

Nuclear Magnetic resonance

1 Introduction

- 1.1 Angular momentum and nuclear magnetism
- 1.2 NMR spectroscopy

2 Chemical shifts

- 2.1 Nuclear shielding
- 2.2 Origin of chemical shifts
- 2.3 Contributions to nuclear shielding

3 Spin-spin coupling

- 3.1 Effect on NMR spectra
- 3.2 Multiplet patterns
- 3.3 Examples
- 3.4 Equivalent nuclei
- 3.5 Strong coupling
- 3.6 Mechanism of spin-spin coupling
- 3.7 Properties of scalar coupling
- 3.8 Dipolar coupling

4 Chemical exchange

- 4.1 Symmetrical two-site exchange
- 4.2 Unsymmetrical two-site exchange
- 4.3 Examples

5 Spin relaxation

- 5.1 Spin-lattice relaxation
- 5.2 Rotational motion in liquids
- 5.3 Spin-lattice relaxation again
- 5.4 The nuclear Overhauser effect
- 5.5 Spin-spin relaxation
- 5.6 Quadrupolar relaxation
- 5.7 Examples—structure
- 5.8 Examples—dynamics

6 Experimental methods

- 6.1 Instrumental requirements
- 6.2 The vector model
- 6.3 Relaxation time measurements
- 6.4 Two-dimensional NMR