

**Molecular Spectroscopy**  
**Write a report on one of the following**  
**Please use your lecture notes and other sources**  
**(from 6 to 20 pages)**

- 1- Introduction to molecular spectroscopy: The aim, identification of a species, quantification of a species. Beer's law: advantages and drawbacks. Instrumental setup of a spectrophotometer: Radiation sources, prism versus diffraction grating, detectors.
- 2- Comparison between a spectrum of an atom and a spectrum of a molecule. The broadening of the absorption spectrum of a molecule, effect of collisions, effect of temperature, Doppler broadening, the effect of conjugation and the non-bonding electrons on the absorption UV spectrum. Challenges of using UV spectrum to identify a sample.
- 3- Basic ideas and short notes of IR spectroscopy , Raman Spectroscopy, and Molecular Luminescence.

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