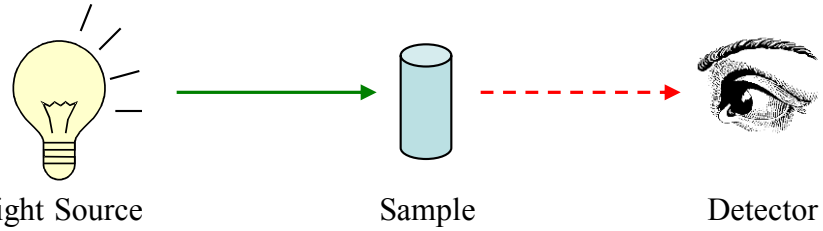
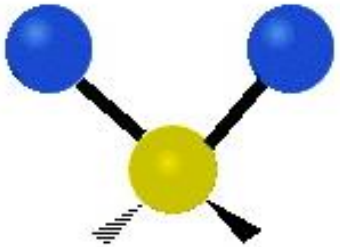
Fourier Transform Infrared Spectroscopy (FT-IR)

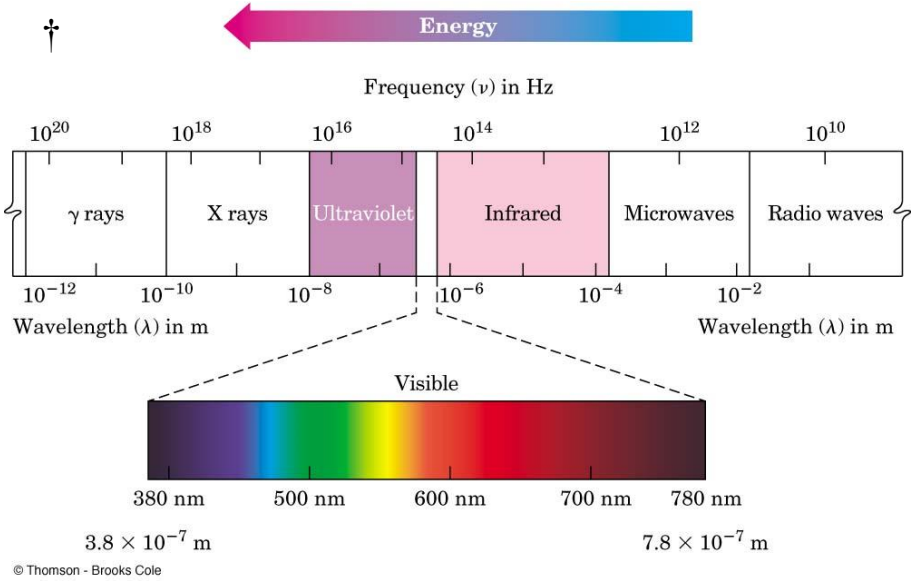


Absorption is due to bond vibrations

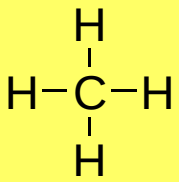


- Each bond vibration is quantized

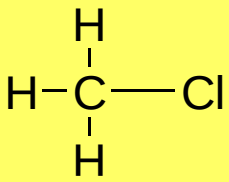
†



Must have a change in dipole of the bond



IR inactive

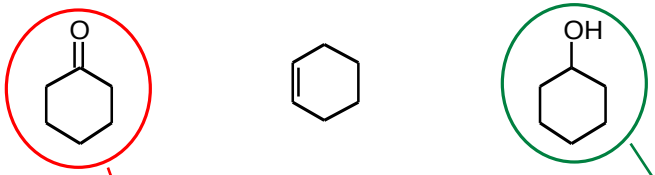


