Problem 6

IR Spectrum (liquid film)

Mass Spectrum

No significant UV absorption above 220 nm

$C_8H_{18}$

$^{13}$C NMR Spectrum
(50.0 MHz, CDCl$_3$ solution)

$^1$H NMR Spectrum
(200 MHz, CDCl$_3$ solution)
Problem 7

IR Spectrum
(CDCl₃ solution)

Mass Spectrum

No significant UV absorption above 220 nm

\[ C_9H_{14}O_2 \]

\[ M^{+} = 118 \text{ (} < 1\% \text{)} \]

\[ m/e \]

\[ 59 \]

\[ 103 \]

\[ \text{DEPT} \quad \text{CH}_3 \quad \text{CH}_2 \quad \text{CH} \]

\[ \text{proton decoupled} \]

\[ \text{solvent} \]

\[ \delta \text{ (ppm)} \]

\[ \text{Exchanges with } D_2O \]

\[ \text{TMS} \]

\[ \delta \text{ (ppm)} \]
Problem 10

IR Spectrum
(liquid film)

Mass Spectrum
M^+ = 156
contains a halogen

UV spectrum
5.00 mg / 10 mL
path length: 0.50 cm
solvent: cyclohexane

^{13}C NMR Spectrum
(50.9 MHz, CDCl_3 solution)
proton coupled
proton decoupled

No TMS in this sample

^{1}H NMR Spectrum
(200 MHz, CDCl_3 solution)
Problem 11

IR Spectrum (liquid film)

Mass Spectrum

No significant UV absorption above 220 nm

$C_2H_4Cl_2$

$^{13}$C NMR Spectrum

(50.0 MHz, CDCl$_3$ solution)

proton coupled

proton decoupled

$^1$H NMR Spectrum

(200 MHz, CDCl$_3$ solution)

expansions

6.0 5.8 ppm

2.2 2.0 ppm

TMS