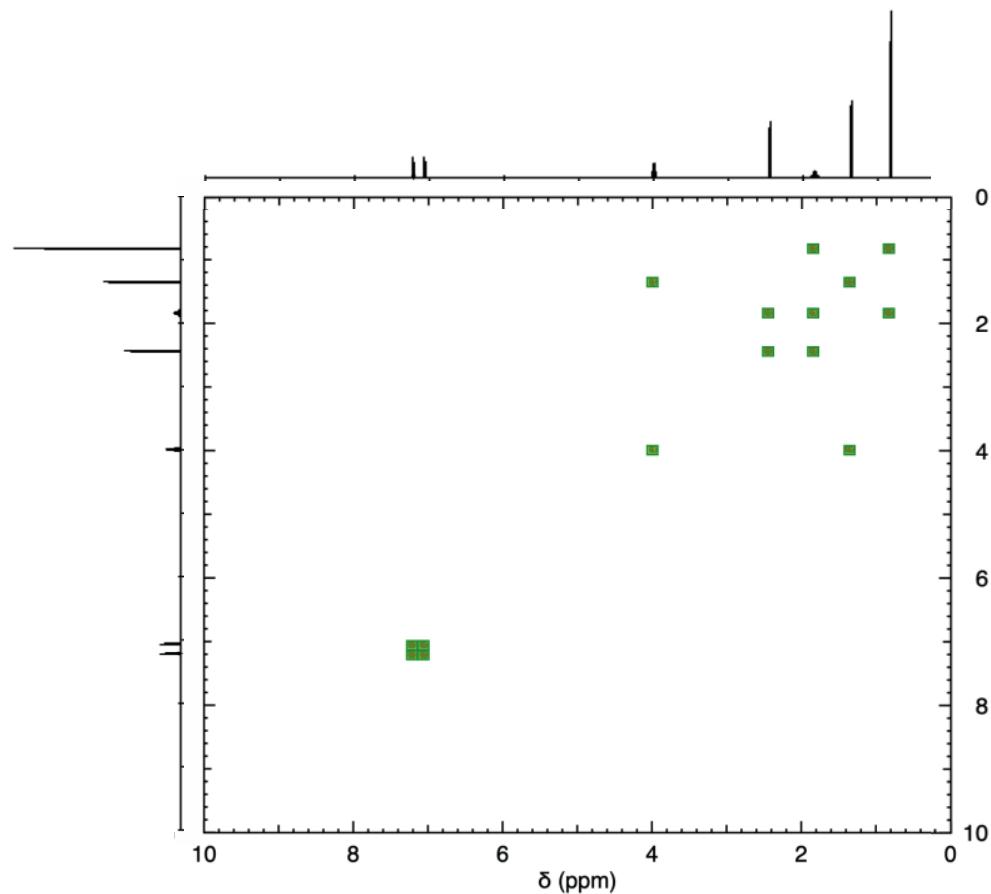
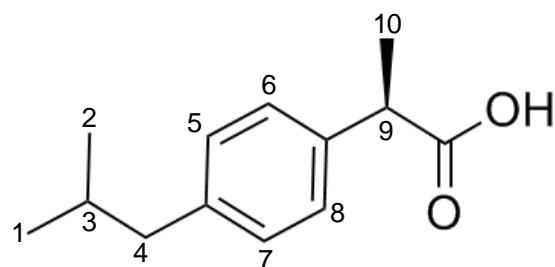


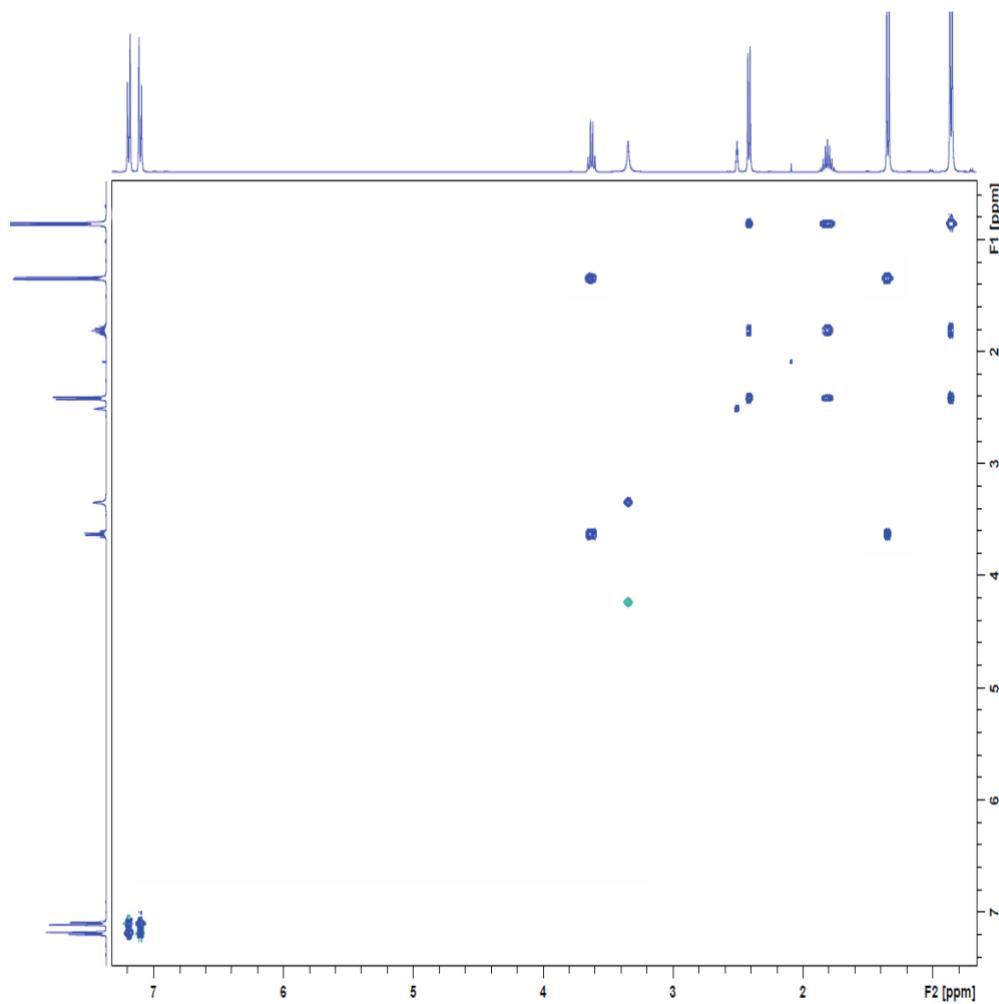
## Jigsaw 4E

1. [Keeler Sections 8.3 and 8.11] Two  $^1\text{H}$ - $^1\text{H}$  2D spectra of ibuprofen are shown below.

a. Explain the difference between the TOCSY and COSY experiments. Which spectrum corresponds to which experiment? How do you know?

b. Assign the spectra.





2. [Keeler Section 12.2 and Hore Section 3.3] For each of the following compounds determine whether the protons are magnetically or chemically equivalent. Explain why.

a. 1-chloro-1-fluoroethene

b.  $\text{HC}\equiv\text{C}-\text{CH}_2-\text{C}\equiv\text{CH}$