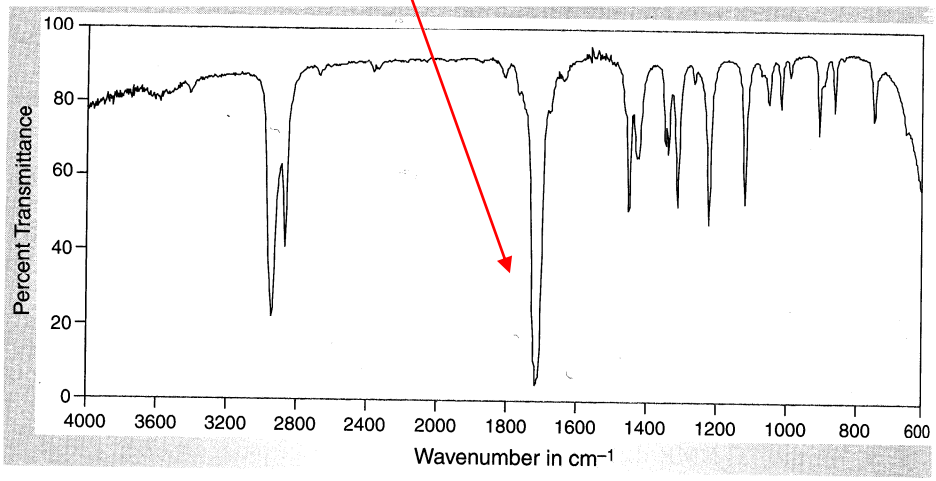
IR active

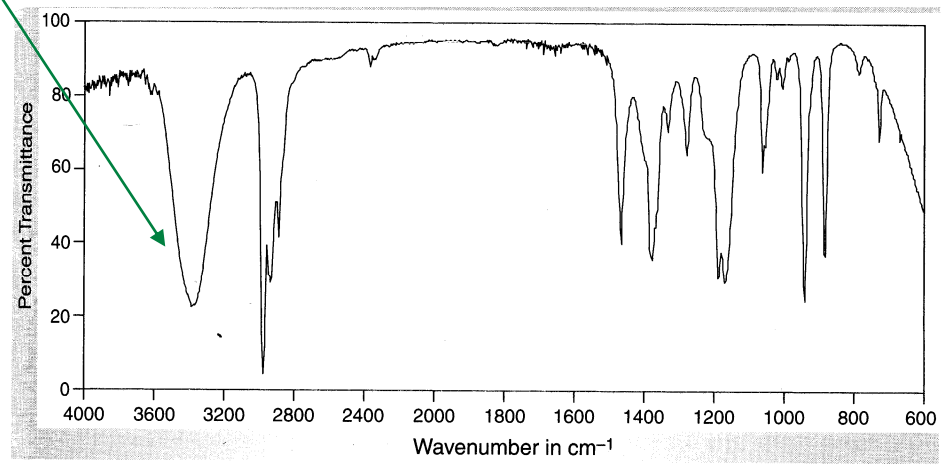
- Identify organic functional groups

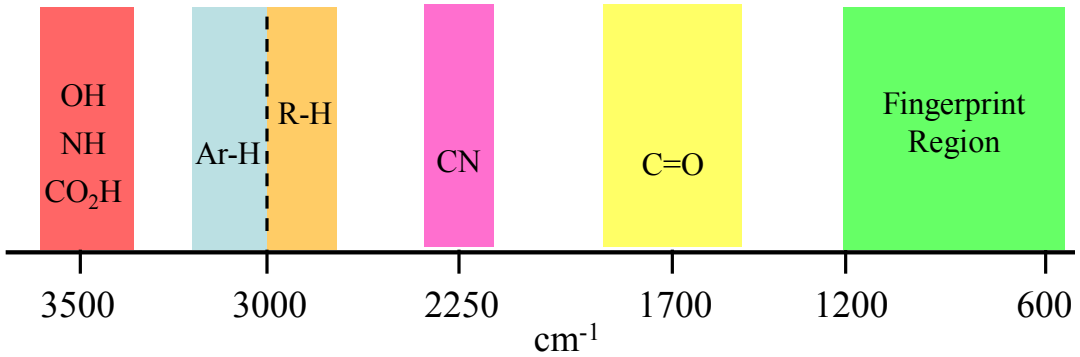
FT-IR Spectra

Major functional groups: OH, NH, C-H, Ar-H, CN, C=O

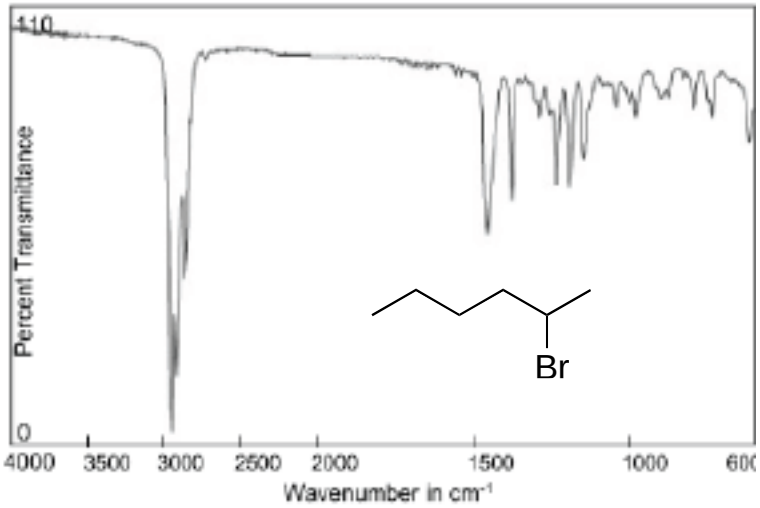


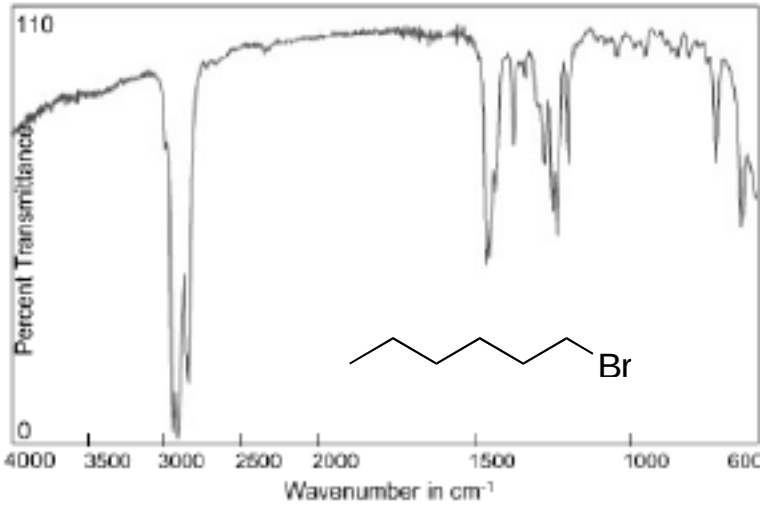


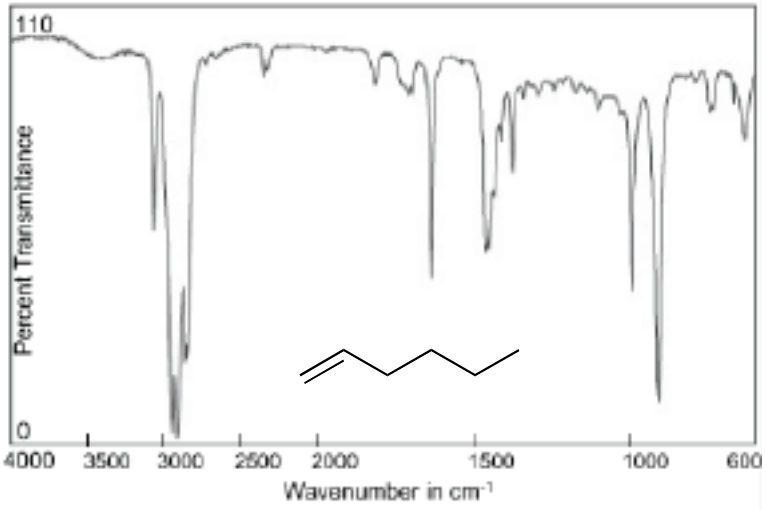




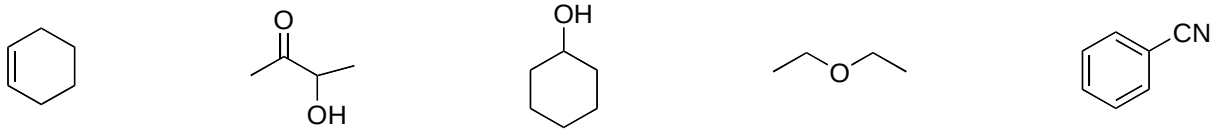
