

tionalizing positions *ortho* to functional groups is clearly ready for application in complex organic synthesis.

Chapter three "is concerned with useful reactions which have not been discussed in other chapters". This is not a stimulating mandate, so one can sympathize with Alper about the job of organizing the information. The result is primarily a listing of examples with little connection among the short sections. There is essentially no mechanistic discussion nor emphasis on a special role played by transition metals in the reactions. The reader may find an odd reaction of use in his or her research, but more likely the same information will be found in a review of a particular topic. For example, three pages on metal-catalyzed oxidation of alkenes with peroxides is the longest single section but provides only a series of examples, without comparison with classical methods. One of the reviews on oxidation written for synthesis chemists would serve the reader much better.

It is a well-produced volume. The quality of the printing, structure drawing and proofreading is excellent. References are included through late 1977. The price is not out of line for a specialized book, and purchase is recommended to those who work actively in organometallic chemistry. All synthesis chemists will benefit from chapters one (especially) and two, largely from stimulation to develop applications in their own work.

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Inorganic Polymers, by N.H. Ray, Academic Press, New York/San Francisco/London, 1978, 174 pages, \$ 17.35.

At least six books on the general subject of inorganic polymers have been published since 1962. Two of the earliest of these books (by Stone and Graham, and by Lappert and Leigh) were comprehensive accounts that summarized both the purely inorganic and the organic-inorganic aspects of the field. Thus, the two main questions that must be asked about this latest book are: How well does it bring the subject up to date, and to what degree does it emphasize the most important recent developments?

The book emphasizes *mineralogical* polymer chemistry and, within this context, it provides an elementary survey of the traditional topics, such as phosphates, silicates, chalcogenide glasses, borates, etc., with an occasional mention of recent applications, such as electrical "switching" phenomena. Regrettably, those research areas that have produced the most dramatic advances in recent years (those that, for the most part, involve organic-inorganic systems), are badly neglected in this volume. Only ten pages are devoted to poly(sulfur nitrides), polyphosphazenes, and carborane-type polymers, and most of the references are to earlier work. Neither poly(organosiloxanes) nor linear organo-transitional metal coordination systems are discussed. The author promises in his preface "to indicate some of the directions in which future research might be encouraged" but, in fact, no new approaches or underlying principles are developed.

The book will probably be useful to physicists, engineers, or others who need a painless introduction to the types of structural arrangements that exist in mineralogical or ceramic-type materials. However, those who were trained as inorganic, organometallic, or polymer chemists, or as solid state scientists will already be familiar with most of the material covered in this book.

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Progress in NMR spectroscopy, Volume 11; edited by J.W. Emsley, J. Feeney and J.R. Sutcliffe, Pergamon Press, Oxford, 1978, vii + 298 pages; \$ 40.00 (£ 20)

This volume of the Progress in NMR Spectroscopy series is of particular value to organometallic chemists as all seven articles are either of direct or general interest. Of obvious direct value are the articles on "NMR Spectra and Structures of Organotin Compounds" by V.S. Petrosyan and on "Dynamic ^{15}C NMR Spectroscopy of Metal Carbonyls" by S. Aime and L. Milone. In common with other articles in this volume the literature coverage extends approximately to the end of 1975 and extensive tabulations of parameters are provided where appropriate. In another chapter, B.E. Mann has provided an account of the principles of "Dynamic ^{13}C NMR Spectroscopy" and illustrated the utility and limitations of the various methods in applications to a wide range of problems, giving also tables covering systems in which activation parameters have been determined by ^{13}C methods. There is also an interesting short chapter by J.N. Shoolery on "Some Quantitative Applications of ^{13}C NMR Spectroscopy" in which methods to determine relative concentrations from ^{13}C spectra are described and evaluated. More fundamental matters are treated in "Calculations of Nuclear Spin-Spin Coupling Constants" by J. Kowalewski and "Semi-empirical Calculations of the Chemical Shifts of Nuclei other than Protons" by K.A.K. Ebraheem and G.A. Webb. The emphasis in both chapters is naturally on the lighter (first row) elements and the great difficulties with calculations in these areas are such that results of real value for heavier elements appear some way off. Both chapters are critically written and the general reader can easily gain an impression of the validity of the various theoretical approaches. An impression of the difficulties can be quickly gained from a graphical presentation of the results for calculations of 1J in HF (p. 24). The calculated coupling constant is plotted as a function of the number of excitations included in the calculations; results of the wrong sign are obtained for less than 20 excitations and between about 27 and 55 excitations. There is an apparent convergence at around 75 excitations. Although this may well be a particularly difficult molecule, the slow convergence in perturbation treatments is a major difficulty even with modern computers.