

Magnetic properties of free radicals

V. G. Terziev

Usp. Fiz. Nauk **161**, 186–187 (March 1991)

Landolt–Bornstein. Numerical Data and Functional Relationships in Science and Technology. New Series. Ed. in Chief O. Madelung, Group II, Vol. 17: Magnetic Properties of Free Radicals. Subvol. d2: Nitroxide Radicals, Pt. 2. Springer-Verlag, Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong, 1989. 441 p.

The new volume of the well-known reference book has been published as a supplement to Vols. II/1 and II/9 published earlier, in which the published data on the magnetic properties of free chemical radicals published up to 1980 were summarized. Its appearance shows the continuing interest in investigating the physical properties of the intermediate elements of chemical reactions.

After a short general introduction (H. Fischer is the author), there follows a comprehensive review of the magnetic properties of nitrogen radicals [by A. R. Forrester,

Chemistry Faculty of the University of Aberdeen (Scotland) Great Britain]. Compounds are grouped according to the degree of their structural complexity. The spin Hamiltonian parameters for free radicals that have been obtained mainly by the electron paramagnetic resonance method are shown in tables. Experimental data obtained by many other resonance methods are also shown. The basic principles which the author used in selecting the published data were authenticity of the results and the presence of an accurately determined structure for the free radical.

This volume summarizes practically all the scientific papers on the magnetic properties of nitrogen radicals published in leading international journals from 1975 to 1985. The book is of interest for specialists working at the interface between chemistry and physics.

Group theory and its application in physics

E. G. Maksimov

Usp. Fiz. Nauk **161**, 187 (March 1991)

T. Inui, Y. Tanabe, and Y. Onodera. *Group Theory and Its Applications in Physics.* (Springer Series in Solid-State Sciences, Vol. 78.) Springer-Verlag, Berlin; Heidelberg; New York, 1990. 397 p.

The book is a translation from Japanese of a fairly standard aid on group theory and its applications in atomic, molecular, and solid state physics. The book is intended both for students and researchers who are becoming acquainted with group theory for the first time, and also for specialists who want to study specific applications of group theory in physics in more detail. The book itself is also suitably organized. The first six chapters are devoted to general questions concerning the theory of groups, and their representations and

application in quantum mechanics. More special questions concerning the theory of group rotation, groups of points, and permutations of groups are then considered in the next nine chapters. Individual chapters are devoted to consideration of the electron states of molecules and of molecular vibrations. In addition to the standard material concerning space groups and their use for describing the electron states in crystals, there is an individual chapter on the application of group theory in the theory of Landau phase transitions. One must consider the detailed nature of all derivations and the large number of illustrations, which make the study of the material considerably easier, to be the merits of this book.