

Prelab, Exp. 5 (Modeling)
Due by 2 PM Thursday, 2/26

1. Both parts of the modeling lab involve consideration of IR spectra, which permit measurement of molecular vibrations.
 - a. How many total molecular vibrations are there in the borane-amine adduct? In the metal-arene compound? Explain how you arrived at your answers.
 - b. What specific functional group observed in the IR spectrum will provide the best confirmation for your synthesis of the borane-amine adduct?
 - c. The number of peaks observed in the IR spectra of these compounds is much less than the total numbers of vibrations you specified in (a). Briefly provide two reasons for this. [Hint: what must a vibration do to the molecule in order to be observed in the IR spectrum?]

2. Please predict the point group of the metal-arene compound. Assume that the CO and CH₃ groups are oriented to give the greatest possible symmetry.