

Book Review

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Inorganic and organometallic polymers

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This monograph in the *Special Topics in Inorganic Chemistry Series* provides valuable and timely coverage of an area of increasing significance. The unique properties available by incorporation of elements from the whole periodic table beyond carbon into the realm of polymer chemistry provides a virtually infinitely rich field, the potential of which is now beginning to be realized and exploited in many areas of application. The variety of material, optical, thermal, magnetic, electronic and other properties that may be introduced, and in principle manipulated, by the rational design of functional inorganic/organometallic polymers makes such materials of enormous potential significance to modern technology. The coverage of this text is well balanced, including both transition metal and main group systems. This contrasts with earlier works, which have been heavily biased towards main-group-element-containing

polymers. This must, in part, reflect the author's own interests, but also the increasing number of transition-metal-containing polymers reported over recent years. It attempts to be inclusive in terms of the types of polymer and discusses both systems in which the polymer backbone is made of inorganic repeat units and those in which metal ions are linked by organic units to form a polymer chain. Chapter 1 deals with various aspects of definition and classification, which is rather complex in this hybrid area in which such considerations remain somewhat fluid and author defined. Chapter 2 deals with strategies for polymer synthesis and emphasizes the methodologies employed for the preparation of systems in which metal ions are part of the polymer backbone. Chapter 3 discusses the application of various techniques for polymer characterization in terms of structure, molecular weight and material properties. The coverage is thorough, including techniques such as GPC, thermal and viscoelastic measurements, and diffraction/scattering techniques, as well as spectroscopic methods more familiar to the coordination/organometallic

chemist. A brief introduction to each technique is provided and the discussion highlights the limitations of each in their application to polymer systems. The final chapter presents coverage of the application of inorganic and organometallic polymers in various areas, including medical, electronics, optics, magnetics and materials, illustrating the exploitation of their unique properties. The origin of this monograph in a special-topics graduate course presented by the author is emphasized by the inclusion of exercises at the end of each chapter which will certainly enhance its usefulness as a teaching text. The extensive referencing to the original literature will also make it an invaluable resource for the researcher active in the area. As such, the text should be successful in reaching its target audience of graduate and postdoctoral researchers working in the area and others interested in assessing the current state of the art in this increasingly important area.

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