

*Transition metals and organometallics as catalysts for olefin polymerization*; edited by W. Kaminsky and H. Sinn, Springer-Verlag, 1988, xix + 442 pages, DM128, ISBN 3-540-18548-8

This volume is the proceedings of an international symposium on transition metals and organometallics as catalysts for alkene polymerisation, held in Hamburg in September 1987. Forty-two of the forty-seven lectures and posters presented appear, and these are divided into four sections according to topic.

The first group of lectures deal with studies of the active sites in heterogeneous catalysts, and investigations into their kinetic behaviour and mechanism of action. Most of the papers deal with the so-called "second generation" of Ziegler–Natta type catalysts, generally using magnesium halides as a support for titanium halides and alkylaluminium compounds. Several of these papers contain more organometallic chemistry than one might expect; the mechanistic discussions of Soga and Yanagihara were particularly interesting. The second section is billed as "New Aspects in the Heterogeneous Catalysts Polymerization of Olefins" (the standards of English are rather variable in the volume). Most organometallic chemists will find this less interesting, as there is rather little mechanistic work. A notable exception is the XAS and EXAFS/XANES study by Jones and Oldman on the titanium environment in magnesium chloride supported Ziegler–Natta catalysts. They conclude that titanium is bound to  $\text{MgCl}_2$  via a double halide bridge as titanium(IV).

The third section of this volume is the one which will be of the most interest to most organometallic chemists, since it deals with homogeneous catalysts for alkene polymerisation. Conventional wisdom has long held that only the use of heterogeneous catalysts could result in stereoregular polymerisation, but the last two or three years have been the development of a range of metallocene (especially chiral metallocene) derivatives of metals such as zirconium, titanium and hafnium, which give, in combination with aluminoxanes, catalysts yielding polymers with excellent stereoregularity. Most of the papers presented detail work in this area, but Ostaja Starzewski discusses new routes to polyethylenes using nickel ylido complexes as the catalysts, and there are also a number of reports on the older titanium and vanadium based catalysts. The final brief section of the book contains four papers discussing the influence of reactor design on polymerisation and routes to polymer characterisation.

This volume has been produced from camera-ready manuscripts, and the standards of these are rather uneven. The editorial hand seems to have been light, since much slipshod English has been allowed to remain, and layout is by no means uniform. Most of the papers are well-referenced, and a detailed description of contents compensates for the lack of an index. Whilst this volume will be of interest primarily to polymer chemists, there is much for the organometallic chemist, and this was clearly an excellent meeting. The publishers are to be commended for its speedy appearance, and for keeping the price relatively modest.