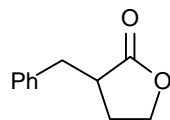


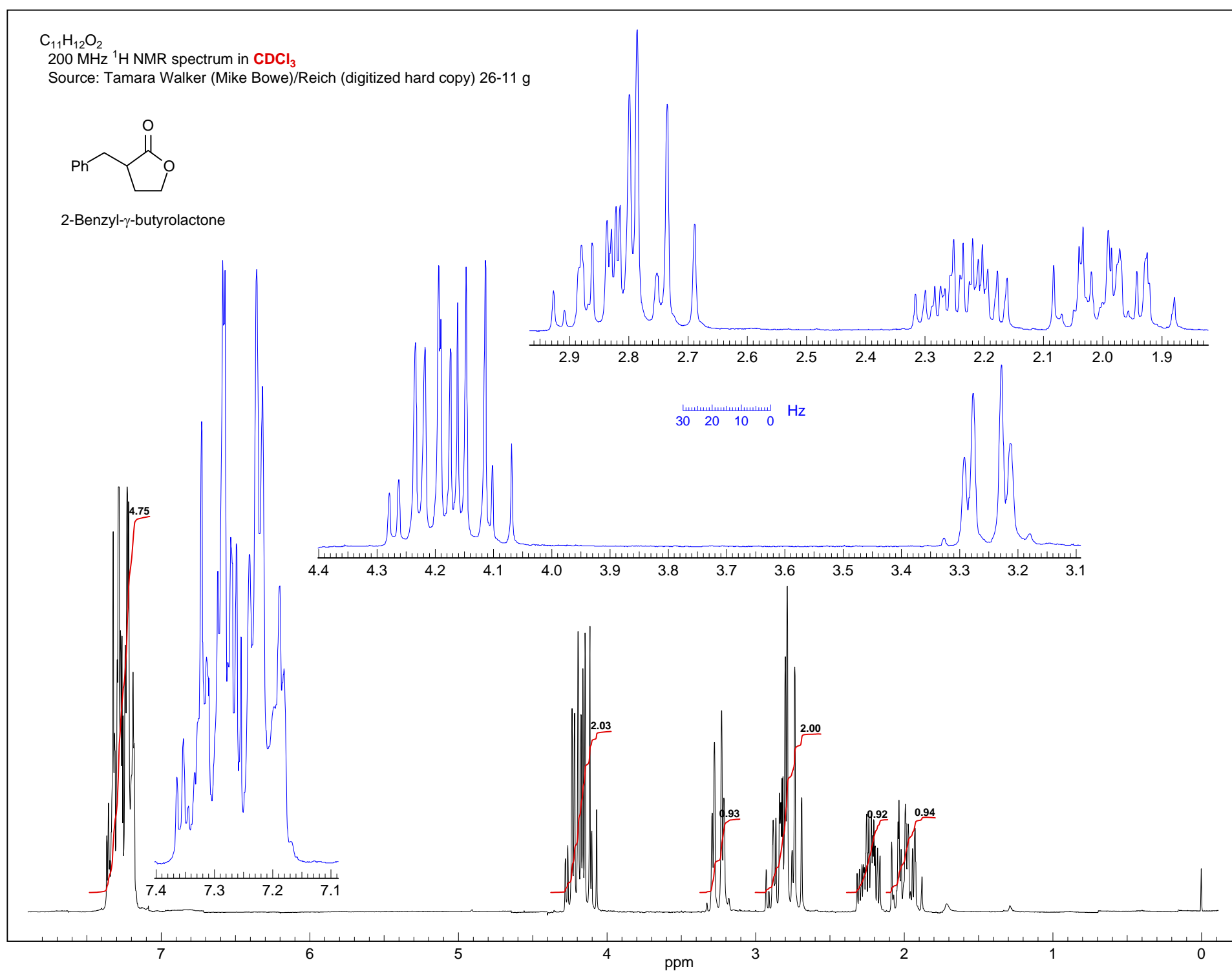
C₁₁H₁₂O₂

200 MHz ¹H NMR spectrum in **CDCl₃**

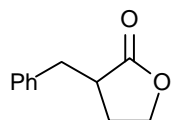
Source: Tamara Walker (Mike Bowe)/Reich (digitized hard copy) 26-11 g



