

National Training School in Theoretical Chemistry

Quantum Mechanics

Peter Knowles (Cardiff), 6 lectures, 2 tutorials

Quantum mechanics provides the fundamental basis on which all theories of matter are founded.

These lectures are designed to extend knowledge of, and competency in handling, some of the fundamental components of quantum theory. Building on the basics of the time-independent Schrödinger equation, three advanced topics will be introduced: (a) time-dependent quantum mechanics; (b) quantum theory of angular momentum; (c) second quantization.

Students at the School will be expected to have a prior working knowledge of quantum mechanics at the advanced undergraduate level. In other words, they will be competent in handling concepts as presented in texts such as Atkins' *Physical Chemistry*, and will have familiarity with more detailed treatment of some topics, as found, for example, in Atkins & Friedman's *Molecular Quantum Mechanics* (4th edition: chapters 1, 2, 3, 6.1-10).