

Supplementary Materials

Figure captions

Figure S1. Time profile of 2-MIB degradation rate at different pH(laccase dosage 0.1 U/mL, 2-MIB concentration 200 ng/L, 25°C, 150r/min)

Figure S2. Time profile of 2-MIB degradation by laccase at different temperature(laccase dosage 0.1 U/mL, 2-MIB concentration 200 ng/L, pH 4.0, 150r/min)

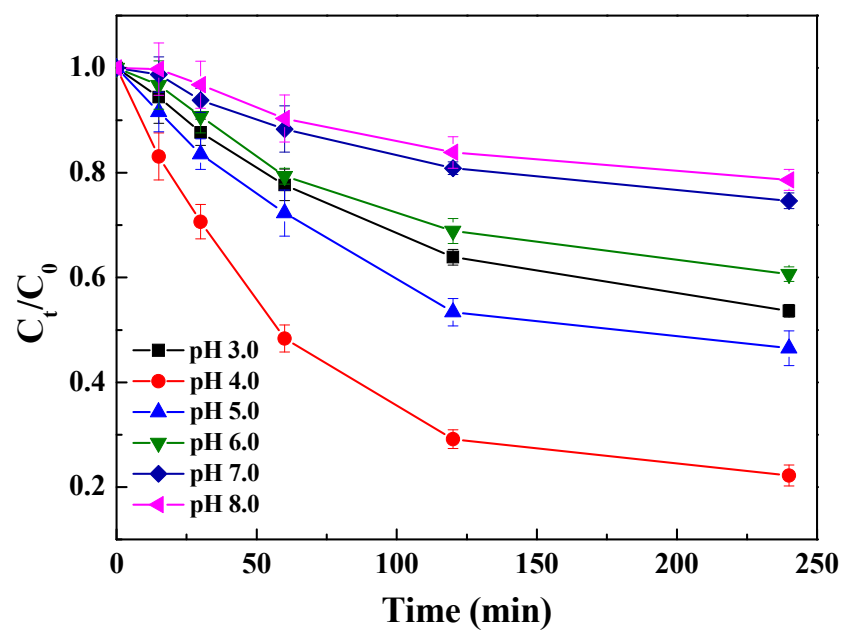
Figure S3. Time profile of 2-MIB degradation by laccase at different stirring rate(laccase dosage 0.1 U/mL, 2-MIB concentration 200 ng/L, 25°C, pH 4.0)

Figure S4. Time profile of 2-MIB degradation by laccase at different laccase dosage(2-MIB concentration 200 ng/L, 25°C, pH 4.0, 150r/min)

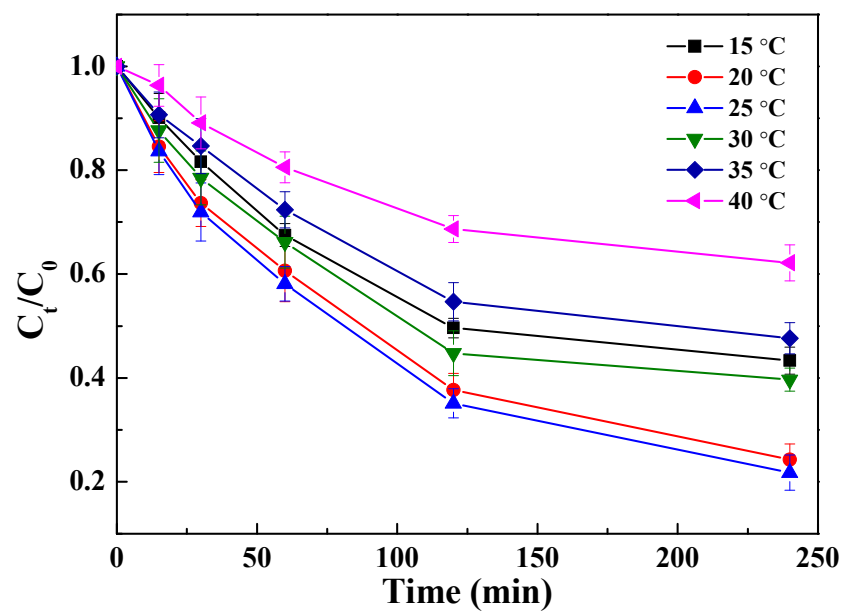
Figure S5. Time profile of 2-MIB degradation by laccase at different initial 2-MIB concentration(laccase dosage 0.1 U/mL, 25°C, pH 4.0, 150r/min)

