Additions and Corrections

Cooperative Chirality in Columnar Liquid Crystals: Studies of Fluxional Octahedral Metallomesogens [*J. Am. Chem. Soc.* **1999**, *121*, 4518−4519]. SCOTT T. TRZASKA, HSIU-FU HSU, AND TIMOTHY M. SWAGER*

The following paragraph was inadvertently omitted from the end of this Communication.

Supporting Information Available: Details on the synthesis and characterization of chiral alkyl bromides, cobalt trisdiketonate complexes, and iron trisdiketonate complexes; structural and packing diagrams of the methoxy analogue of **1d**; plot of the CD signal observed for mixtures of **1a** and **2a** (*S* isomer); and tables of crystal data and structure refinements, atomic coordinates and equivalent isotropic displacement parameters, bond lengths and angles, anisotropic displacement parameters, and hydrogen coordinates and isotropic displacement parameters for the methoxy analogue of **1d** (PDF). This material is available free of charge via the Internet at http://pubs.acs.org.

JA995512W

10.1021/ja995512w
Published on Web 05/12/1999

Book Reviews

Electronic Structure and Properties of Transition Metal Compounds: Introduction to the Theory. By Isaac B. Bersuker (The University of Texas at Austin). John Wiley: New York. 1996. ISBN 0-471-13079-6.

In the 1960s, a series of books including monograph contributions by Ballhausen, Jorgensen, Figgis, Griffith, Bersuker (in Russian), Schläfer and Gliemann, McClure, Orgel, Lewis and Wilkins, and Lever laid down the theoretical basis of inorganic electronic structure, spectroscopy and magnetism, and underpinned much of the subsequent phenomenal development of inorganic chemistry. These books are mostly now out of print, and few similar books have appeared in the intervening period.

Bersuker recognized that there was a need for a new volume bringing a more up to date view of modern inorganic theory and having a broad range of topics, many of which were unknown or not included in the aforementioned earlier volumes. Bersuker planned "*to give a generalized view of the modern state of art of the entire topic*" (of electronic structure and reactivity).

Indeed this volume does cover an impressive array of topics. There are the classical areas of atomic structure and spectroscopy, symmetry and group theory, crystal and ligand field theory, molecular orbital and related approaches. There is an extensive chapter on electronic structure and chemical bonding, and chapters dealing with electronic control of nuclear configurations (vibronic coupling, The Jahn−Teller theorem etc.), electronic structure investigated by physical methods, stereochemistry and crystal chemistry (distortion isomers, plasticity, cooperative effects, ferroelectrics etc.), electron transfer (mostly in mixed valence systems), redox properties and electron-conformational effects, and reactivity and catalytic action (e.g. Woodward−Hoffman, computation of energy barriers etc. chemical activation by vibronic coupling).

Does Bersuker succeed in his objectives? A qualified "yes and no"! In covering the field extremely broadly he has presented a monograph that surely anyone interested in theoretical inorganic chemistry should obtain−however, to cover so much in some 660 pages requires that many areas have received a rather superficial treatment.

For example, EXAFS has two pages of text and the electron transfer chapter deals heavily with mixed valence binuclear and polynuclear species but hardly touches other aspects of this important topic. The magnetism section covers some 7 pages; the van Vleck equation is presented with no derivation. Its application to spin-coupled systems is presented but, without any diagrams showing the populated states, it may be difficult to follow by the neophyte.

On the other hand, it should be no surprise to those who know Bersuker's work that the chapter on vibronic interactions and the Jahn−Teller theorem occupies some 60 pages. Indeed a pervasive thread through the entire book is the application of vibrational approaches to problem solving. This chapter, and the application of this theory to many topics, is probably the most important contribution as it presents Professor Bersuker's most extensive knowledge in this critical field.

In the traditional areas such as crystal and ligand field theory, and the angular overlap model, he gives a polished introduction to the subject. His approach is rigorous and concise, using a precise mathematical formalism which, however, may not be so familiar (or user friendly!) to a reader who has not been previously immersed in quantum mechanics. This is a common problem throughout the book; the theoretically inclined reader should have no difficulty, but the more experimentally inclined researcher who lacks this detailed background will often find the approach too terse with leaps in logic which he or she may have trouble following−again a consequence of covering a large amount of material in a relatively short space. Bersuker has published extensively in the field and in several places discusses some of his work, again in a concise fashion, and it can be necessary to go and read the original paper to obtain the additional depth of understanding.

The English language presentation is excellent and the book is largely free of typographical errors except that clearly the author must have had a bad day when creating Table 8.8 (p 391) where five of the seven chemical names therein are incorrectly spelled.

In conclusion, this book is a "tour-de-force" which brings together Isaac Bersuker's life-long years of experience in theoretical chemistry. It is a "must-buy" for the practicing theoretical inorganic chemist, especially if they are desirous of understanding how vibronic interactions control structure and reactivity, but I would have preferred that the author would have been less ambitious in the breadth of coverage and provide greater depth and a more detailed (pedagogical) presentation.

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JA975564Q

10.1021/ja975564q