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Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XXIV, 420 p. 2 illus., 1 illus. in color.)
Disciplina	543.0877
Soggetti	Spectrum analysis Microscopy Atomic structure Molecular structure Magnetism Magnetic materials Crystallography Chemistry, Physical and theoretical Materials science Spectroscopy and Microscopy Atomic/Molecular Structure and Spectra Magnetism, Magnetic Materials Crystallography and Scattering Methods Physical Chemistry Characterization and Evaluation of Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface -- Fundamental constants - Units conversion -- The electron paramagnetic resonance phenomenon -- Hyperfine structure of the spectrum in the isotropic regime -- Introduction to the spin states space formalism -- Consequences of the anisotropy of G and A matrices on the shape of spectra given by radicals and transition ions complexes -- Intensity of the spectrum, saturation, spin-lattice relaxation -- Zero field splitting. EPR spectra given by paramagnetic

centers with spin greater than  $\frac{1}{2}$  -- Effect of dipolar and exchange interactions on the EPR spectrum - Biradicals and polynuclear complexes -- EPR spectra given by rare earth and actinide complexes -- Effect of instrumental parameters on the shape and intensity of the spectrum - Introduction to numerical simulation techniques.

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## Sommario/riassunto

Although originally invented and employed by physicists, electron paramagnetic resonance (EPR) spectroscopy has proven to be a very efficient technique for studying a wide range of phenomena in many fields, such as chemistry, biochemistry, geology, archaeology, medicine, biotechnology, and environmental sciences. Acknowledging that not all studies require the same level of understanding of this technique, this book thus provides a practical treatise clearly oriented toward applications, which should be useful to students and researchers of various levels and disciplines. In this book, the principles of continuous wave EPR spectroscopy are progressively, but rigorously, introduced, with emphasis on interpretation of the collected spectra. Each chapter is followed by a section highlighting important points for applications, together with exercises solved at the end of the book. A glossary defines the main terms used in the book, and particular topics, whose knowledge is not required for understanding the main text, are developed in appendices for more inquisitive readers.

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