Book Reviews

Magnetic Molecular Materials

Edited by Dante Gatteschi, Olivier Kahn, Joel S. Miller and Fernando Palacio, NATO ASI Series E: Applied Sciences – Vol. 198, Kluwer, Dordrecht, Netherlands, 1991

This volume deals with the NATO Advanced Research Workshop on Magnetic Molecular Materials held in Il Ciocco (Italy), Oct. 1990. The volume contains 25 reviewed papers delivered at the meeting. The proceedings of three Round Tables devoted to the design strategies of magnetic molecular materials, their physical investigation and their applications are also included in the text.

This book can be divided into four interrelated sections: (i) an introductory section grouping lectures which describe the basic elements of the cooperative nature of the magnetic phenomena; (ii) a section outlining the synthetic strategies developed so far using organic building blocks; (iii) a section focused on the approaches using organic radicals and metal ions and, (iv) a section centered on specific physical techniques of investigation of these kinds of materials.

Given the continuous growth of molecular sciences, this is undoubtedly a timely book. The contributions provide an almost complete view of the current research achievements on magnetic molecular materials. The order and the flow of topics are appropriate and the presentation of the content is very clear. Personally, I found all the contributed papers to be extremely concise and at the same time sufficiently detailed to stand alone. Indeed in each contribution the reader will find a well balanced treatment of the synthetic, theoretical and physical aspects.

A distinguishing feature of the editorial work is the homogeneous treatment of each subject. This is particularly useful for the reader when passing from one contribution to another. Owing to the different disciplinary origin of the contributors, it is quite rare to encounter this in such publications and, therefore, the efforts of the editors are greatly appreciated.

In summary, given the comprehensive exposition and the perspectives provided on the current status of research, I think that this book should be not only recommended for libraries and for a highly specialized audience, but also for the non-specialist who wants to gain an overall appreciation of the developments of the efforts of the researchers in designing materials which can fulfil specific tasks.

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Inorganic and Metal-Containing Polymeric Materials

Edited by John E. Sheats, Charles E. Carraher Jr., Charles U. Pittmann Jr., Martel Zeldin and Brian Currel, Plenum Publishing Corporation, New York, 1990, 423 pp, US$ 95.-

This book collects the extended version of the contributions which were presented at the Symposium on Inorganic and Organometallic Polymers at the National Meeting of the American Chemical Society in 1989.

The field of metal-containing and inorganic polymers is a multi-faceted one, and accordingly the book deals with many and rather diverse topics. These include organic polymers modified either by blending or by reaction with metals or metal compounds, organometallic polymers obtained by copolymerization of organo-transition metal monomers, condensation inorganic and semi-inorganic polymers (with particular emphasis on silicon- and titanium-based materials), coordination polymers, polyphosphazenes.

The first two chapters review the subject under consideration and cover most of the features which are developed in greater detail in the subsequent chapters. Some of the papers deal with the set-up of synthetic routes and/or with the characterization of the relevant materials, whereas others highlight a number of applications in which these materials could be useful such as organic conductors, antitumor agents, slow release drugs, protective coatings, ceramic fibers, plant growth hormones, biocides, supports for heterogeneous catalysts, additives, and hybrid catalysts.

Thanks to the amount of topics included therein, this book not only represents a valuable and updated source of information for people working in the field of metal-containing polymeric materials, but it could also be of great interest to outsiders, in that it offers a rich survey of the manifold scope and of the potentialities of this type of material.

Unfortunately, a negative remark about the layout has to be made, as it does not always appear to be as good as it ought to be, in view of the importance of the covered arguments and of the good scientific level of the book.

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Iron Biominerals

Edited by R. B. Frankel and R. P. Blakemore, Plenum Publishing Corporation, New York, 1991, 435 pp, US$ 95.-

This book represents the Proceedings of a Conference on Iron Biominerals held from July 31 to Aug. 1, 1989 at the University of New Hampshire, Durham, New Hampshire. It therefore gives the state-of-the-art in the comprehension and elucidation of the mechanisms of acquisition, storage and deposition of the essential element iron into living organisms. Owing to the relevance of this essential element, the reading of this book is recommended not only to researchers in this field, but also, as a general background, to biochemists, inorganic chemists, medical doctors, and solid state experts, the latter point arising from the peculiar connection, discussed in the book, between living organisms and the formation of ordered inorganic materials.

Great importance is given to magnetotactic bacteria, as expected considering that one of the Editors, Professor R. P. Blakemore, first discovered and characterized these microorganisms.

The book contains 31 articles which have been grouped under 5 main headings, titled Iron Biomineralization, Biological Iron Oxides, Biological Iron Sulfides, Iron Storage in Ferritin, Iron Acquisition.

In Iron Biomineralization three general articles regarding iron biominerals, biominerals and homeostasis, and crystallochemical control of iron oxide biomineralization introduce useful concepts and information which will be developed in most of the following contributions. The section Biological Iron Oxides contains many reports about magnetotactic bacteria and iron biomineralization processes in bacteria and invertebrates. In Biological Iron Sulfides, the magnetotactic organisms from sulfidic environments are reviewed. The aspects of the storage and mobilization of iron in ferritin are summarized in the section on Iron Storage in Ferritin, which includes also two contributions dealing with magnetic resonance imaging of brain. In Iron Acquisition the uptake mechanisms of this metal in microorganisms and in mammals are discussed.

Finally, the book in its 435 pages also contains a large number of references which constitute a precious source of further information.

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