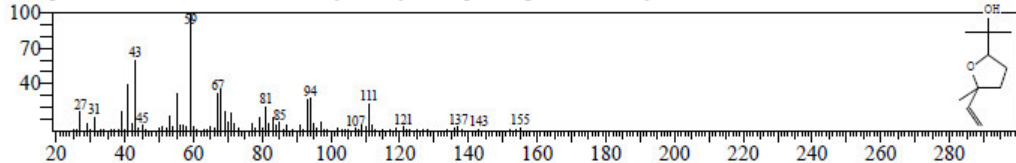
Hit#:2 Entry:13270 Library:NIST14s.lib
SI:86 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox



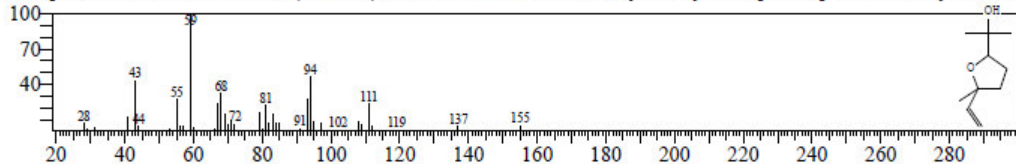
Hit#:3 Entry:13271 Library:NIST14s.lib
SI:85 Formula:C10H18O2 CAS:34995-77-2 MolWeight:170 RetIndex:1164
CompName:trans-Linalool oxide (furanoid) \$\$ 2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, trans-



Hit#:4 Entry:13269 Library:NIST14s.lib
SI:84 Formula:C10H18O2 CAS:5989-33-3 MolWeight:170 RetIndex:1164
CompName:2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, cis- \$\$ cis-Linalool oxide \$\$ Linalool ox

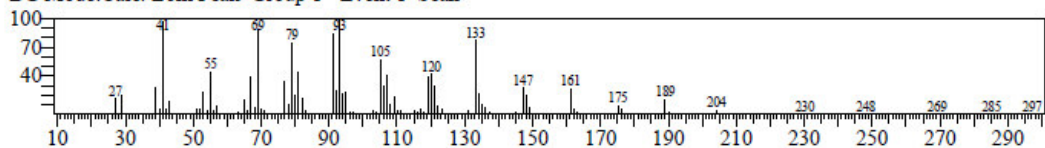


Hit#:5 Entry:13273 Library:NIST14s.lib
SI:80 Formula:C10H18O2 CAS:34995-77-2 MolWeight:170 RetIndex:1164
CompName:trans-Linalool oxide (furanoid) \$\$ 2-Furanmethanol, 5-ethenyltetrahydro-.alpha.,.alpha.,5-trimethyl-, trans-

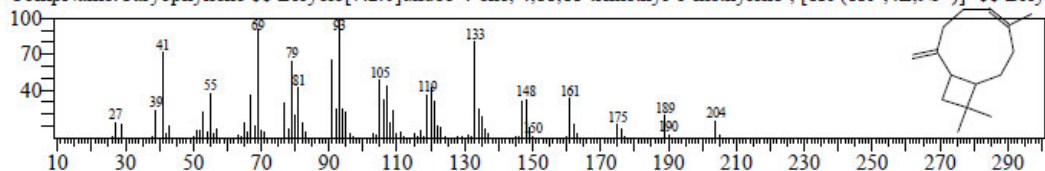


<< Target >>

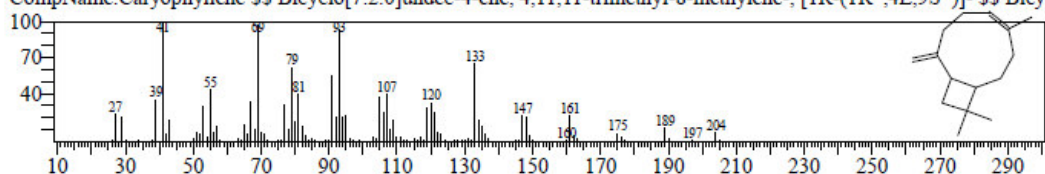
Line#:35 R.Time:57.825(Scan#:10966) MassPeaks:208
RawMode:Averaged 57.820-57.830(10965-10967) BasePeak:93.05(11201)
BG Mode:Calc. from Peak Group 1 - Event 1 Scan



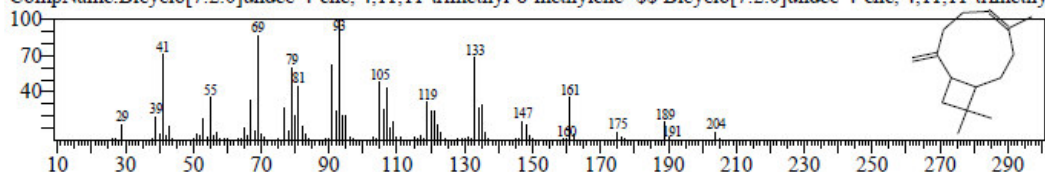
Hit#:1 Entry:19087 Library:NIST14s.lib
SI:96 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



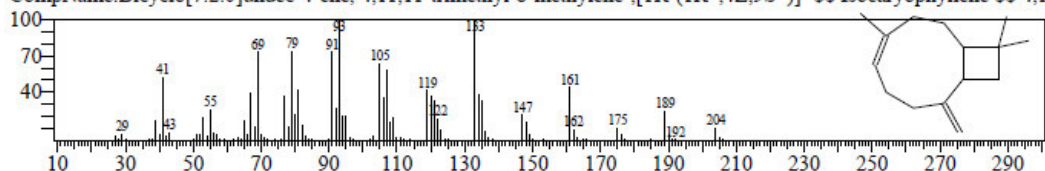
Hit#:2 Entry:19033 Library:NIST14s.lib
SI:94 Formula:C15H24 CAS:87-44-5 MolWeight:204 RetIndex:1494
CompName:Caryophyllene \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4E,9S*)]- \$\$ Bicy



Hit#:3 Entry:19086 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:13877-93-5 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene- \$\$ Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethy



Hit#:4 Entry:19094 Library:NIST14s.lib
SI:93 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1



Hit#:5 Entry:19032 Library:NIST14s.lib
SI:92 Formula:C15H24 CAS:118-65-0 MolWeight:204 RetIndex:1494
CompName:Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-, [1R-(1R*,4Z,9S*)]- \$\$ Isocaryophyllene \$\$ 4,1