Figure S6. Lineweaver-Burk plots of free laccase

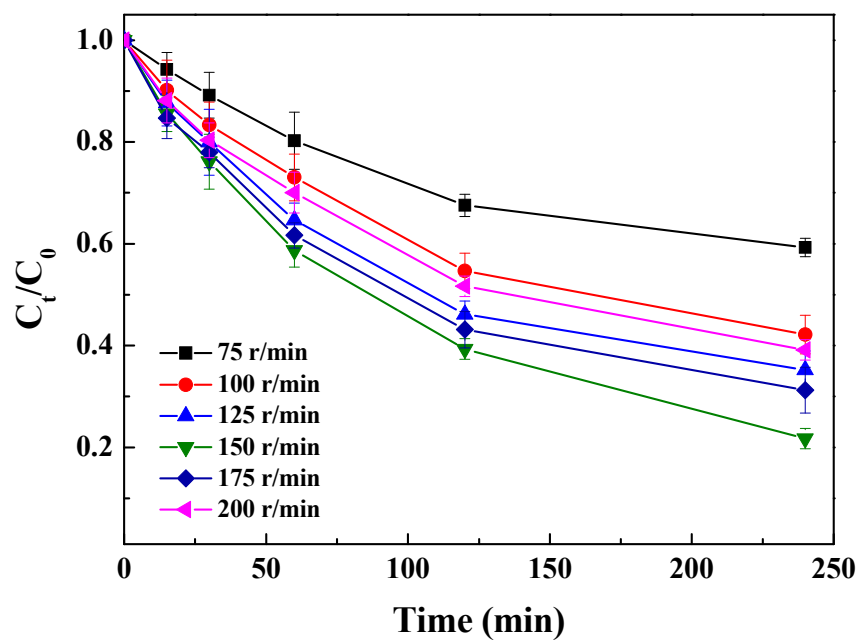
Wang et al., Figure S1



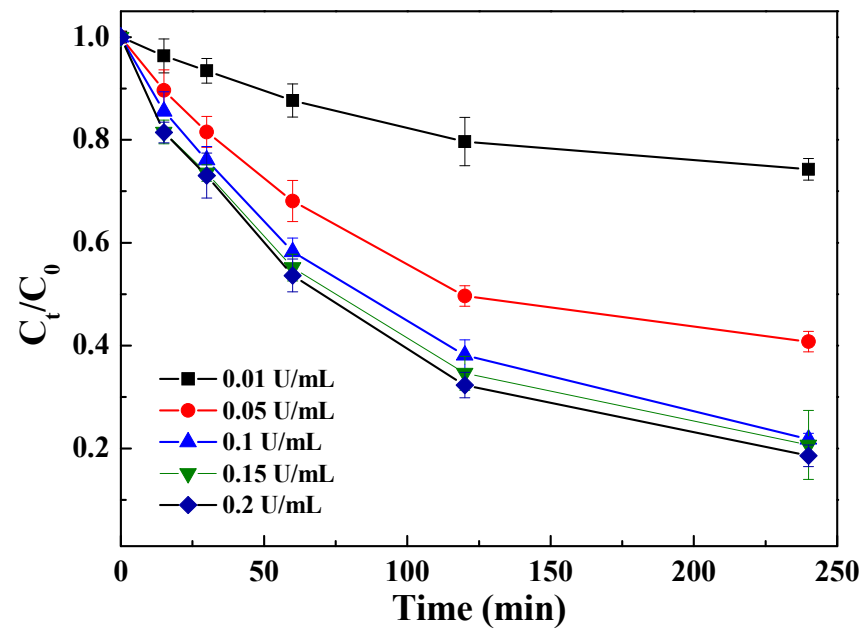
Wang et al., Figure S2



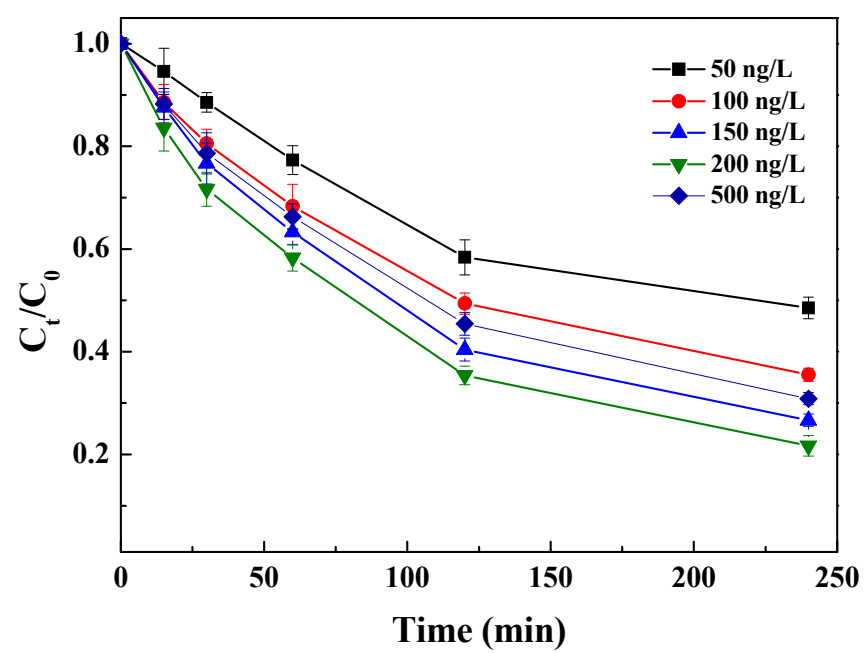
Wang et al., Figure S3



Wang et al., Figure S4



Wang et al., Figure S5



Wang et al., Figure S6

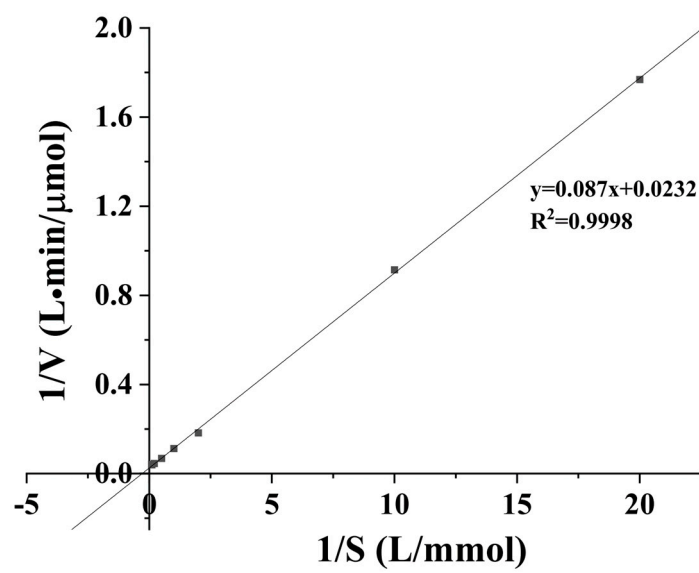


Table captions

Table S1 Kinetic parameters of laccase

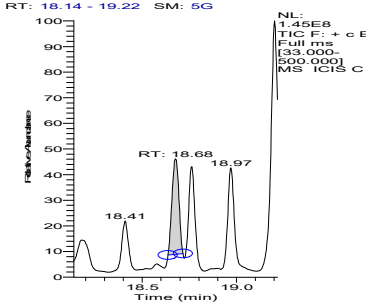
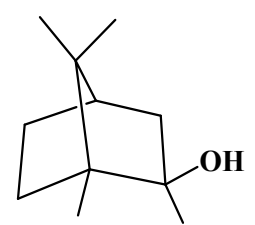
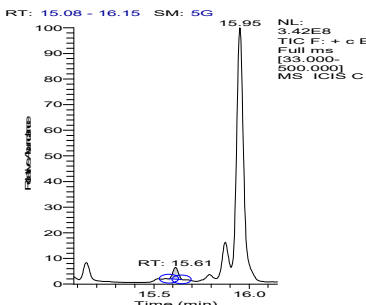
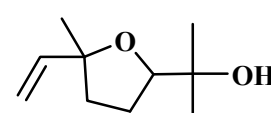
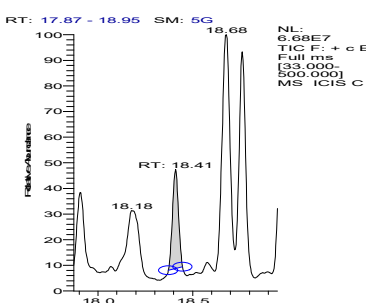
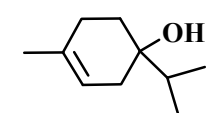
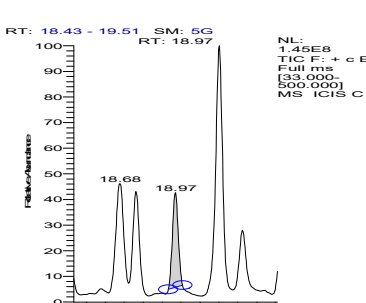
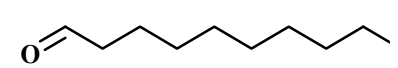
Table S2 Summary of intermediates determined by SPME-GC/MS in 2-MIB degradation catalyzed by laccase

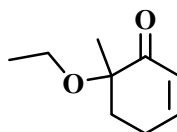
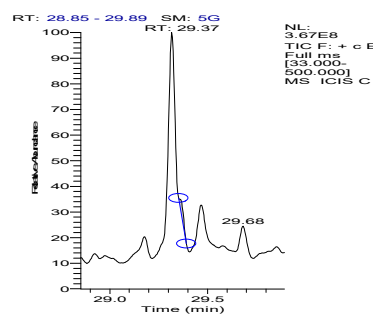
Table S3 Summary of intermediates determined by SPME-GC/MS in 2-MIB degradation catalyzed by laccase assisted with micro-electric field.

