

recording and interpreting their own proton NMR spectra for the first time, and its very reasonable price should mean that many personal copies will be bought.

*School of Chemistry and Molecular Sciences
University of Sussex, Brighton BN1 9QJ (Great Britain)*

Paul D. Lickiss

Gmelin Handbook of Inorganic Chemistry, 8th edit. B — Boron Compounds, 3rd Supplement, Vol 3; by A. Meller (Universität Göttingen, Institut für Anorganische Chemie), Springer, Berlin, 1988 xvi + 380 pages ISBN 3-540-93557-6 DM1777.

This volume of Gmelin is one of a series making up the third supplement on boron compounds, and covering the literature from 1980 to 1984. It has been written entirely by Professor Meller and covers boron–nitrogen (227 pages) and boron–fluorine compounds (164 pages).

There is a long section (91 pages) on boron nitride dealing with its synthesis and structure, its optical and electrical properties, and its uses as ceramic, in composites, and as a filler in organic polymers. As expected, much of the literature on this subject is in the form of patent applications and, as usual in volumes of Gmelin, the references are extremely thoroughly documented. The section which follows deals with boron–nitrogen compounds containing hydrogen, and derivatives obtained by replacing the hydrogen by organic groups. Tris-, bis-, and mono-aminoboranes, borazines, and boron–nitrogen heterocycles are covered in about 70 pages, and many preparative and spectroscopic data are presented in tabulations. Unstable species such as $\text{HN}=\text{BH}$, characterised mainly by theoretical studies, are briefly described as well as the crystalline compounds obtained by replacement of the hydrogen atoms by large groups such as Bu^t . The preparation of amine-boranes is still of considerable interest and many references are given to the use of these compounds in organic syntheses. A wide range of substituted pyrazoboles (pyrazolylborane dimers in which pyrazole units bridge boron atoms to form six-membered B_2N_4 rings) has been made and there is a comprehensive survey including B-halogen- and B-sulfur-substituted species so that data on numerous compounds can be easily compared. The B–N section concludes with an account of the new and interesting two- and three-coordinate boron cations, and the five- and six-coordinate aminoborate anions. In these compounds the range of boron environments encountered in organoboron chemistry is significantly extended.

The section on boron–fluorine compounds is dominated by discussion of the preparation, properties, and uses of trifluoroborane. Applications in catalysis, polymerisations, and condensation reactions are documented with hundreds of references to the patent literature. In addition there are 432 references to $\text{Et}_2\text{O} \cdot \text{BF}_3$, all published in the four years covered by the present volume. The final 50 pages of the book cover tetrafluoroborates, with many structural and thermodynamic data and extensive references to industrial and analytical applications.

Volumes of Gmelin are always of immense value to those working in the areas they cover. Sadly, they are always so expensive that few chemists have ready access to them.

*School of Chemistry and Molecular Sciences
University of Sussex, Brighton BN1 9QJ (Great Britain)*

J.D. Smith