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## Book reviews

*The Chemistry of Inorganic Homo- and Heterocycles. Vol. 1*; edited by I. Haiduc and D.B. Sowerby, Academic Press, London, 1987, xxiv + 416 pages, ISBN 0-12-655775-6, £60, $108.

At the beginning of this book the editors ask the question: What is an inorganic ring? Their answer is "a finite polynuclear system of atoms other than carbon, arranged to form a closed (planar or close to planar) structure, made up of identical atoms (homocycle) or different atoms (heterocycle)". Rings with even one carbon are excluded, as are chelates and metallocycles involving transition metals and rings of atoms in clusters such as boron hydrides or metal carbonyls. This leaves a large area of chemistry involving rings of generally main group atoms which lies somewhere in between organic or organometallic chemistry on the one hand and coordination chemistry on the other.

One of the editors (I. Haiduc) wrote an extremely thorough survey (1197 pages) of Inorganic Ring Systems in 1970. Literature since about 1980 has been covered in a series of annual surveys. This volume and its companion Vol. 2 concentrate on work published in the decade 1970–1980, with occasional references to more recent results. The distinguished team of authors has produced a well written and authoritative account, which will be an extremely valuable source of information to all working on inorganic rings and related areas of organometallic and coordination chemistry. The contributors have been allowed freedom in the arrangement of material within their subject areas, but all deal systematically with synthesis, reactions, and structural data, and several have sizable sections on applications and uses.

The chapters, which vary considerably in length, cover the following topics: boron homocycles (I. Haiduc, 2 pages, 8 refs.), boron–nitrogen heterocycles covering both 3- and 4-coordinate boron (F.W. Maringgele, 85 pages, 101 refs.), boron–phosphorus and boron–arsenic heterocycles (D.B. Sowerby, 6 pages, 22 refs.) boron–oxygen heterocycles (I. Haiduc, 33 pages, 420 refs., many to the patent literature), boron–sulphur and boron–selenium heterocycles covering both 3- and 4-coordinate boron (W. Siebert, 23 pages, 78 refs.), aluminium–nitrogen rings and cages (M. Cesari and S. Cucinella, 24 pages, 113 refs.), silicon homocycles (cyclopolysilanes) and related heterocycles (E. Hengge and K. Hassler, 30 pages, 183 refs.), silicon–nitrogen heterocycles (U. Klingebiel, 55 pages, 237 refs.; an account which illustrates the many complex possibilities where heteroatoms other than Si and N are incorporated), silicon–phosphorus heterocycles (G. Fritz and J. Härer, 10 pages, 35 refs.), silicon–oxygen heterocycles (cyclosiloxanes) (V. Chvalovský, 62 pages, 936 refs.; a characteristically thoroughly documented survey with most of the data compressed into tables and extensive references to the patent literature), silicon–sulphur heterocycles (I. Haiduc, 11 pages, 56 refs.), germanium homocycles

(cyclopolygermanes) and related heterocycles (I. Haiduc and M. Dräger, 5 pages, 20 refs.), germanium-containing heterocycles (I. Haiduc, 10 pages, 76 refs.), cyclostannanes (P.G. Harrison, 5 pages, 10 refs.), tin–nitrogen and tin–phosphorus heterocycles (M. Veith, 18 pages, 46 refs.), and tin–oxygen, tin–sulphur, tin–selenium, and tin–tellurium heterocycles (B. Mathiasch, 16 pages, 59 refs.).

Most of the authors do not have English as their mother tongue, but I was struck throughout by the excellent English style. I noticed very few trivial errors.

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*Preparative Chemistry Using Supported Reagents*, edited by P. Laszlo, Academic Press, 1987, $110, xiv + 545 pages, ISBN 0-12-437105-1.

This volume, of 27 chapters, covers a very wide range of topics in the field of the use of supported reagents in organic and inorganic chemistry. This is not merely a "how-to" book for the organic chemist (though much material of this kind is available in it), but is a serious attempt to describe what is actually going on, at least as far as it is known. The first section of the book deals with general principles, opening with a chapter by the editor in which he surveys the field and demonstrates his own boundless enthusiasm for it. The second chapter deals with the theory of fractals; this is very important for an understanding of surface chemistry, but this account is definitely not an easy introduction for someone whose mathematics is a little rusty. Other sections consider photochemistry and electrochemistry of adsorbed species. Chapter 6 describes in some detail some practical considerations of setting up supported reagents, and anyone planning to use this technique will find this an invaluable introduction.

Part 2 of this volume deals with physico-chemical studies of the structures of solid supports, considering such techniques as photoelectron spectroscopy, Auger, EELS, EXAFS, SIMS *, magnetic resonance and X-ray studies. Parts 3, 4, 5, and 6 of the book dealing respectively with reagents supported on polymers, graphite, alumina and silica will be both the most familiar and probably the most interesting for both the organic and the organometallic chemist. There is a good deal of descriptive chemistry, and all the main areas seem to receive due consideration, but there is no attempt to be comprehensive and most of the authors are clearly at least as concerned to understand the reactions as to describe them.

Part 7 of this volume reviews the use of zeolites as supports, focussing particularly on molecular sieves and shape selective catalysts. The final major topic covered is the use of clays as supports for catalysts and reagents for isomerisation, oxidation and reduction, hydrogenation and anion activation reactions.

* EELS = electron energy loss spectroscopy; EXAFS = extended X-ray absorption fine structure; SIMS = secondary ion mass spectrometry.