

## Book review

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*The Characterization of Chemical Purity. Organic Compounds*; ed. by L.A.K. Staveley, Butterworths, London, 1971, vii+173 pages, \$ 5.—/\$ 15.—. Supplement to "Pure and Applied Chemistry".

Evaluation of the purity of chemical substances is a matter of concern to almost all practicing chemists. This monograph, produced by the Commission on Physicochemical Measurements and Standards of the International Union of Pure and Applied Chemistry, provides an introduction to a variety of techniques applicable to purity assessment. Methods applicable to molecular solids and liquids have been emphasized, and the book is thus of interest to organometallic chemists who may be faced with problems of purity determination.

The editor's introduction, and a preliminary chapter on the concept of purity, summarize the scope and underlying philosophy of the monograph. These emphasize the desirability of employing several characterization techniques, the importance of selecting purity characterization methods which rely on physical principles different from those underlying the purification itself, and the relation between "purity" and the purpose for which the "pure" sample is intended. There is little in this that should be new to most chemists, but the restatement in this context is useful. Indeed, if the monograph hastens the retirement from the chemical literature of overworked and meaningless phrases such as "spectroscopically pure", "chemically pure", and "analytically pure", and fosters their replacement with more explicit descriptions, it will have served a laudable purpose.

The bulk of the monograph contains short chapters by different contributors devoted to nine specific methods of purity evaluation. Some of these techniques provide information as to the general level of impurities: thermal methods (observation of freezing and melting phenomena), density measurements, vapor pressure and boiling temperature measurements, and refractive index. Techniques that reveal, at least potentially, the presence of individual compounds as impurities are surveyed in chapters on chromatography, mass spectrometry, optical (IR and UV) spectroscopy, and Raman spectroscopy. The final chapter deals with the use and availability of standard samples.

In a monograph of this size, the treatment of each specific technique is necessarily brief. The individual contributors have, in the main, attempted to provide an overview of principles, some assessment of the power and applicability of the specific methods to purity evaluation, and, in many cases, some examples of specific applications. The research worker wishing to make use of any of these methods will

necessarily have recourse to the more specific literature, references to which are provided.

The monograph should prove helpful as an introductory survey to chemists who wish to consider the relative merits of one or another method of purity evaluation when faced with circumstances requiring definitive and unequivocal assessment of the materials with which they work. It should serve, also, as a spur to those of us who may have become excessively reliant on one or a few techniques (that may not always be best for the purpose in hand) by engendering an increased sense of criticality and skepticism about the purity of our materials.

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