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Book review

Gmelin handbook of inorganic chemistry, 8th Edition. *Mo — Molybdenum, Supplement Volume A3: Metal. Chemical reactions*, Springer-Verlag, Berlin, Heidelberg, New York, 1983, xv + 227 pages, DM 905.

This may be a self-indulgent jingoistic comment, but it is a real pleasure to find a volume of the Gmelin Handbook concerning molybdenum published in English. This is the fifth volume on "Molybdenum" (System No. 53): the main volume appeared in 1935, and supplements dealing with the metal technology (Vol. A1, 1977), compounds with the noble gases, hydrogen and oxygen, and anhydrous antimony, bismuth and alkali molybdates (Vol. B1, 1975) and the compounds of molybdenum oxides with oxides of other metals (Vol. B2, 1976) have since been published (all in German). The new volume (Vol. A3, 1983) describes the chemical reactions of molybdenum metal in sections headed general survey, chemical reactions, reactions with elementary particles, reactions with non-metals, reactions with metals, reaction with non-metallic compounds, reactions with metal compounds, reactions with acidic aqueous solutions, reactions with alkaline aqueous solutions, reactions with salt solutions, reactions with miscellaneous materials, and reactions with organic compounds (including hydrocarbons, alcohols, esters, ethers, organic acids, urea, CCl_4, $CHCl_3$, $C_2H_4Cl_2$, CF_4 and nitrosoperfluoropentane). In addition to the orthodox chemistry resulting in alloys, binary compounds, complexes, etc., a satisfactory emphasis is placed upon the chemisorption and physisorption phenomena at clean molybdenum surfaces (the section dealing with CO is particularly worthy of mention). However, this otherwise excellent and scholarly volume has one major flaw: surely it is unacceptable in a volume entitled "Metal. Chemical Reactions" and including a section headed "reactions with organic compounds" and a subsection entitled "reactions with hydrocarbons" to exclude all mention of the fascinating chemistry derived from the technique of metal vapour synthesis. Even though the most recent reference systematically covered in the volume is 1979, the preparation of bis(arene)-molybdenum(0) compounds was well-known and well-established by this period, and the exclusion of this wide class of reactions (with no explanation as to the reason — is it possible the authors did not know of this technique?) severely limits the usefulness of this otherwise excellent volume to organometallic chemists. However, as a source of the conventional inorganic and surface chemistry of molybdenum metal, this book is an invaluable addition to a chemistry library (even at £1.00 per page).

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