from a practising organosilicon chemist, attention to the English by an appropriate British or American chemist, and careful proof-reading it could have been transformed with relatively little effort. Indeed, I hope that the publishers will even now consider producing an appropriately amended version, which could find a good market.

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The Periodic Table of the Elements; by R.J. Puddephatt and P.K. Monaghan, 2nd edition, Clarendon Press, Oxford, 1986, x + 102 pages, £6.95. ISBN 0-19-855516-4.

The expressed aim of this book is to present, at a level suitable for first year students in universities and technical colleges (and for senior secondary school students), the periodic behaviour of the elements and their compounds. This is an exceptionally difficult task, guaranteed to produce universal criticism. Surely, every lecturer in inorganic chemistry reading this book feels that it is so like a course that they have given/are giving/are about to give, that they could have made a much better job of it themselves; after all, it would have been *so* much better if the authors had missed out A, expanded B and included C. This, of course, boils down to the fact that they did not have the courage to do what Dick Puddephatt and Paddy Monaghan have done, which is to present a clear and concise description of periodicity in 100 pages, at a price that all students (even those with outstanding bar bills) can afford. It is easy to criticize a book like this (I'll prove this in the next paragraph), but it is more meaningful to praise it. It gently takes the student, in a non-mathematical manner, through simple atomic structure into the Aufbau principle, via the Schrödinger wave equation. Having discussed the Group classification, the periodic effects upon atomic and bonding properties of the main-group elements are presented, including such topics as ionization energies, electron affinities, covalent and ionic radii, electronegativity, polarizability, ionic and covalent bonding, and oxidation state. The structures and binding energies of the main-group elements are then discussed, followed by examples of periodicity manifest in the halides, hydrides, methyls, oxides and sulfides of these elements. Catenation is examined, as is the diagonal relationship and the anomalous behaviour of the first row elements. Similar, but briefer, consideration is then given to the transition elements, the lanthanides and the actinides. Each chapter is concluded by a (very small) number of rather trivial problems, and the inclusion of some more probing questions would have strengthened the already impressive pedagogical value of this book.

This text is outstandingly good when describing trends, the heart of periodicity, and the excellent illustrations support the lucid text. Both authors are demonstrably experienced teachers, and this text could be understood by the weakest of students. Nevertheless, this book does have a serious weakness, and this relates to the use of valence bond theory throughout the volume. This out-dated, erroneous and misleading theory (in the popularist version presented here) is poison to the minds of impressionable students, and (like pornography) they should only be exposed to it 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,