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## Book review

*Advances in Polymer Science 51 "Industrial Developments"* Springer-Verlag, Berlin, etc., 1983, 228 pages, DM108.

Two of the reviews in this volume, The Chemistry of Carbon Fiber Formation from Polyacrylonitrile by G. Henrici-Olivé and S. Olivé, and Foamed Polymers, Cellular Structure and Properties by F.A. Shutov, will not be discussed here, beyond noting that they are both comprehensive and authoritative, as they have no relevance to organometallic chemistry. The other two contributions are concerned with different aspects of polymerization reactions brought about by Ziegler—Natta catalysts and therefore have a direct bearing on the chemistry of organometallic compounds.

The article by U. Zucchini and G. Cecchin is the more limited in scope, dealing with the control of the molecular weight distribution (MWD) in polyolefins prepared by Ziegler—Natta processes. From the organometallic point of view, it is notable for a discussion of the effects of ligands on the oxidation state of the transition metal and the effect of the "third component" or of support material or of cocatalysts on the nature and quality of active centres, and hence on the MWD. An unusual feature is a survey of the patent literature relevant to this topic.

V.A. Zakharov, G.D. Bukatov and Y.I. Yermakov present a more widely-ranging discussion of the mechanism of Ziegler—Natta polymerization. This concerns itself with possible component steps in the process, such as the insertion of the olefin into transition metal—carbon bonds or aluminium—carbon bonds, chain transfer, and olefin coordination and insertion of the active centre. In summary, the authors favour a monometallic model for the active centre, a conclusion that they consider to be supported by NMR studies of polypropylene.

There is an author index for the entire series from volume 1 to volume 51.

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