*Gmelin Handbook of Inorganic Chemistry. Si.* (a) *Supplement Vol. B2. Silicon Carbide. Part 1*, 1984, xxvi + 314 pages, DM 1080, ISBN 3-540-93504-5. (b) *Supplement Vol. B3 Silicon Carbide. Part 2,* 1986, xvi + 545 pages. DM 2026. ISBN 3-540-93526-6. Springer-Verlag, Berlin, etc.

These two additions to the Gmelin volumes on silicon are exceptionally timely in view of the considerable and rapidly growing interest in silicon carbide and other polymeric species with silicon–carbon backbones. They are also representative of the Gmelin publications at their best.

Part 1 deals with the properties of crystalline silicon carbide, diodes, molecular species in the gas phase, and amorphous silicon–carbon alloys. As would be expected, the greater part (245 pages) of the volume is devoted to the first topic, the discussion of the physical properties of crystalline silicon carbide (including doped species), and deals with the bonding and the crystallographic, mechanical, thermal, electrical, magnetic, optical, and surface properties. Some 24 pages are then taken up with a discussion of diodes, and a small section (3 pages) on molecular species in the gas phase (from $Si_3C$ to $SiC_2$) is followed by consideration (in 36 pages) of amorphous silicon–carbide alloys, including hydrogen-free films, and films containing hydrogen, fluorine, or oxygen.

Part 2 starts with a brief but admirable preface by F.A. Schröder which in less than one page gives a clear outline of the history of silicon carbide and the reasons for its importance. Some 5 pages on the Si–C phase diagram is followed by 513 pages on the natural occurrence of silicon carbide, its preparation, purification, analysis, electrochemistry, chemical reactions, and applications. The section on manufacture includes not only the well established methods but also the production of the material by, for example, pyrolysis of rice husks (which contains a good proportion of $SiO_2$), and of Si–C–H systems (including organosilicon compounds) and Si–C–Cl–H systems (including organosilicon chlorides). The importance of the availability of a range of routes to silicon carbide is made clear in the preface, where is explained that it is often necessary to synthesize the material directly in the form in which it will be used, since it cannot be melted, cast, rolled, or drawn, and is not easily electroplated, sintered, or purified, and the ways of producing special forms (e.g. powders, single crystals, whiskers, filaments, fibres, films, and coatings) are all set out. The applications are very effectively summarized in some 120 pages. The final sections of the volume deal briefly (in 34 pages with systems such as Si–C–H, Si–C–O–H, Si–C–N, Si–C–X–H (X = F, Cl, Br), Si–C–Y (Y = B, Se, Te).

The volumes are authoritatively written and, as usual for Gmelin, excellently produced. They present a massive amount of information, not available elsewhere in a single source, on a very important branch of chemistry, and will be indispensable to specialists in the field concerned. They will also be of considerable interest to organosilicon chemists working on, or contemplating working on, ceramic-type polymers derived from organosilicon compounds.

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