Wang et al., Table S1

enzyme	K_m (mmol/L)	V_{max} (μ mol/L/min)	K_{cat} (1/min)	K_{cat}/K_m (L/mmol/min)
Free laccase	3.75	43.10	1.27×10^3	338.67

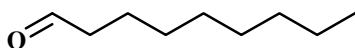
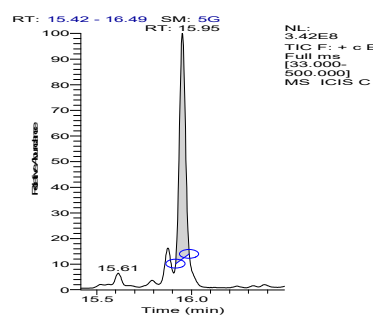
Wang et al., Table S2

Chromatography	Structure	Name	Formular
<p>RT: 18.14 - 19.22 SM: 5G</p>  <p>NL: 1.45E8 TIC F: + c E Full ms [33,000-500,000] MS ICIS C</p>		2-methylisoborneol	$C_{11}H_{20}O$
<p>RT: 15.08 - 16.15 SM: 5G</p>  <p>NL: 3.42E8 TIC F: + c E Full ms [33,000-500,000] MS ICIS C</p>		2-Furanmethanol, 5-ethenyltetrahydro-à,à, 5-trimethyl-, cis-	$C_{10}H_{18}O_2$
<p>RT: 17.87 - 18.95 SM: 5G</p>  <p>NL: 6.68E7 TIC F: + c E Full ms [33,000-500,000] MS ICIS C</p>		Terpinen-4-ol	$C_{10}H_{18}O$
<p>RT: 18.43 - 19.51 SM: 5G</p>  <p>NL: 1.45E8 TIC F: + c E Full ms [33,000-500,000] MS ICIS C</p>		Decanal	$C_{10}H_{20}O$



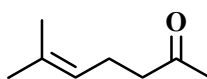
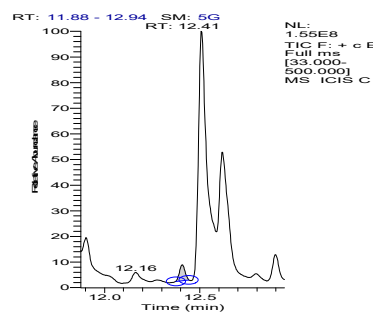
6-Ethoxy-6-methyl-
-2-cyclohexenone

C₉H₁₄O₂



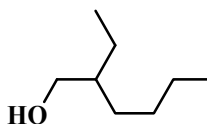
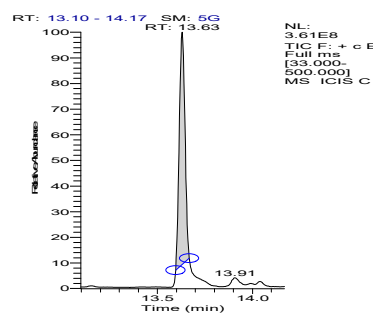
Nonanal

C₉H₁₈O



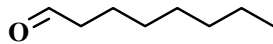
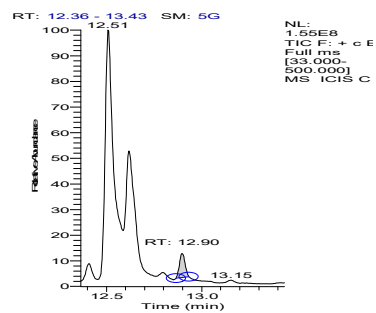
5-Hepten-2-one, 6-
methyl-

C₈H₁₄O



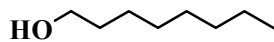
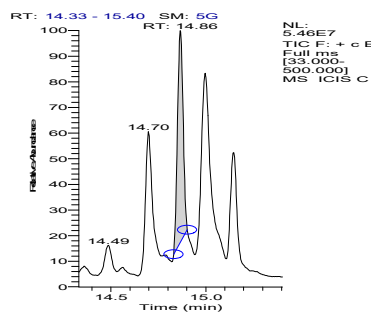
1-Hexanol, 2-ethyl-

C₈H₁₈O



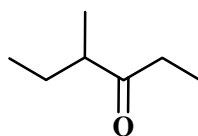
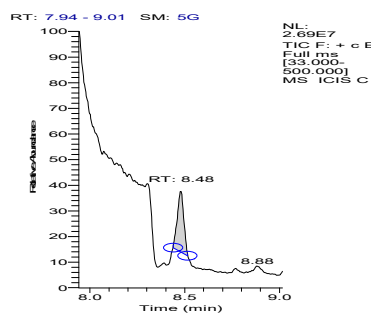
Octanal

C₈H₁₆O



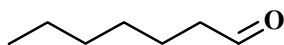
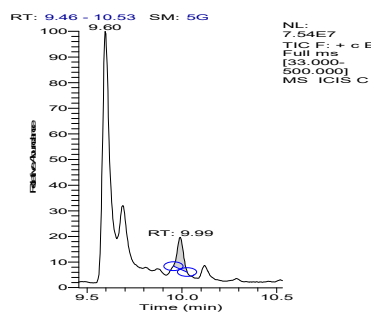
1-Octanol

C₈H₁₈O



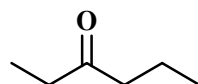
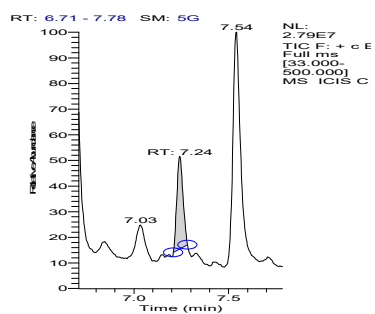
3-Hexanone, 4-methyl-

C₇H₁₄O



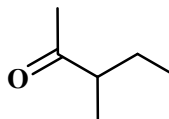
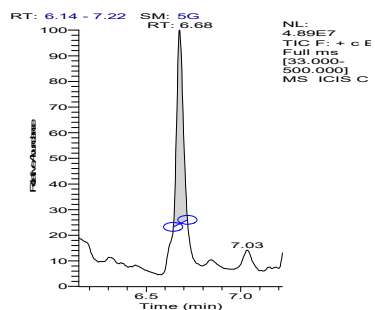
Heptanal