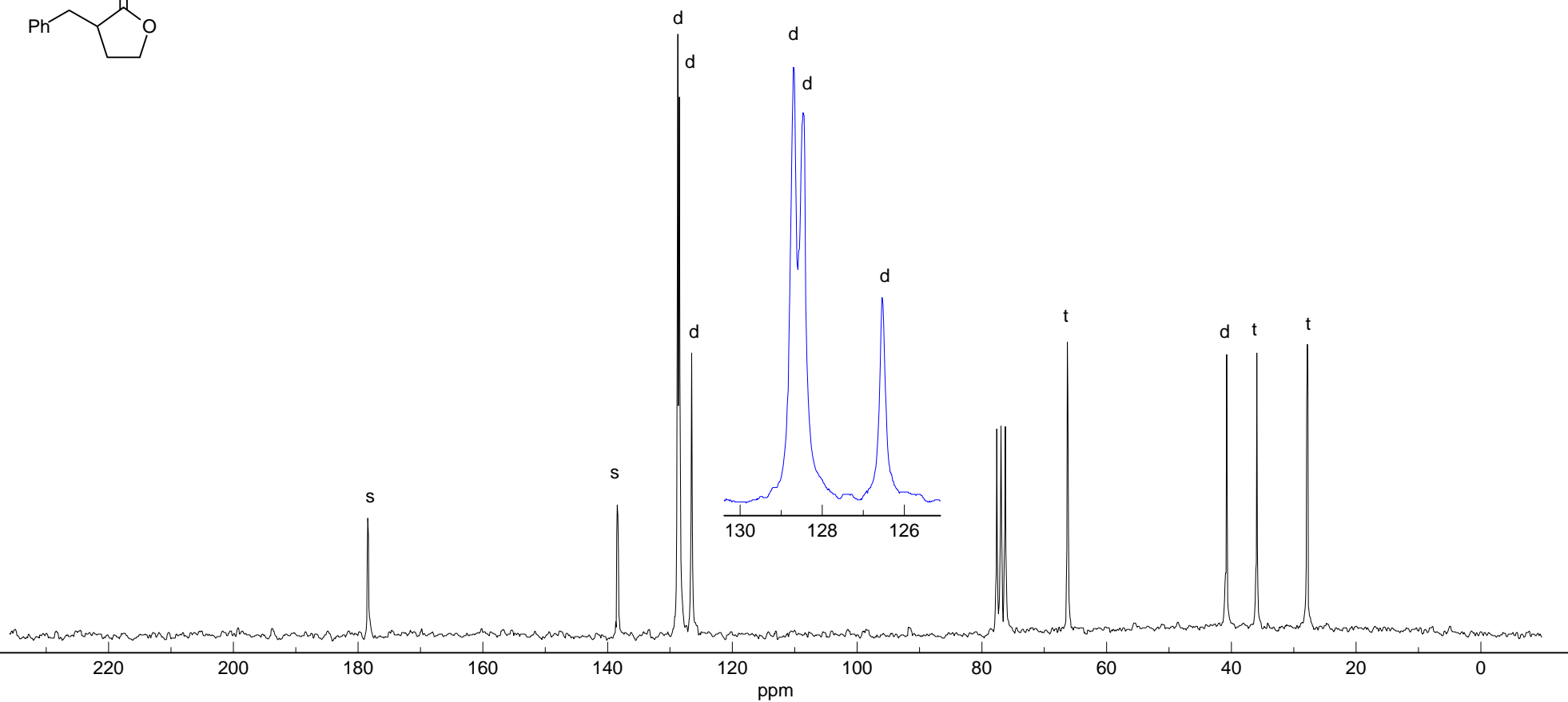
2-Benzyl-γ-butyrolactone



