Journal of Organometallic Chemistry, 170 (1979) C23—C24

Book review

ADVANCES IN POLYMER SCIENCE Vol. 28, POLYMERIZATION REACTIONS
Springer Verlag, 1978, pp 157, Price DM72

This series, of which the present book is volume 28, has a long and respected history of presentation of review articles in Polymer Science. A glance at the cumulative index to previous volumes quickly reveals the strong connection between Organometallic Chemistry and Polymer Chemistry which is continued in the present volume.

This volume contains three reviews all of which should be of interest to the polymer chemist and at the same time can claim the interest of organometallic chemists. In the first review, Yamashita describes recent progress in the synthesis of block and random copolymers by ring-opening polymerization. This is a comprehensive and up-to-date review of some interesting and novel chemistry. In particular the use of organometallic initiators, derived from alkyl aluminium and alkyl zinc compounds, to copolymerize cyclic monomers with cheap monomers, such as carbon dioxide and sulphur dioxide, is worthy of attention.

The second review, by Sumitomo and Okada describes recent progress in ring-opening polymerization of bicyclic monomers. The monomers concerned are mainly heterobicyclic acetals, lactones and lactams, polymerized; almost exclusively by anionic and cationic routes using complex organometallic initiators. Many of the polymers are of interest as analogues of polysaccharides.

Ring opening polymerization of heterocyclic monomers is usually a fairly controlled process amenable to study by careful use of standard experimental techniques. In contrast the cationic polymerization of olefins by organometallic catalysts is often extremely rapid, uncontrolled and highly sensitive to traces of impurities. Dramatic progress has been made in recent years in the understanding of these reactions mainly due to the work of Kennedy and his co-workers and about half of the present volume is devoted to reviews by Kennedy and Trivedi of studies of

cationic polymerization of olefins initiated by alkyl halide/ alkylaluminium systems. The work described is comprehensive and elegant and represents a major advance in understanding and controlling these highly reactive systems.

It is perhaps unlikely that this volume will attract the attention of mainstream organometallic chemists. However for anyone involved in or interested in the applications of organometallic chemistry in polymerization there is much here of interest. Unfortunately, as is usual these days, the price is likely to restrict the book to libraries.

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