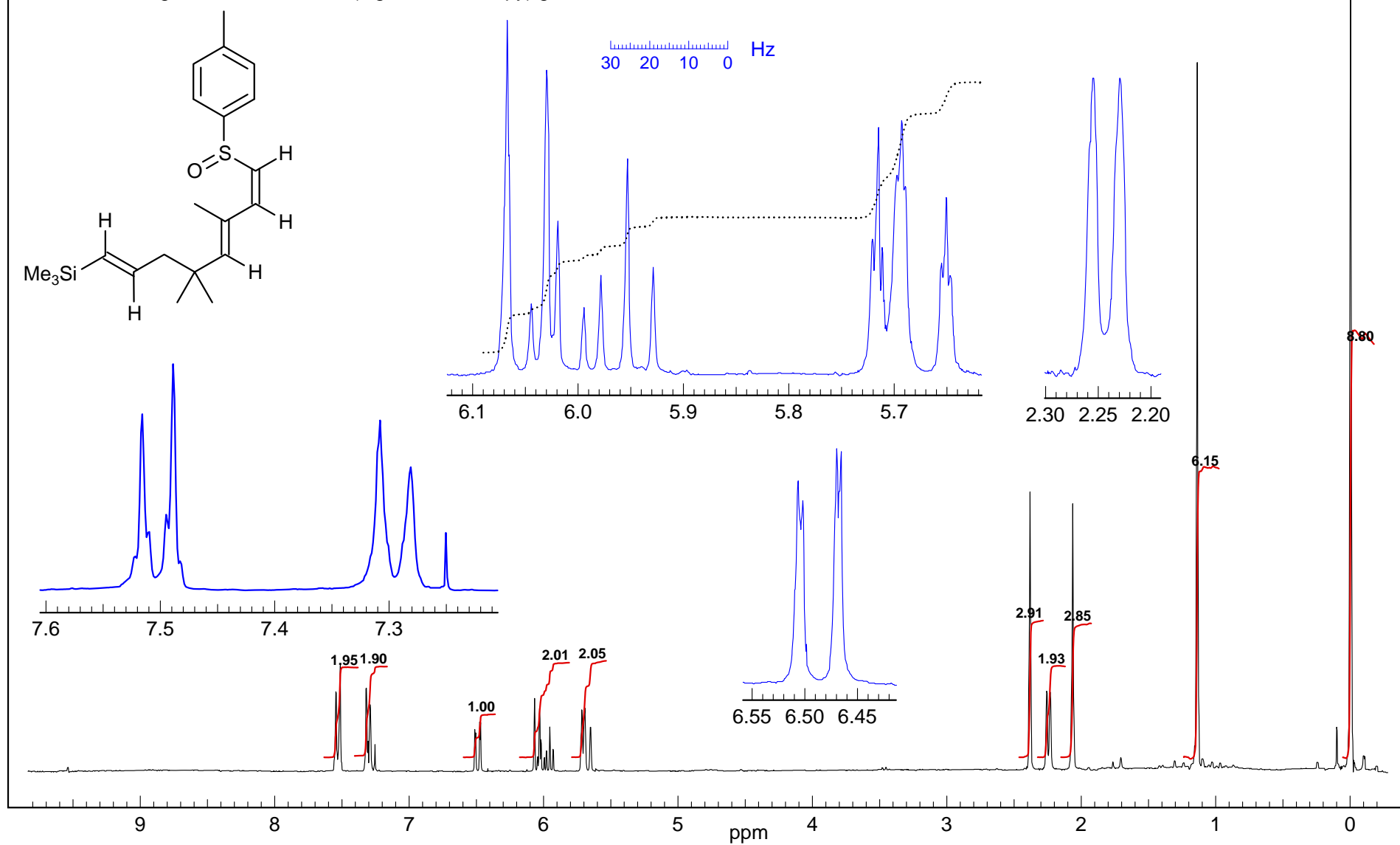


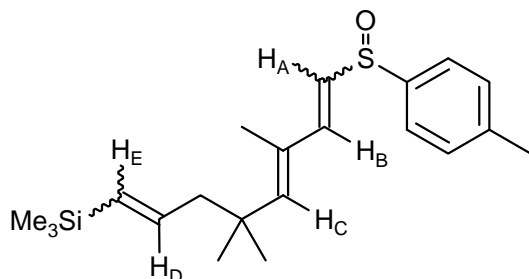
Problem R-12D ($C_{21}H_{32}OSSi$).