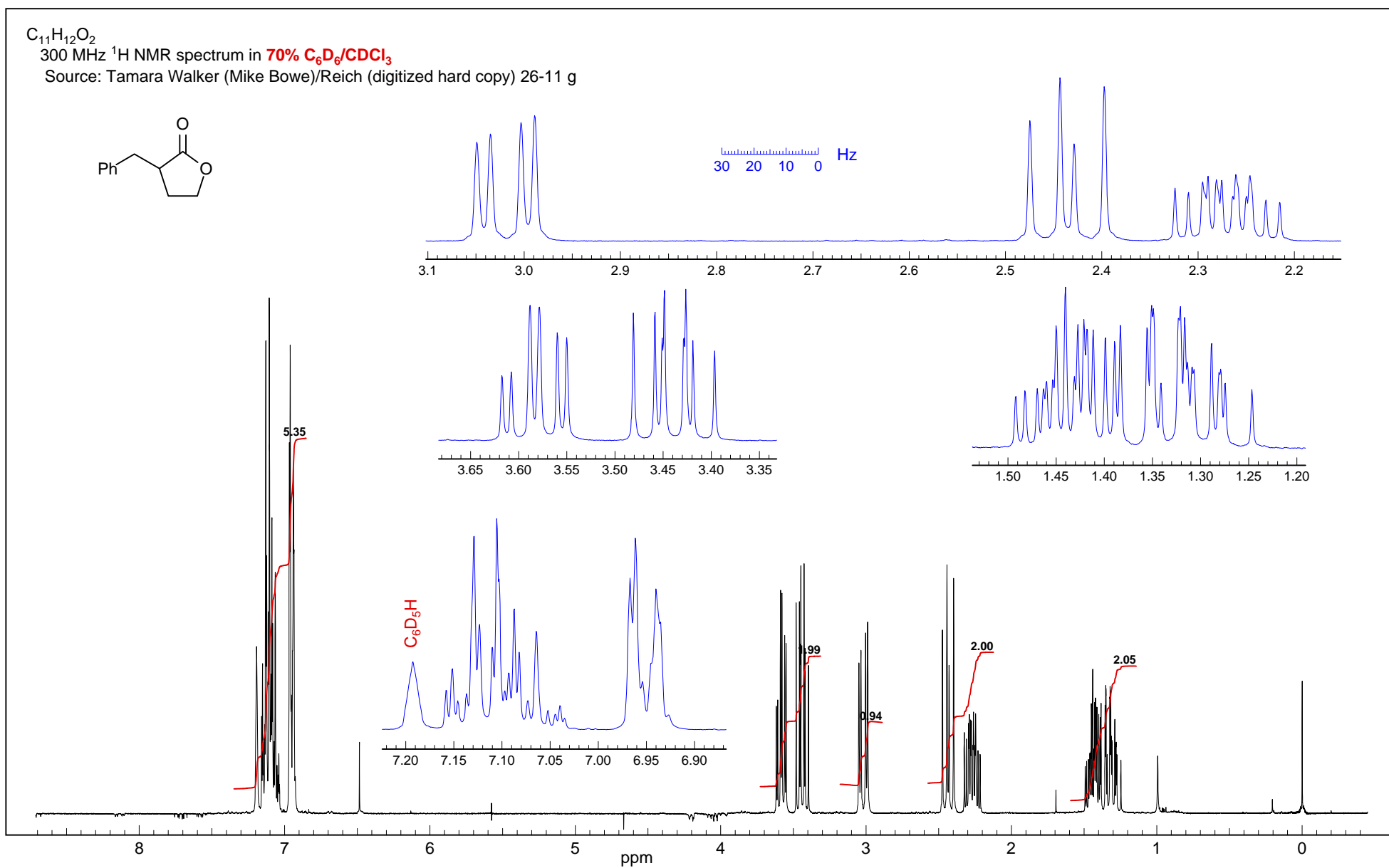
50 MHz ^{13}C NMR spectrum in CDCl_3



