

Spectroscopy

Exercises Chapter 5

1. The electronic configuration of the CO molecule is described by following MOs: KK(3σ)²($4\sigma^*$)²(1π)⁴($5s$)²

The first excited state is described by: KK(3σ)²($4\sigma^*$)²(1π)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.