

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.

The content of the final chapter "Deuterium Magnetic Resonance, Applications in Chemistry, Physics and Biology" (by H.H. Mantsch, H. Saito, and I.P.C. Smith) is clear from its title; no organometallic applications are described, but there is clear potential in the study of H-exchange reactions.

It is evident that considerable effort has been expended on the format and production of this volume and it is a pleasure to record that exceptional quality has been achieved without excessive delay or expense.

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