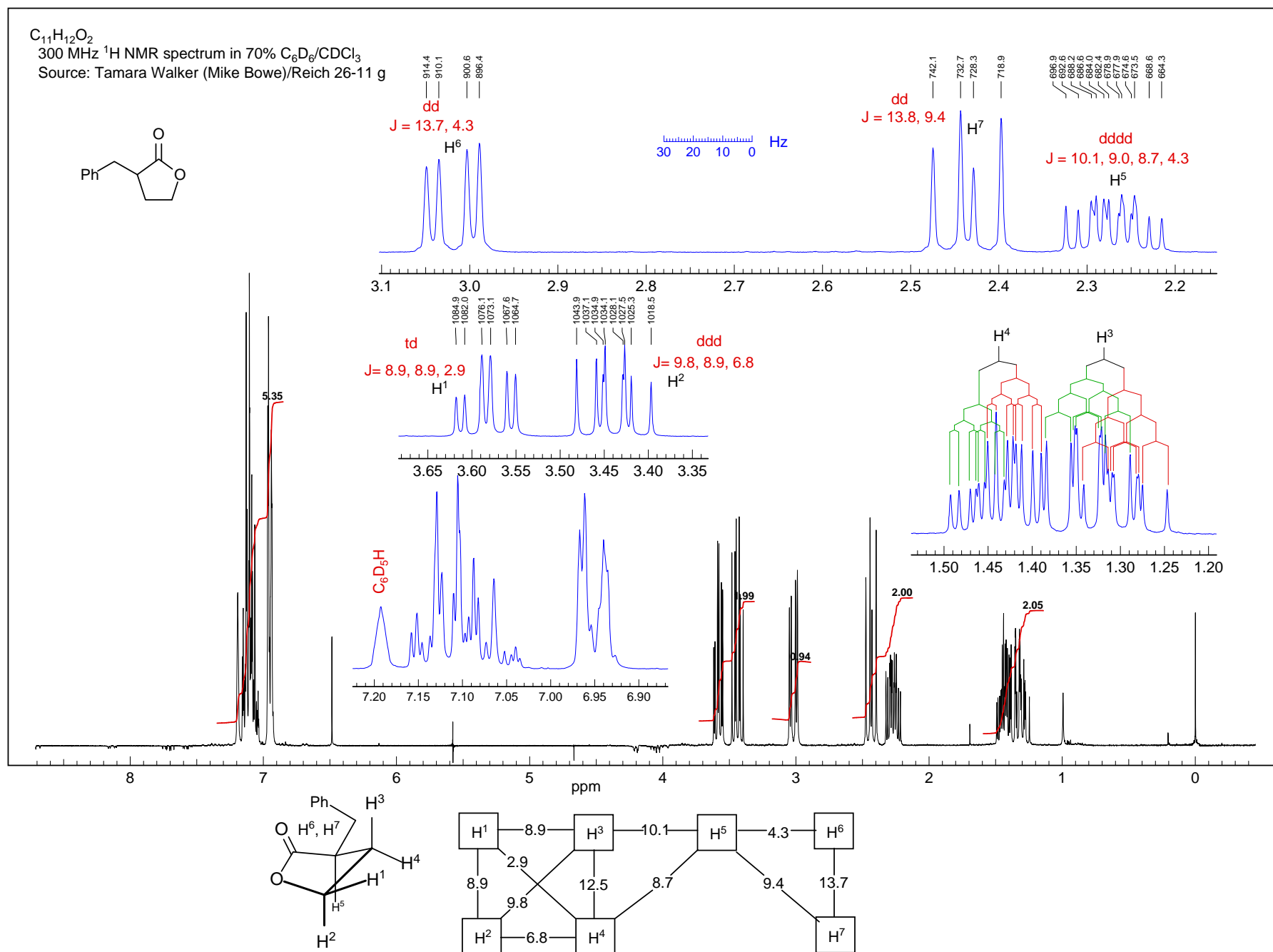
178.4
138.4
128.7
128.5
126.5
66.3
40.8
35.9
27.8



