Chem 347: Quantum Chemistry

Course description: Introduction to quantum chemistry, molecular orbitals and bonding. The Schrödinger equation and its solutions for some simple systems. Molecular orbitals and bonding in diatomic and polyatomic molecules.

Course Goals

Develop an understanding of atomic models

Develop an understanding of energy levels relevant to spectroscopy

Develop an understanding of the concept of quantization for the electronic structure of atoms and molecules

Develop the ability to think quantum mechanically and to understand how this is distinct from thinking in terms of classical mechanics

Develop the ability to apply quantitatively the formalism of quantum mechanics to standard systems

Develop the ability to apply quantitatively the concepts of quantum mechanics to chemical bonding and standard chemical systems.

Develop the ability to use theoretical frameworks in chemistry to rationalize or predict experimental observations

Program Goals

Develop the ability to represent chemical information.

Develop an understanding of the use of models, their premises, advantages and limitations.

Develop competence in problem solving.