C₇H₁₄O



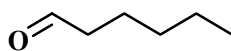
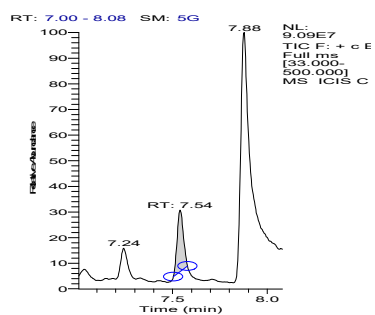
3-Hexanone

C₆H₁₂O

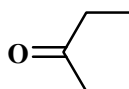
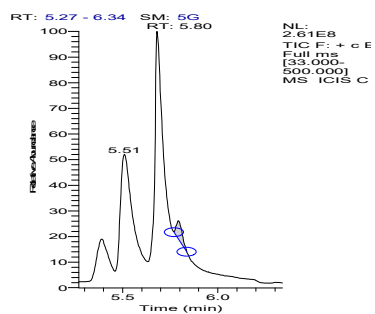
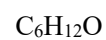


2-Pentanone, 3-methyl-

C₆H₁₂O



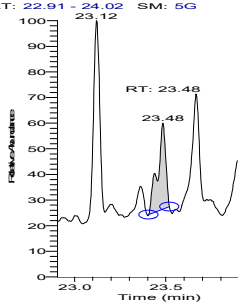
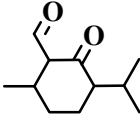
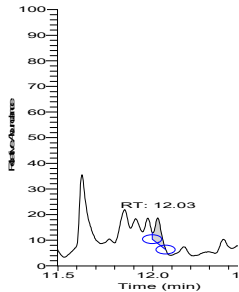
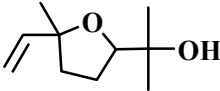
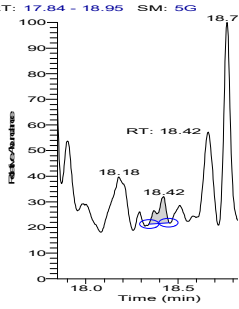
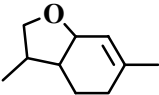
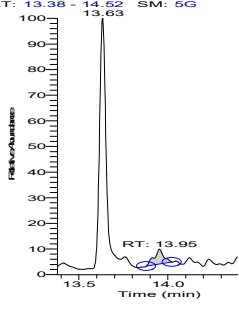
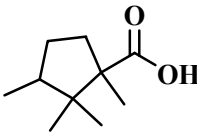
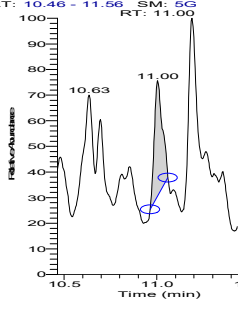
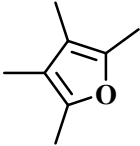
Hexanal

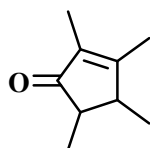
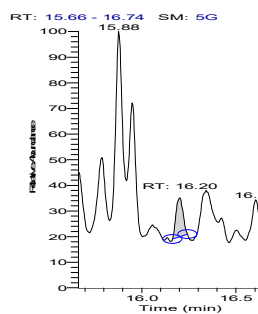


3-Pentanone



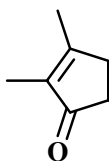
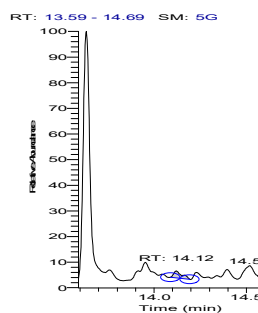
Note: The shaded areas indicated the position and peak area of detected intermediate product.

Chromatography	Structure	Name	Formular
<p>RT: 22.91 - 24.02 SM: 5G</p> 		<p>Cyclohexanecarboxaldehyde, 6-methyl-3-(1-methylethyl)-2-oxo-</p>	<p>$C_{11}H_{18}O_2$</p>
<p>RT: 11.50 - 12.57 SM: 5G</p> 		<p>2-Furanmethanol, 5-ethenyltetrahydro-2H, 5-trimethyl-, cis-</p>	<p>$C_{10}H_{18}O_2$</p>
<p>RT: 17.84 - 18.95 SM: 5G</p> 		<p>3,6-Dimethyl-2,3,3a,4,5,7a-hexahydrobenzofuran</p>	<p>$C_{10}H_{16}O$</p>
<p>RT: 13.38 - 14.52 SM: 5G</p> 		<p>Cyclopentanecarboxylic acid, 1,2,2,3-tetramethyl-</p>	<p>$C_{10}H_{18}O_2$</p>
<p>RT: 10.46 - 11.56 SM: 5G</p> 		<p>Tetramethylfuran</p>	<p>$C_8H_{12}O$</p>



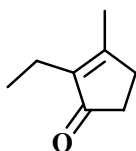
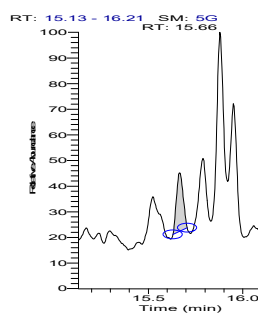
2-Cyclopenten-1-one, 2,3,4,5-tetramethyl-

C₉H₁₄O



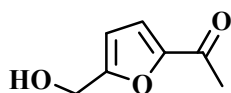
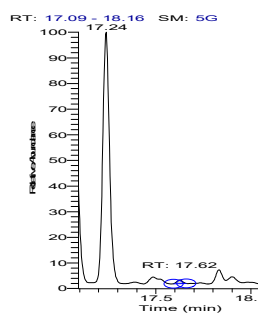
2-Cyclopenten-1-one, 2,3-dimethyl-

C₇H₁₀O



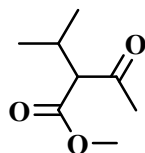
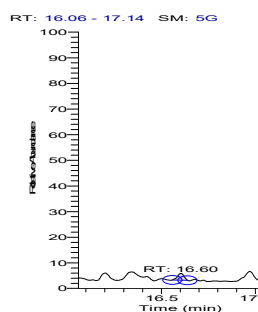
2-Ethyl-3-methylcyclopent-2-en-1-one

C₈H₁₂O



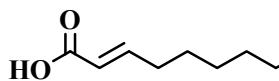
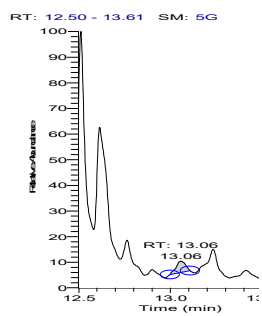
5-Acetyl-2-furanmethanol

