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Nota di contenuto	Nitroxides; Contents; Preface; Symbols and Abbreviations; 1 Fundamentals of Magnetism; 1.1 Magnetism of Materials; 1.1.1 Historical Background; 1.1.2 Magnetic Moment and its Energy in a Magnetic Field; 1.1.3 Definitions of Magnetization and Magnetic Susceptibility; 1.1.4 Diamagnetism and Paramagnetism; 1.1.5 Classification of Magnetic Materials; 1.1.6 Important Variables, Units, and Relations; 1.2 Origins of Magnetism; 1.2.1 Origins of Diamagnetism; 1.2.2 Origins of Paramagnetism; 1.2.3 Magnetic Moments; 1.2.4 Specific Rules for Many Electrons; 1.2.5 Magnetic Moments in General Cases 1.2.6 Zeeman Effect1.2.7 Orbital Quenching; 1.3 Temperature Dependence of Magnetic Susceptibility; 1.3.1 The Langevin Function of Magnetization and the Curie Law; 1.3.2 The Brillouin Function of Magnetization and the Curie Law; 1.3.3 The Curie-Weiss Law; 1.3.4 Magnetic Ordered State; 1.3.5 Magnetic Interactions; 1.3.5.1 Exchange Interaction; 1.3.5.2 Dipolar Interaction; 1.3.6 Spin Hamiltonian; 1.3.7

Van Vleck Formula for Susceptibility; 1.3.8 Some Examples of the van Vleck Formula; 1.3.8.1 The Curie Law; 1.3.8.2 Zero-Filed Splitting Case; 1.3.8.3 Spin Cluster Case-The Dimer Model
1.3.8.4 Multiple-spin Cluster Case - The Triangle or Others1.3.8.5 Temperature-Independent Paramagnetism; 1.3.9 Low-Dimensional Interaction Network; 1.4 Experimental Magnetic Data Acquisition; 1.4.1 Methods; 1.4.2 Evaluations of Magnetic Susceptibility and Magnetic Moment; References; 2 Molecular Magnetism; 2.1 Magnetic Origins from Atoms and Molecules; 2.1.1 Historical Background; 2.1.2 Spin States Derived from Chemical Bonds; 2.1.3 Organic Free Radicals; 2.1.4 Coordinate Compounds; 2.2 Characteristics of Molecular Magnetism; 2.2.1 Molecular Paramagnetism
2.2.2 Magnetic Properties of Organic Free Radicals2.3 Nitroxide as a Building Block; 2.3.1 Stability of the N-O Bond; 2.3.2 Structural Resonance of the N-O Bond; 2.3.3 Molecular and Magnetic Interactions between Nitroxides; 2.3.4 Nitroxides as Building Block; 2.4 Low-Dimensional Properties of Nitroxides; 2.4.1 One-Dimensional Magnetism; 2.4.1.1 TANOL (TEMPOL); 2.4.1.2 F(5)PNN; 2.4.2 Interchain Interaction and Spin Long-Range Ordering; 2.4.3 Two-Dimensional Magnetism; 2.4.3.1 DANO; 2.4.3.2 p-NPNN; 2.4.4 Coordination of Nitroxide with Metal Ions; 2.4.4.1 Cu(2+), Mn(2+)-TANOL (TEMPOL)
2.4.4.2 Mn(2+)-IPNNReferences; 3 Fundamentals of Electron Spin Resonance (ESR); 3.1 Magnetic Resonance of Electron and Nuclear Spins; 3.1.1 Historical Background; 3.1.2 Classification of Magnetic Resonance; 3.2 Principle of Electron Spin Resonance (ESR); 3.2.1 Principle of ESR from Spectroscopic Interpretation; 3.2.2 Principle of ESR from Resonance Interpretation; 3.2.3 Bloch Equation; 3.2.3.1 Solutions of the Bloch Equation; 3.2.3.2 Absorption Line Shape; 3.2.3.3 Relaxation Times; 3.2.4 Modified Bloch Equation; 3.2.5 Hyperfine Interaction
3.2.5.1 Interaction of the Electron Spin with Nuclear Spins

Sommario/riassunto

Covering all aspects of this field, this volume also critically discusses recent results obtained with the use of nitroxides, while providing an analysis of future developments.Written by a group of scientists with long-term experience in investigating the chemistry, physicochemistry, biochemistry and biophysics of nitroxides, the book is not intended as an exhaustive survey of each topic, but rather a discussion of their theoretical and experimental background, as well as recent advances. The first four chapters expound the general theoretical and experimental background and the advan