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Molecular Magnetism

I Molecules in the magnetic field

Magnetic moments and susceptibility
Zeeman effect
Spin orbit interaction and zero field splitting

II Polynuclear complexes

Magnetic exchange coupling
Ferromagnetism and antiferromagnetism

III Single molecule magnets

Examples and Applications

Abstract

Single molecule magnets (SMM) are molecules showing similar properties as macroscopic magnets but on molecular scale. Magnetized by a magnetic field they keep the magnetization for relatively long time and can be used for storage of information.

The lecture has three parts: In the first two parts the basic concepts important in SMMs are explained. Chapter I is a short review on the interaction of one magnetic centre with magnetic field. In chapter II, the coupling of different spin centres in one molecule is discussed. In Chapter III examples for SMMs are given and important features for the stability of the magnetization in molecule magnets (spin and zero field splitting) are discussed.