

## Abstract

The absorption of radiation by different molecules and interaction with a solvent greatly determines the shape and position of bands of a chromophore in electronic spectroscopy. The maximum absorption wavelength ( $\lambda_{\text{max}}$ ) was determined using the spectra obtained from the UV/Visible spectrophotometer. Considering the shape, the spectral bands of the molecule in solution were noticed to be broader than in gas phase because of the fluctuations in the solute-solvent interactions. Really, such interactions were observed to change slightly among solute molecules, and with time showed the energy differences between their electronic and vibrational levels. This can be seen as an important source of the inhomogeneous broadening, indicating that the broadening is attributed to the inhomogeneous conditions experienced by the absorbing or emitting molecules.

**Keywords:** Spectral bands, inhomogeneous broadening, electronic and vibrational levels, solute-solvent interactions.