

Spectroscopy

Exercises Chapter 5

1. The electronic configuration of the CO molecule is described by following MOs: $\text{KK}(3\sigma)^2(4\sigma^*)^2(1\pi)^4(5s)^2$
The first excited state is described by: $\text{KK}(3\sigma)^2(4\sigma^*)^2(1\pi)^4(5s)^1(2\pi^*)^1$
 - a. Discuss the changes in bond strength and bond length associated with the electronic excitation.
 - b. Sketch the corresponding potential energy curves.
 - c. Sketch the vibrational structure observable in the spectrum for this electronic transition.
 - d. Sketch the rotational structure observable in the spectrum for this electronic transition.