CHAPTER OVERVIEW

4: Electronic Spectroscopy of Cyanine Dyes

Our first chemical application of Quantum Mechanics is directed at obtaining a description of the electronic spectra of a class of molecules called cyanine dyes. We start with this set of molecules because we can use a particularly simple model, the particle-in-a-box model, to describe their electronic structure. This simple model applied to a real molecular system will further develop our "sense of Quantum Mechanics." We also will discover rules, called selection rules, that are used to tell whether a transition between two energy levels will occur in an absorption or emission spectrum. Later we will learn about more sophisticated and general methods for describing the electronic states of atoms and molecules.

Topic hierarchy

David M. Hanson, Erica Harvey, Robert Sweeney, Theresa Julia Zielinski ("Quantum States of Atoms and Molecules")