

*Characterization of Organometallic Compounds, Part I*; Edited by M. Tsutsui, New York, Interscience 1969, viii + 372 pages, 140s (Series: *Chemical Analysis, Vol. 26*).

Nothing else in this monograph makes quite the impact of the amazing opening sentences of the Editor's preface, which read: "With the discovery and characterization of ferrocene in 1951 chemical research underwent an exciting development. Organometallic chemistry was born, and since that time has grown at a rapid rate."

This is a disappointing book, because while it contains some interesting reviews it does not deal effectively with the subject matter of its title. It is true that "to characterize" can mean "to establish or describe the characteristics of", and in this sense any study or account of any properties of a compound or class of compounds could be described as "characterization", but the Editor of the volume clearly has in mind the usage common among chemists when he writes that the book "attempts to fill the need of graduate students and professional chemists for a knowledge of the techniques and procedures used to analyze and identify" organometallic compounds. One must ask how often an organometallic compound is characterized, in this sense, by use of microwave spectroscopy? The chapter by R. Varma on "Characterization of Metalloid and Organometallic Compounds by Microwave Spectroscopy" gives in fact a 12 page outline of the microwave technique of the type found in class text books and then a 5 page account of a few examples of structural information obtained for several inorganic and a few organometallic compounds. If developments in instrumentation make the use of microwave spectroscopy a practicable tool for "analyzing or identifying" a new organometallic compound this chapter will be of little assistance.

The most disappointing chapter, since it could have been the most valuable, is that by K. Nakamoto on "Characterization of Organometallic Compounds by Infrared Spectroscopy". A comprehensive collection and classification of frequencies commonly encountered in organometallic compounds would be of great value. How limited this account is can be illustrated by the fact that in the section on sigma-bonded compounds the only information presented under "metal-halogen groups" concerns the metal-halogen stretching frequencies in  $\text{Me}_2\text{SiHal}_2$  and  $\text{Me}_3\text{SiHal}$  compounds!

The most useful chapter is that by O. Swarczopf and F. Swarczopf on "Chemical Characterization of Organometallic Compounds" (which would be better entitled "Elemental Analysis of Organometallic Compounds"). Analysts new to the field will find this a helpful lead into the literature.

Other chapters are as follows: Introduction to Organometallic Chemistry (by F. K. Cartledge and H. Gilman), Mass Spectroscopy of Organometallic Compounds (by R. W. Kiser), The Determination of Organometallic Structures by X-Ray Diffraction (N. C. Baenziger), and Characterization of Organometallic Compounds by Mössbauer Spectroscopy (R. H. Herber). All contain some interesting material, and this review would be rather different in tone if the book had been titled, more correctly, as "Introductory Essays on Some Aspects of Organometallic Chemistry".

A book which really did offer practical help in analyzing and identifying organometallic compounds would be very warmly welcomed.

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