

School of Chemistry

Aims and Objectives: Session 2023-2024, Semester 2

Module CH3712: Quantum Theory of Atoms, Molecules and Solids

Course Title: Quantum Theory of Atoms, Molecules and Solids

Duration: 8 hours

Lecturer: Dr G. Haehner

Aims: The aim of this course is to build on the foundations laid in Introduction to Quantum Theory (CH2701) and to introduce further, basic concepts essential to the theoretical description and understanding of molecules and solids.

Objectives:

1. To understand Valence Band (VB) theory and appreciate its application to molecules.
2. To understand Molecular Orbital (MO) theory and appreciate its application to molecules.
3. To consider the quantum mechanical treatment of molecular rotation and vibration.
4. To consider the interaction of atoms and molecules with electromagnetic radiation and the origin of selection rules.
5. To consider the origins of intermolecular forces.