C₇H₈O₃



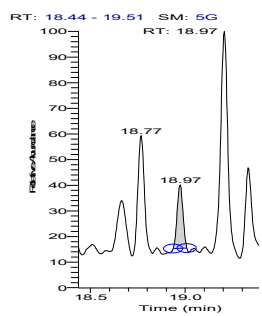
Butanoic acid, 2-acetyl-3-methyl-, methyl ester

C₈H₁₄O₃



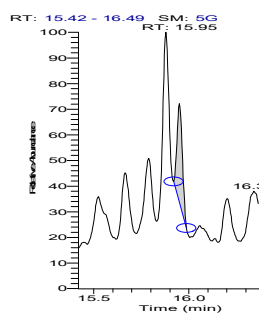
trans-2-undecenoic acid

$C_{11}H_{20}O_2$



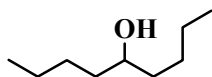
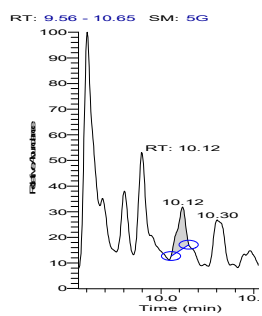
Decanal

$C_{10}H_{20}O$



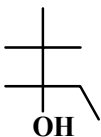
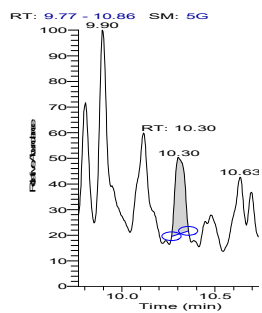
Nonanal

$C_9H_{18}O$



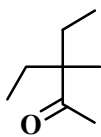
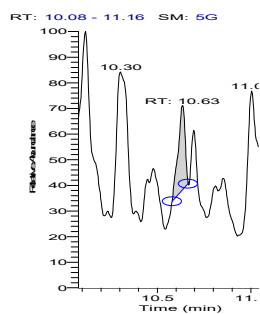
5-Nonanol

$C_9H_{20}O$



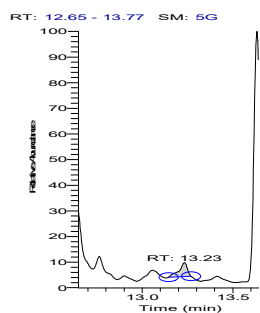
3,4,4-Trimethyl-3-pentanol

$C_8H_{18}O$



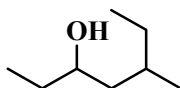
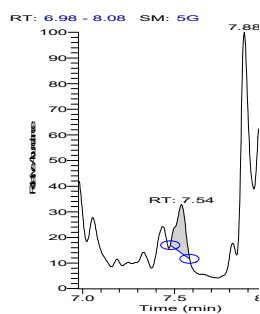
2-Pentanone, 3-ethyl-3-methyl-

C₈H₁₆O



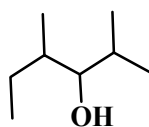
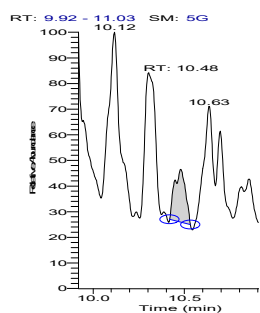
1-Hexanol, 2,2-dimethyl-

C₈H₁₈O



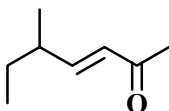
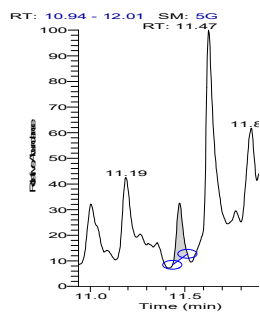
3-Heptanol, 5-methyl-

C₈H₁₈O



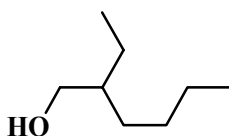
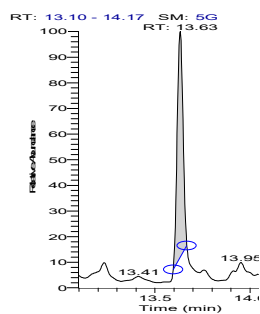
3-Hexanol, 2,4-dimethyl-

C₈H₁₈O



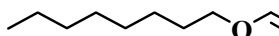
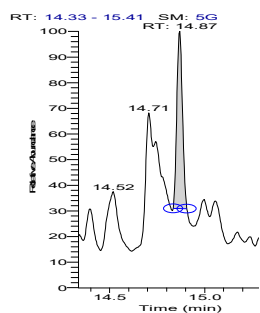
3-Hepten-2-one, 5-methyl-

C₈H₁₄O



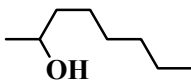
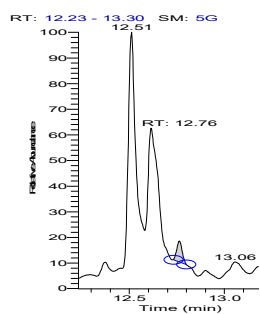
1-Hexanol, 2-ethyl-

$C_8H_{18}O$



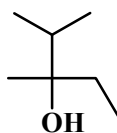
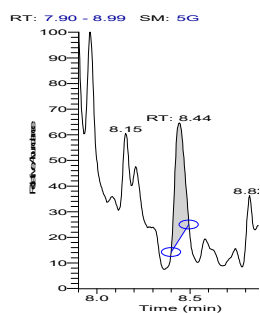
Formic acid, octyl ester

$C_9H_{18}O_2$



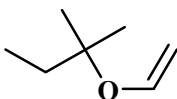
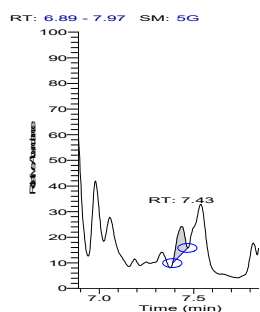
2-Octanol

$C_8H_{18}O$



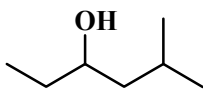
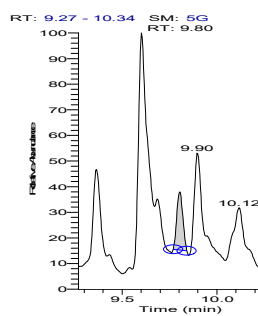
3-Pentanol, 2,3-dimethyl-

$C_7H_{16}O$



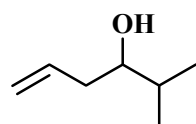
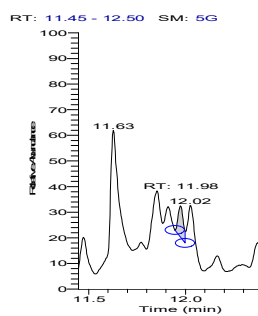
Butane, 2-(ethenyloxy)-2-methyl-

