

excitation energy studies, and this section contains the single solid-state NMR study described. For crystallographers, the most interesting section in this chapter will likely be that devoted to the development of the high-speed diffractometer mentioned above.

The next three chapters (Ch. 3, 61 pp., Ch. 4, 25 pp. and Ch. 5, 73 pp.) are devoted to chemical and crystallographic studies of solid-state processes in a variety of systems. The major contributions described here are those of Ohashi and coworkers on the racemization of solid cobaloxime complexes, and of Hasegawa and colleagues on the solid-state photochemistry of unsymmetrically substituted diolefin crystals. Much of the work of these two important research groups has been reviewed elsewhere, but this update is welcome. Ohashi describes three modes of racemization in crystals of differently substituted cobaloxime complexes and analyzes them in terms of crystal structures, reaction cavities and reaction pathways. The racemization of one complex over a 10 h period was monitored by four X-ray data sets, some obtained in 45 min, and without a synchrotron! The detailed studies of the Hasegawa group on the polymerization of diolefin crystals are well known to organic solid-state chemists. The clear and comprehensive description of the topochemical principles involved, the extensive use of crystal structure analysis and the use of mixed crystals and complexes reveal a very impressive research effort. The entire Chapter 4 is a review by Toda of the work in his laboratory on carrying out organic chemical reactions by grinding together the solid reactants. While containing descriptions of many new findings, this chapter will probably be of limited interest to most crystallographers, and suffers from a rather encyclopedic approach to the cataloging of results with little in the way of introduction and an absence of any concluding remarks on overall significance or future directions.

The final chapter (Ch. 6, 67 pp.), entitled 'Reactivity and crystal structure', includes descriptions of five fairly unrelated projects, ranging from the influences of substituents on polymer properties, the structures of bilayers formed by azolipids, to the reactivity of thiathiophthenes and other hypervalent sulfur compounds.

In summary, this volume provides a good overview of recent activity in solid-state organic chemistry in Japan. Much of this

work is of major significance, and there are many examples of interdisciplinary approaches involving both crystallography and chemistry. For these reasons, the volume would be a useful addition to any chemical or crystallographic library. However, on account of the omissions and inadequate coverage of certain topics mentioned earlier, it cannot be recommended as a comprehensive description of the present status of the field internationally.

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Books Received

The following books have been received by the Editor. Brief and generally uncritical notices are given of works or marginal crystallographic interest; occasionally, a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.

Transition metal chemistry. The valence shell in d-block chemistry. By M. GERLOCH and E. C. CONSTABLE. Pp. xi + 211. Weinheim: VCH Verlagsgesellschaft, 1994. Price (soft cover) DM 58.00. ISBN 3-527-29219-5. Early in the authors' preface this book is offered as 'an outline of a theoretical structure for transition metal chemistry at an elementary (early to mid UK degree) level that hopefully provides a consistent viewpoint of this widely varying and fascinating subject' and later as 'an attempt to bring together in a single yet non-simplistic way many important bonding and theoretical principles that hopefully make more sense of this wide and fascinating subject'. The book is described by the publisher as 'eminently readable'.