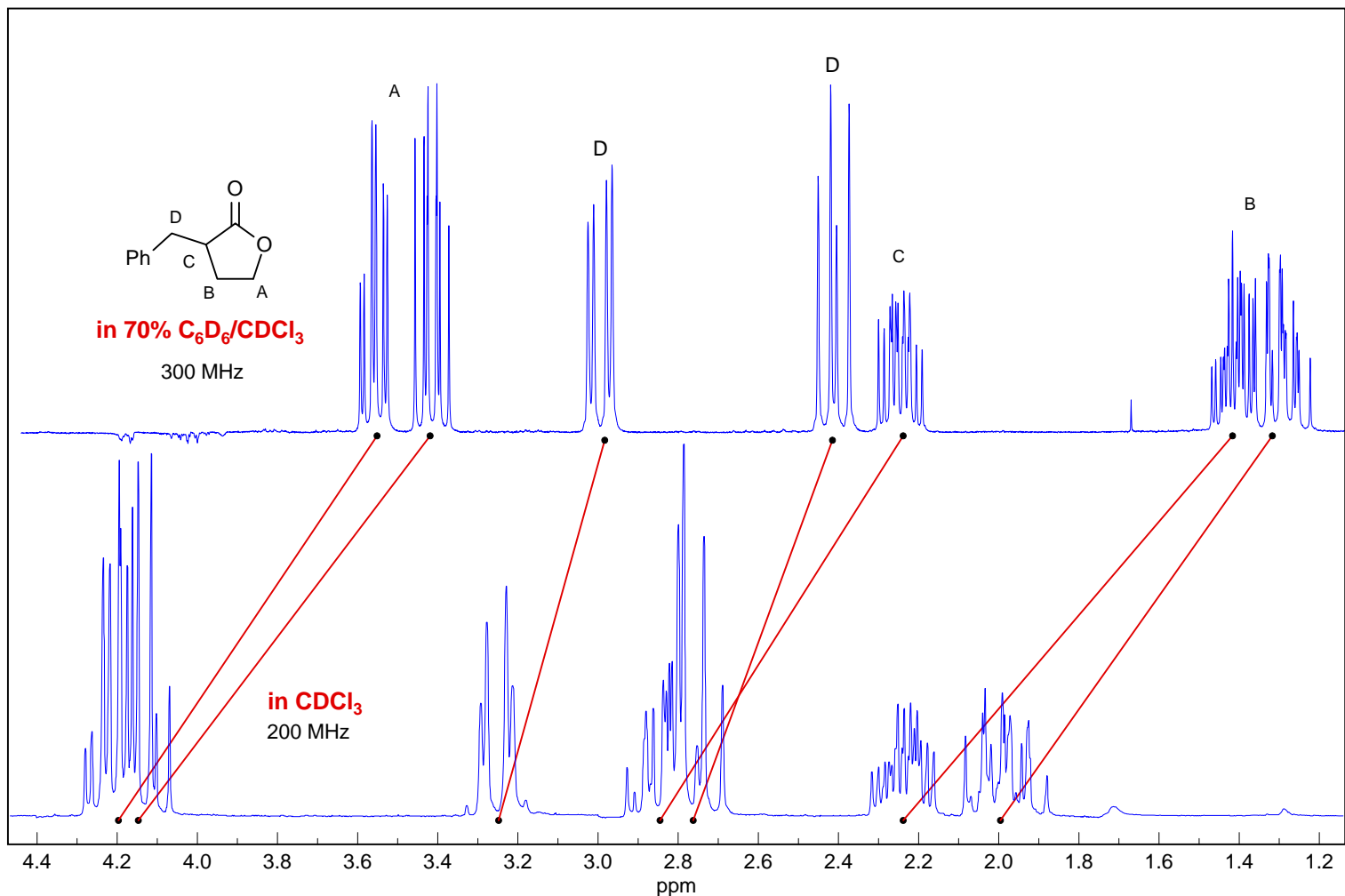
Exercise: Analyze the NMR spectrum of 2-benzylbutyrolactone.



Exercise: Analyze the NMR spectrum of 2-benzylbutyrolactone.



Aromatic Solvent Induced Shifts (ASIS)



NOTE; In 70% C_6D_6 the spectrum is essentially first order; in $CDCl_3$ the C proton is close to one of the D protons at δ 2.8, causing all protons coupled to it to show pronounced second order effects (the other D proton and the B protons). The A protons are still mostly first order.

70% C_6D_6 was chosen because, as can be seen from the two spectra, addition of benzene causes the C proton to move upfield much faster than the D proton, eventually removing the complications from the close shift in $CDCl_3$. However, the two B protons are moving closer together, and in pure C_6D_6 they become more second order with some effects on the A and C protons.

The relative shift effects of the various protons is consistent with the "transient π complexes" model for ASIS (where the benzene is perpendicular to the positive end of the molecular dipole), with B moving the most since these are closest to the benzene, A and C move a little less, D still less.

