Problem R-10O \((\text{C}_8\text{H}_8\text{Se})\).

270 MHz \(^1\text{H} \) NMR spectrum in \(\text{C}_6\text{D}_6\)

Source: W. W. Willis / Reich (digitized hard copy)
Problem R-10O. (C₆H₈Se) Determine the structure from the 270 MHz ¹H NMR spectrum.

(a) DBE____

(b) Determine the structure of R-10O. Mark the chemical shifts on a drawing of the molecule below.

(c) Obtain all of the coupling constants from the expansions of the multiplets C and D. Report them in the standard format ($^{n}J_{X,Y} = 0.00$ Hz). Clearly mark them on a drawing of the molecule, and on the spectra.
Problem R-10O. \((\text{C}_8\text{H}_8\text{Se})\) Determine the structure from the 270 MHz \(^1\text{H}\) NMR spectrum.

(a) **DBE**

(b) Draw the structure of R-10O. Mark the chemical shifts on a drawing of the molecule below.

\[
\begin{align*}
5.45, \text{d, } 3J_{\text{HH}} \text{ (trans)} & = 17.5 \text{ Hz} \\
5.55, \text{d, } 3J_{\text{HH}} \text{ (cis)} & = 10 \text{ Hz} \\
6.70, \text{dd, } J = 17.5, 10 \text{ Hz}
\end{align*}
\]

(c) Obtain all of the coupling constants from the expansions of the multiplets C and D. Report them in the standard format \((nJ_{X,Y} = 0.00 \text{ Hz})\). Clearly mark them on a drawing of the molecule, and on the spectra.

\[
\begin{align*}
3J_{\text{HH}} \text{ (cis)} & = 11.5 \text{ Hz} \\
2J & \approx 0 \\
3J_{\text{HH}} \text{ (trans)} & = 25 \text{ Hz} \\
2J_{\text{HSe}} \text{ (gem)} & = 22 \text{ Hz}
\end{align*}
\]
Problem R-10O (C₈H₈Se).
270 MHz $^1$H NMR spectrum in C₆D₆
Source: W. W. Willis / Reich (digitized hard copy)

$^3J_{HH}$ (cis) = 9.9 Hz
$^3J_{HH}$ (trans) = 17.5 Hz

$^2J_{HH}$ (cis) = 9.9 Hz
$^2J_{HH}$ (trans) = 25.4 Hz
$^2J_{HH}$ (gem) = 22.1 Hz

$^3J_{HH}$ (cis) = 11.9 Hz

Ph-Se

$^3J_{HH}$ (trans) = 17.5 Hz

$^2J_{HH}$ (cis) = 9.9 Hz
$^2J_{HH}$ (trans) = 25.4 Hz
$^2J_{HH}$ (gem) = 22.1 Hz

$^3J_{HH}$ (cis) = 11.9 Hz