when they are fully warned of its seductive dangers. The inclusion of SHAB theory is likewise not conducive to clear scientific thinking. Thus, this book is a seriously flawed masterpiece, but a masterpiece nevertheless. Its good points far outweigh its bad points, but the bonding theory should carry a government health warning.

At the price, no library will be without this book, and most will clearly order multiple copies (if the binding is no stronger than that used for the first edition, they will need to; my original edition resembled a pack of cards after only a few months!). It will be popular with students, particularly when vacation essays on periodicity approach, and will clearly sell well in both Britain and North America.

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Anorganische Synthesechemie – ein integriertes Praktikum; by B. Heyn, B. Hipler, G. Kreisel, H. Schreer and D. Walther, Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo, 1986, xix + 235 pages, DM 64. ISBN 3-540-16588-6.

When first examining a book entitled "Inorganic Synthetic Chemistry – an integrated practical manual", the question of the target audience immediately occurs. Is the book aimed at skilled research workers, giving tried and tested recipes (cf. *Inorganic Syntheses*), at undergraduates, forming the basis of a laboratory instruction manual, at M.Sc. students, or at D.Phil. students? Even after detailed examination, we are afraid that this question remains unanswered. The assumption must be, given the style and layout, that the volume is aimed primarily at undergraduates but, if that is so, the selection of material is singular. If aimed at a more skilled readership, then this volume offers little that is not already available elsewhere in a clearer and often more detailed context (except that, here, the text is entirely in German). Thus, we will assume that the book is intended for undergraduate use, and base the rest of this review on that assumption.

The stated aim of this volume is to provide a broad base for synthetic inorganic chemistry, covering a wide range of synthetic procedures (e.g. high temperature synthesis, autoclave reactions, and reactions under inert atmospheres), and concentrating upon safety, detailed and explicit experimental instructions, purification methods, and characterization. The philosophy of the authors is to broaden the base of a traditional course (in their terms, coordination chemistry in an aqueous environment) into the 'newer areas' of organometallic chemistry and non-aqueous synthesis, and they place much emphasis on the facts that air and water are both reactive media. They show an accentuated concern with recycling solvents, disposal of unwanted by-products, and the economics of yield optimization. The main chapters describe the preparations of metal halides (including $CuCl_2$, $[Al_2Br_6]$, $[Mo_2Cl_{10}]$, and $FeBr_2$), metal hydrides (e.g. MgH_2, $SnPh_3H$, $[Zr(cp)_2(Cl)H]$, and $[Mo(cp)_2H_2]$), main group organometallics {e.g. RLi, $SiPh_2(OH)_2$, $SnBu_3Cl$, Pb_2Ph_6, $Ph_2PCH_2CH_2PPh_2$, and $P(C_6H_{11})_3$}, transition metal organometallics {e.g. $[Ti(cp)_2Ph_2]$, $[Ni(cod)_2]$, $[Zr(cp)_2(C_4H_6)]$, $[V(cp)_2Cl_2]$, and $[M(cp)_2]$ (M = Cr, Ni, Co, or Fe)}, coordination compounds {e.g. *cis*-$[Pt(NH_3)_2Cl_2]$, $[Co(NH_3)_6]Cl_3$, $[Co(PPh_3)_3Cl]$, $K_2[CoCl_4]$, $[Fe_2(CO)_9]$, $Ti(OCHMe_2)_4$, $[M(acac)_n]$ ($n = 2$, M = Ni,

Pd or Cu; $n = 3$, M = Cr, Co or Fe) and $[Cr_2(O_2CMe)_4(OH_2)_2]$}, sulfur-nitrogen compounds ($[S_3N_2Cl]Cl$ and PhN=S=O), metal-induced and metal-catalyzed organic synthesis, active metals (including Mg, Pd, Fe, Ni and Co), and solid state preparations (e.g. TiO, $ZnCr_2O_4$, $[Mo_6Cl_8]Cl_4$, FeI_2, Ga_2S_3 and KAg_4I_5). The concluding four chapters (in a total of 28 pages) deal with the principles of work under inert gases, solvent recycling, analytical methods and the economics of synthetic procedures.

It must be noted, at this point, that this is not a good book for undergraduates. Although the authors are to be congratulated for their concern with safety, and many of the practical procedures are very clearly described, they have included many poor pedagogical examples. It is unforgivable to describe aluminium(III) bromide as $AlBr_3$, molybdenum(V) chloride as $MoCl_5$, and hexaaquanickel(II) chloride as $NiCl_2(H_2O)_6$! There is no mention of the metal–metal bonding in $[Cr_2(O_2CMe)_4(OH_2)_2]$ (surely the only reason for including it?), and the reported characterization data are sparse and inconsistent (^1H NMR and MS data are only rarely cited). In a number of cases, preparations which are already extremely well described in *Inorganic Syntheses* are reproduced here in briefer (and less helpful) forms. The selection of examples is obscure (do undergraduates really need to prepare organozirconium compounds?) and the order of presentation of some of the material is ludicrous. For a teaching book, there is little logic to be found in the selection and grouping of material (just what principles are being demonstrated?).

In summary, despite being cheap, good value for money, and well produced, the book gives the overall impression of being a random collection of syntheses from a series of laboratory courses. Although it may well make a useful laboratory manual for the University of Jena, its appeal to other German universities must be very limited, and to American and English universities it has nothing to offer at all. We regret that we cannot recommend this volume to either libraries or teaching laboratories, and this is indeed a matter of regret. A book of this nature (particularly with the great emphasis placed upon safety) is needed, but this is not the book. On a scale of one to ten, this is Elsa Lanchester not Bo Derek.

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Houben–Weyl Methoden der Organischen Chemie, Organo-π-metall-Verbindungen als Hilfsmittel in der Organischen Chemie, 4th edition, *Volume E18, parts 1 and 2*; edited by J. Falbe. Georg Thieme Verlag, 1986. xxvii + 1428 pages. DM 1580, subscription price DM 1422.

The Houben–Weyl Series has as its purpose to detail the chemistry (synthesis and reactions) of various classes of compounds. It complements the Gmelin inorganic and Beilstein organic series, which are more concerned with comprehensive lists of compounds and their properties. This present volume deals with π-complexes of metals with particular reference to their uses in synthetic organic chemistry.

The first section begins with a systematic account of the preparation of π-bonded