Chemistry 416, Dr. Glaser
Coupling in NMR Spectroscopy: 1,1-Difluoroethene

The Classical Case of 1,1-Difluoroethene

Consider the methylene portions of 1,1-dichloroethane and of 1,1-difluoroethene. What kind of ^{1}H NMR do you expect for the chlorinated molecule? Easy, one peak because the two H atoms are homotopic. But now look at the ^{1}H NMR spectrum of the fluorinated species. What happened to the "homotopic" H-atoms? (Compare Lambert, page 69.)

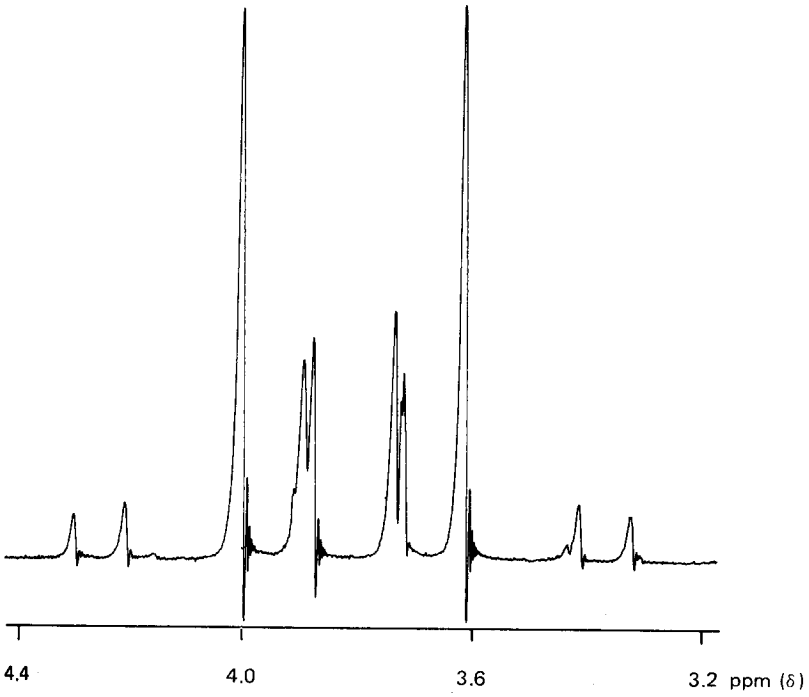

FIGURE 4-2 The proton spectrum of 1,1-difluoroethene, recorded at 90 MHz in $CDCl_3$.