270 MHz 1H NMR spectrum in $CDCl_3$

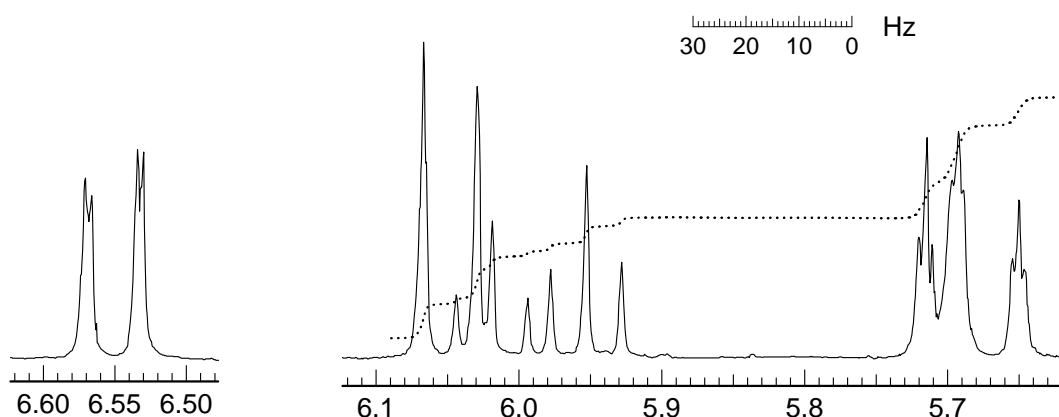
Source: Margaret K. Jones/Burke (digitized hard copy) g



Problem R-12D. Interpret the partial spectrum of the triene shown below, and assign stereochemistry to two of the double bonds. The complete spectrum is on the next page.



(a) On the expansion reproduced below, mark clearly the assignment of the protons H_A to H_E . Draw a coupling tree for each one to show that you understand the line assignments. You may use first order analysis.



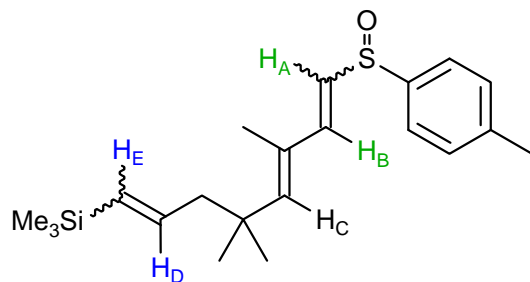
(b) Report the data below in the standard format (e.g., δ 5.31, dq, $J = 8.2, 3.3$ Hz)

H_A _____ H_D _____
 H_B _____ H_E _____
 H_C _____

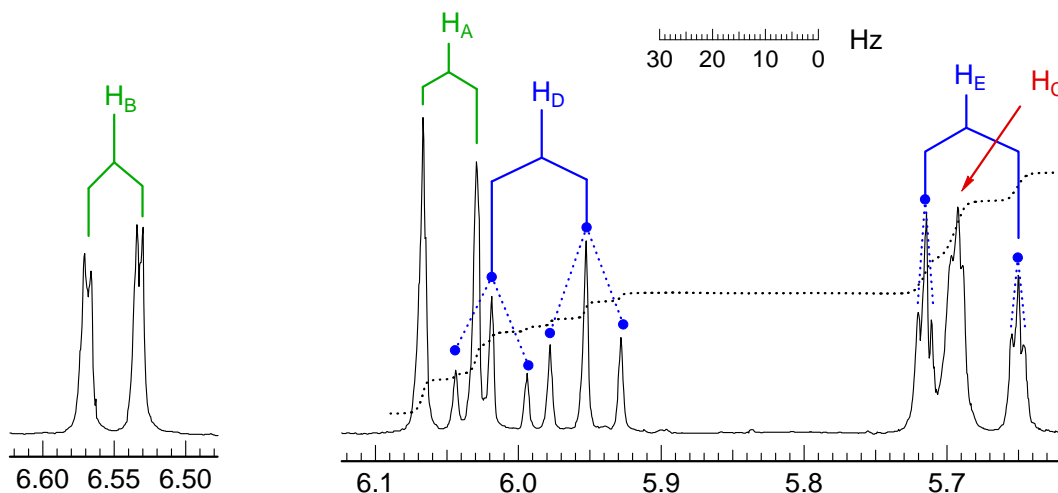
(c) What is the stereochemistry at the $H_A - H_B$ double bond? Explain briefly.

(d) What is the stereochemistry at the $H_D - H_E$ double bond? Explain briefly.

Problem R-12D. Interpret the partial spectrum of the triene shown below, and assign stereochemistry to two of the double bonds. The complete spectrum is on the next page.



(a) On the expansion reproduced below, mark clearly the assignment of the protons H_A to H_E . Draw a coupling tree for each one to show that you understand the line assignments. You may use first order analysis.



(b) Report the data below in the standard format (e.g., δ 5.31, dq, J = 8.2, 3.3 Hz)

H_A δ 6.05, d, J = 11 Hz

H_D δ 5.98, dt, J = 18, 7 Hz

H_B δ 6.55, dd, J = 11, 1 Hz

H_E δ 5.68, dt, J = 18, 1 Hz

H_C δ 5.69, t, J = 1.5 Hz

(c) What is the stereochemistry at the H_A - H_B double bond? Explain briefly.

Double bond must be cis - 11 Hz coupling too small for trans

(d) What is the stereochemistry at the H_D - H_E double bond? Explain briefly.

Double bond must be trans - 18 Hz coupling