FT-IR is Different for each Compound



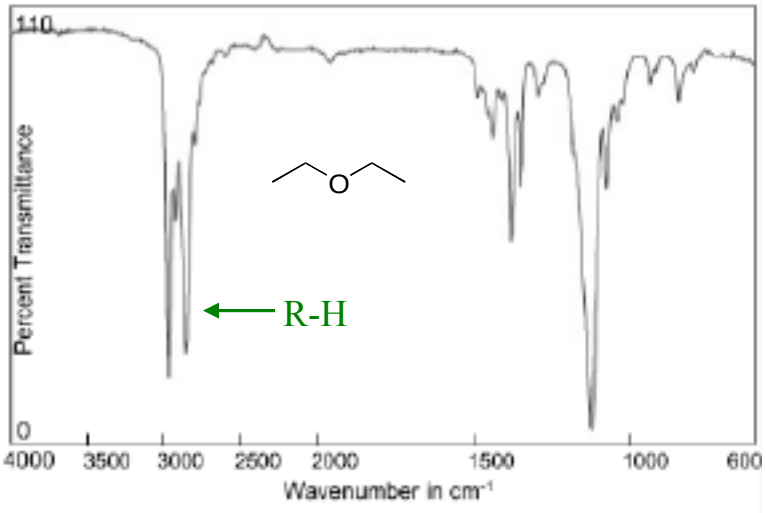


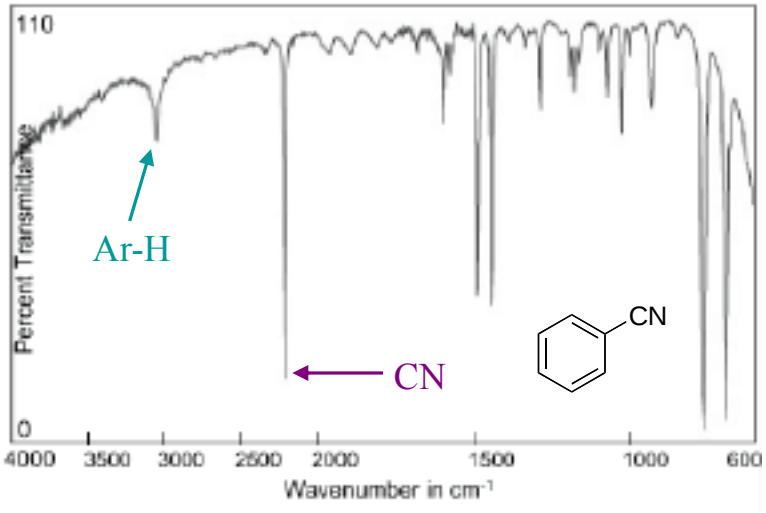


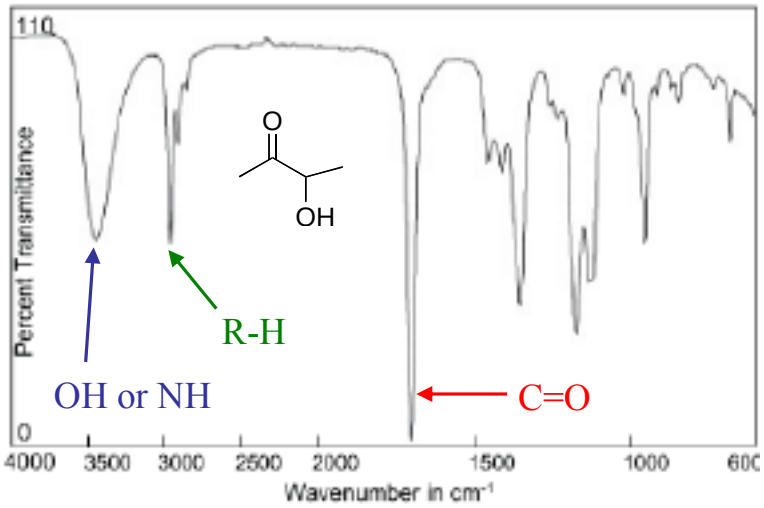
Interpreting FT-IR Spectra



(a) (b) (c) (d) (e)



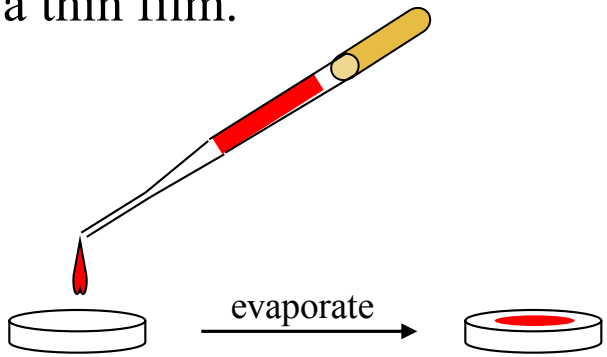




Look for characteristic peaks for each functional group

Collecting an FT-IR Spectrum

- Clean salt plates with dichloromethane (CH_2Cl_2), never use water, acetone, etc.
- Collect a background with your clean dry salt plate.
- For solids, dissolve in CH_2Cl_2 and place a drop on the salt plate, and let the solvent evaporate to form a thin film.



- For liquids place a drop of the pure compound on a clean salt plate and then place a second salt plate on top to form a sandwich.
- Mount salt plate into the instrument so that the beam passes through your sample. Generally we collect 16 scans.