$C_7H_{14}O$



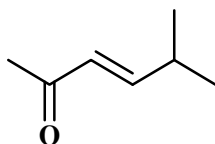
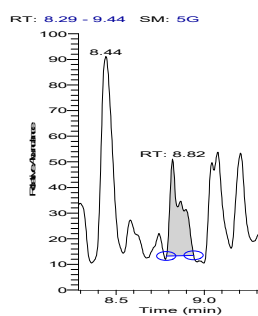
3-Hexanol, 5-methyl-

C₇H₁₆O



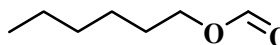
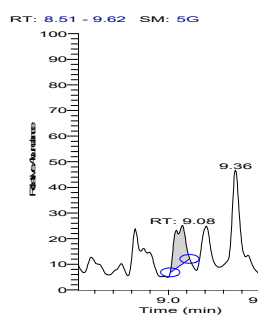
2-Methyl-5-hexen-3-ol

C₇H₁₄O



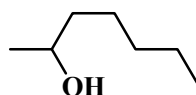
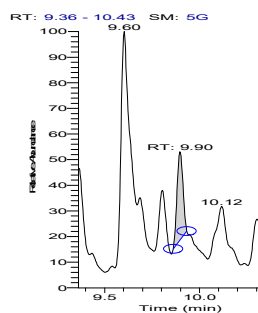
3-Hexen-2-one, 5-methyl-

C₇H₁₂O



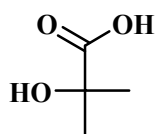
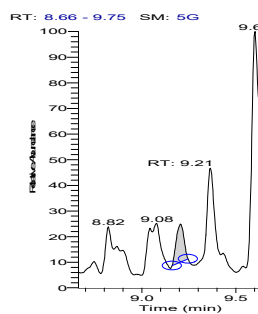
Formic acid, hexyl ester

C₇H₁₄O₂



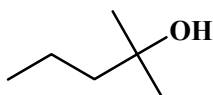
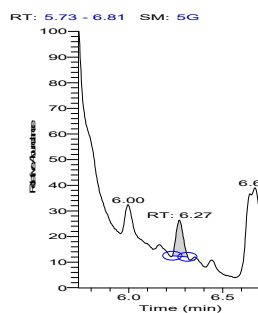
2-Heptanol

C₇H₁₆O



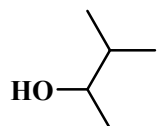
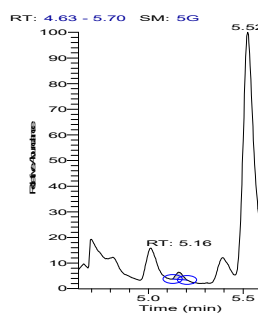
Propanoic acid, 2-hydroxy-2-methyl-

$C_4H_8O_3$



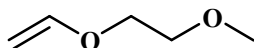
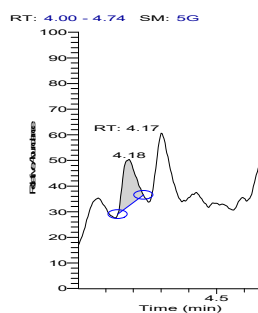
2-Pentanol, 2-methyl-

$C_6H_{14}O$



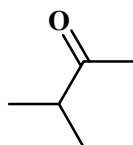
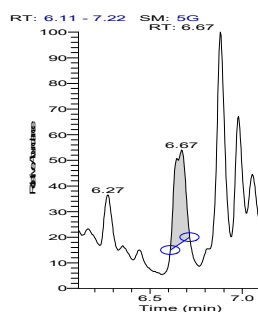
3-Pentanol, 2-methyl-

$C_6H_{14}O$



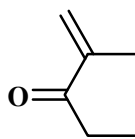
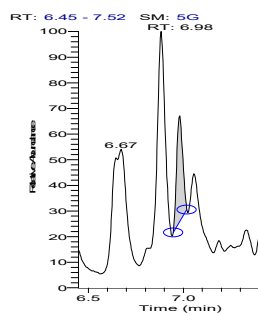
Ethene, (2-methoxyethoxy)-

$C_5H_{10}O_2$



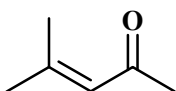
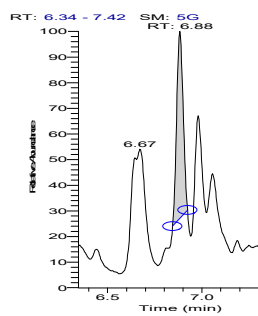
2-Pentanone, 3-methyl-

$C_6H_{12}O$



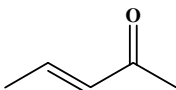
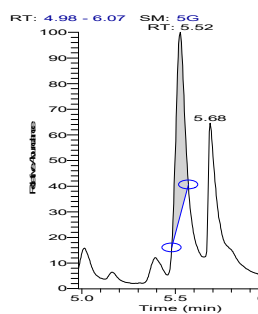
1-Penten-3-one, 2-methyl-

$C_6H_{10}O$



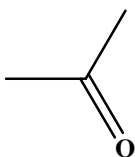
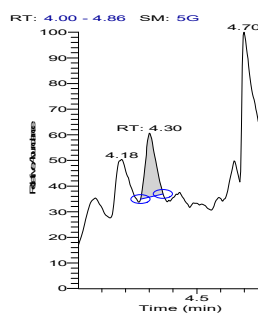
3-Penten-2-one, 4-methyl-

$C_6H_{10}O$



3-Penten-2-one

C_5H_8O

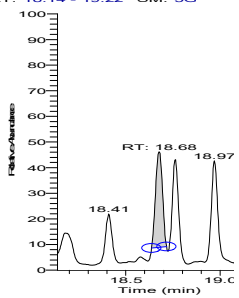
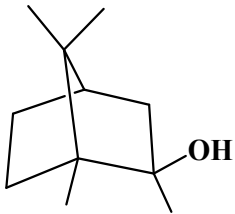
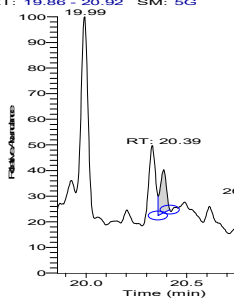
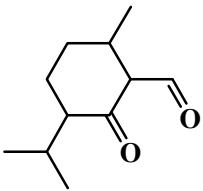
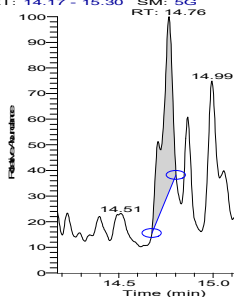
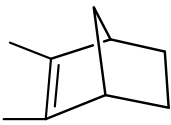
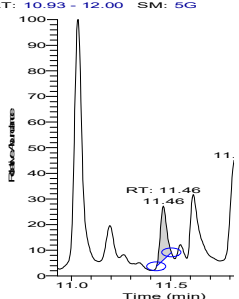
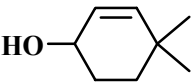


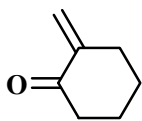
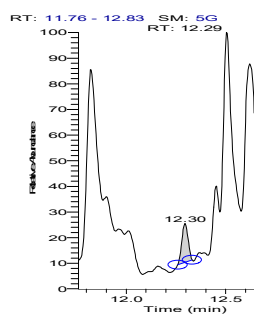
Acetone

C_3H_6O

Note: The shaded areas indicated the position and peak area of detected intermediate product.

