VIBRATIONAL COARSE STRUCTURE

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- The absorption or emission of electromagnetic radiation in visible and ultraviolet due to transition between electronic energy levels of molecules.
- During the transition vibrational and rotational energy changes occur.
- The separation between electronic levels is of the order of 10^{-6} cm^{-1} or more.

- Molecules possessing permanent electric dipole moment give pure rotational spectra.
- Vibrational spectra required a change of dipole moment.
- Electronic spectra given by all molecules since change in the electrons distribution in molecules are always accompanied by dipole moment changes.

- The vibrational spectra are observed only when the dipole moment of the molecule changes during the vibration.
- A Change in total energy of the molecule is,

$$\Delta E_{total} = \Delta E_{el} + \Delta E_{vib} + \Delta E_{rot}$$

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Vibrational course structure of electronic absorption from the ground state