

4. Infrared Spectroscopy

a) Deduce a possible structure for the compound with the following major IR absorptions. Explain your choice based on the IR absorptions, indicating the absorptions on your molecule. C_4H_8O : 3000, 2850 (weak), 2715(weak), 1730 (strong) cm^{-1}

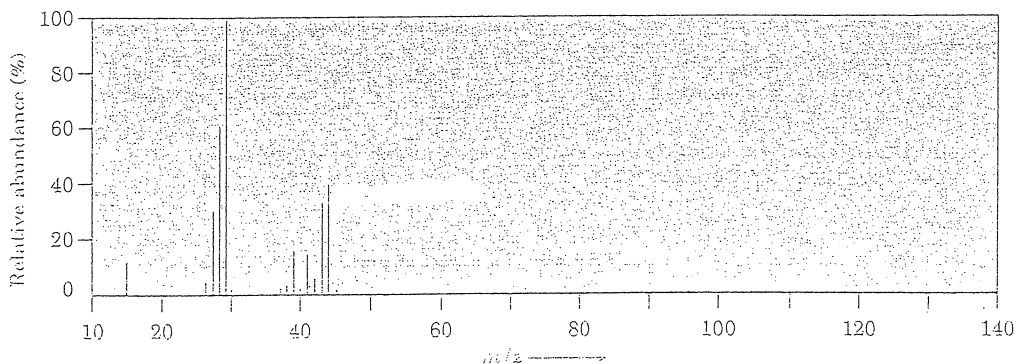
b) How could you use IR spectroscopy to distinguish between $CH_3OCH_2CH_3$ and $CH_3CH_2CH_2OH$?

c) Give an example of a molecule with an **IR inactive vibration**.

5. Mass Spectroscopy

Shown below is the mass spectrum for propane. Respond to the questions below:

- circle the parent peak; indicate its m/z value
- draw an arrow pointing to the base peak; indicate its m/z value
- draw the structure of the base peak
- identify the fragment at 15 m/z



e) What evidence in a mass spectrum alerts the chemist to the presence of chlorine in a molecule?