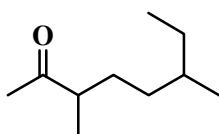
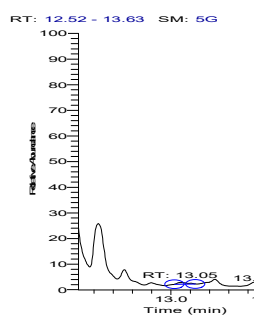
Wang et al., Table S3

Chromatography	Structure	Name	Formular
<p>RT: 18.14 - 19.22 SM: 5G</p> 		2-methylisoborneol	$C_{11}H_{20}O$
<p>RT: 19.86 - 20.92 SM: 5G</p> 		Cyclohexanecarboxaldehyde,6-methyl-3-(1-methylethyl)-2-oxo-	$C_{11}H_{18}O_2$
<p>RT: 14.17 - 15.30 SM: 5G RT: 14.76</p> 		Bicyclo[2.2.1]hept-2-ene, 2,3-dimethyl-	C_9H_{14}
<p>RT: 10.93 - 12.00 SM: 5G</p> 		4,4-Dimethyl-cyclohex-2-en-1-ol	$C_8H_{14}O$



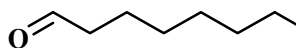
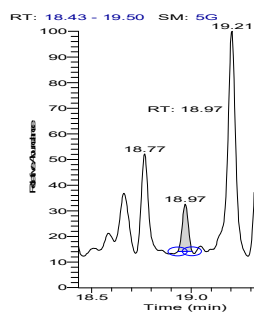
2-Methylidenecyclohexan-1-one

C₇H₁₀O



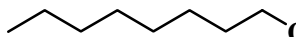
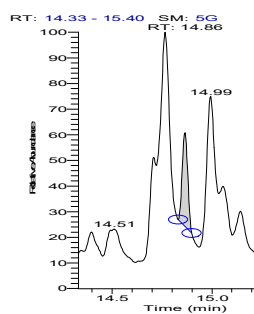
Octan-2-one, 3,6-dimethyl-

C₁₀H₂₀O



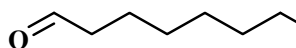
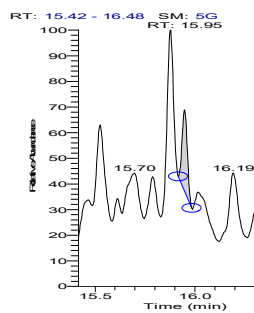
Decanal

C₁₀H₂₀O



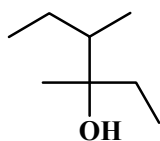
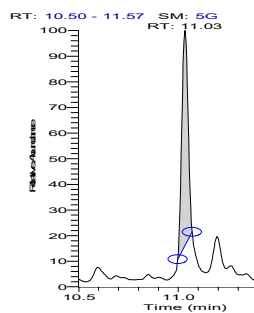
Formic acid, octyl ester

C₉H₁₈O₂



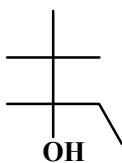
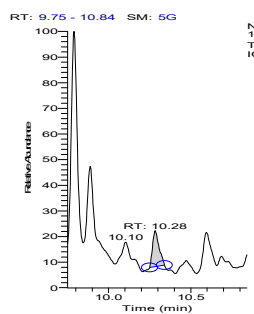
Nonanal

C₉H₁₈O



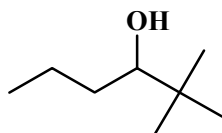
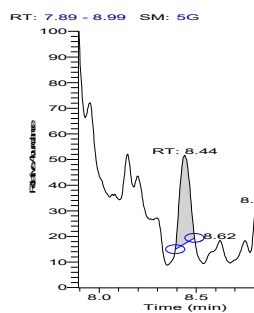
3,4-Dimethyl-3-hexanol

C₈H₁₈O



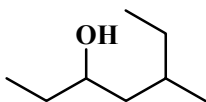
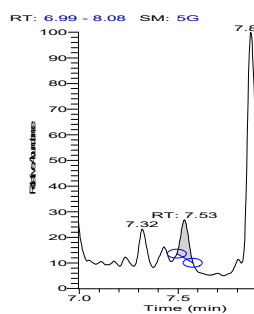
3,4,4-Trimethyl-3-pentanol

C₈H₁₈O



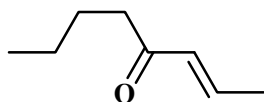
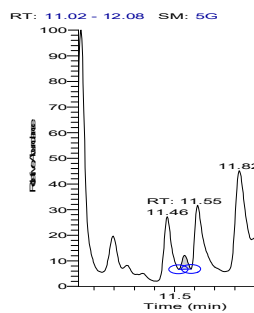
3-Hexanol, 2,2-dimethyl-

C₈H₁₈O



3-Heptanol, 5-methyl-

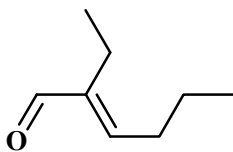
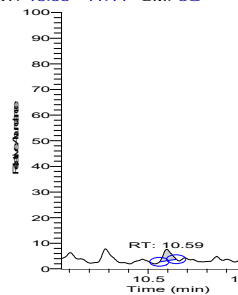
C₈H₁₈O



2-Octen-4-one

C₈H₁₄O

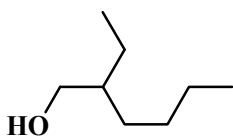
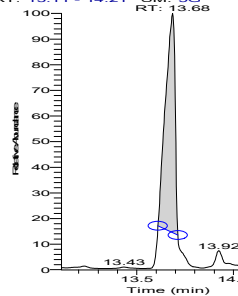
RT: 10.06 - 11.14 SM: 5G



2-Hexenal, 2-ethyl-

C₈H₁₄O

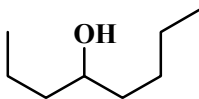
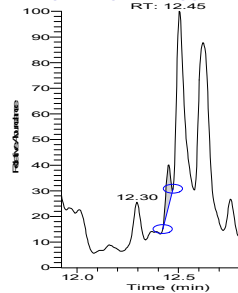
RT: 13.11 - 14.21 SM: 5G



1-Hexanol, 2-ethyl-

C₈H₁₈O

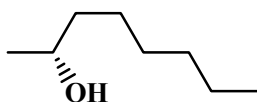
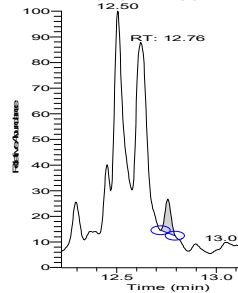
RT: 11.92 - 12.97 SM: 5G



4-Octanol

C₈H₁₈O

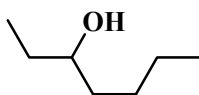
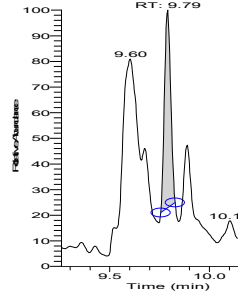
RT: 12.22 - 13.29 SM: 5G



2-Octanol, (R)-

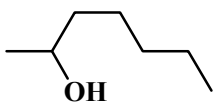
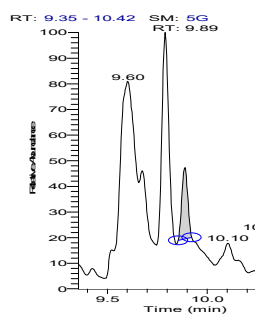
C₈H₁₈O

RT: 9.26 - 10.33 SM: 5G



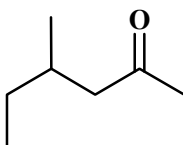
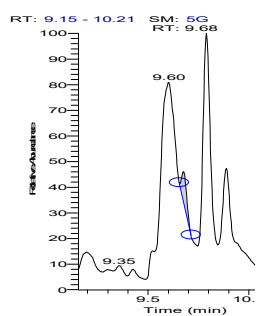
3-Heptanol

C₇H₁₆O



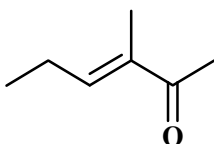
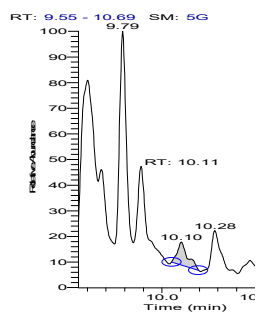
2-Heptanol

C₇H₁₆O



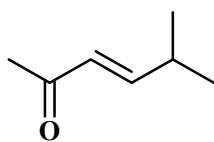
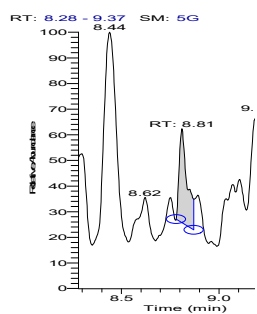
2-Hexanone, 4-methyl-

C₇H₁₄O



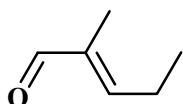
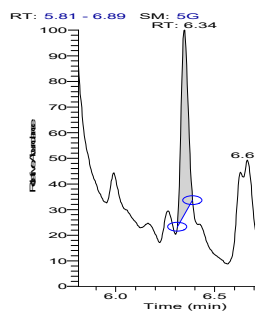
3-Hexen-2-one, 3-methyl-

C₇H₁₂O



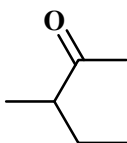
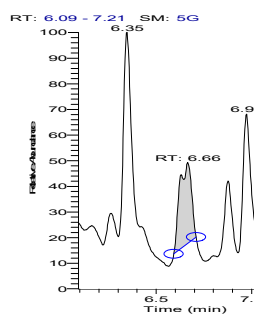
3-Hexen-2-one, 5-methyl-

C₇H₁₂O



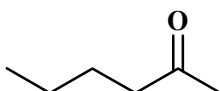
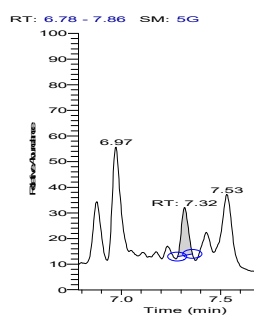
2-Pentenal, 2-methyl-

C₆H₁₀O



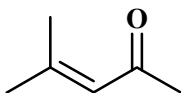
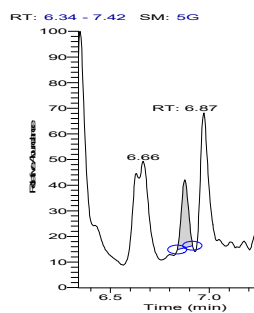
2-Pentanone, 3-methyl-

$C_6H_{12}O$



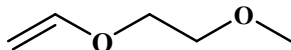
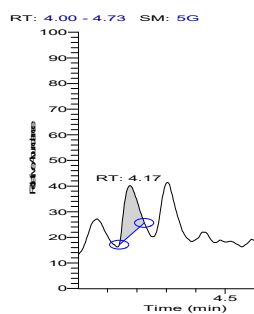
2-Hexanone

$C_6H_{12}O$



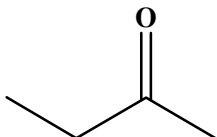
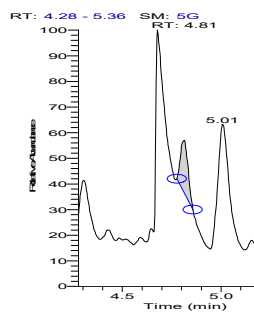
3-Penten-2-one, 4-methyl-

$C_6H_{10}O$



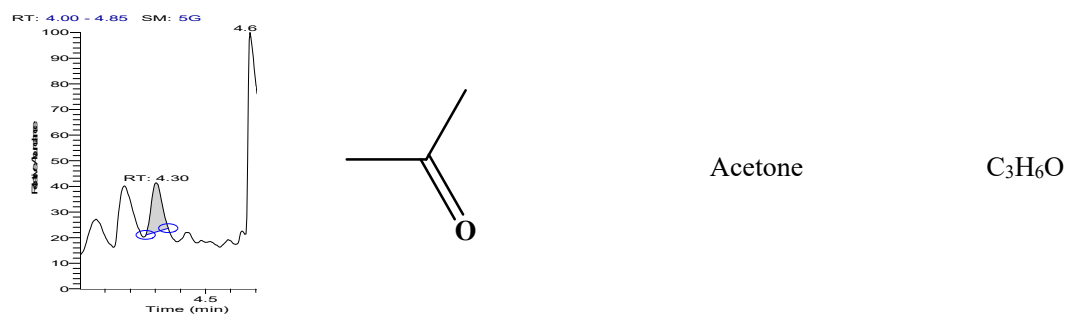
Ethene, (2-methoxyethoxy)-

$C_5H_{10}O_2$



2-Butanone

C_4H_8O



Note: The shaded areas indicated the position and peak area of detected intermediate product.