

Book review

Chemical Reactions on Polymers, ACS Symposium Series Volume 364, edited Judith L. Benham and James F. Kinstle, American Chemical Society, 1988, xii + 483 pages, US\$99.95 (U.S.A. and Canada); US\$119.95 (elsewhere), ISBN 0-8412-1448-4.

The symposium from which this volume was developed was sponsored by the ACS divisions of Polymer Chemistry and Polymeric Materials: Science and Engineering, in Anaheim, California in 1986. The thirty-three papers in it are extremely diverse, and are grouped into six sections, Reactive Polymers, New Synthesis Routes, Surface Modification of Polymers, Speciality Polymers with Polar/Ionic Groups, Chemical Modification for Analytical Characterization and Chemical Modification for Functionalisation and Curing. Perhaps it is an quirk of American versus English usage, but I was initially misled by the title of this volume. I thought that it would discuss chemical processes in which the polymer acted as a reagent or a catalyst, and which happened "on" or in the vicinity of the polymer. Whilst there are some such discussions, the book is largely devoted to reactions performed on the polymer to modify it, and to polymer synthesis. If a native English speaker can be so misled, editors might wish to give this point careful thought in future.

A number of the papers will be of specific interest to organometallic chemists. In particular, Francis and his coworkers report the preparation of a polysiloxane containing pendant isocyanide groups, which was treated with metal vapours of chromium, iron or nickel to give metal isocyanide complexes. The products of the chromium and nickel reactions could be oxidised in air or electrochemically, in the presence of an electron relay such as ferrocene. Rempel reports the modification of polybutadiene by catalytic hydroformylation, hydrogenation and hydroxymethylation; both rhodium and ruthenium complexes proved to be successful catalysts, and this is a field which will doubtless attract more attention over the next few years. Naoshima and Carraher report the modification of dextran using dibutyltin dichloride and bis(cyclopentadienyl)titanium dichloride, under phase transfer conditions.

Organometallic chemists will, however, also find much potential in other chapters, in that they describe the syntheses of highly functionalised polymers, which could be considered as agents for the immobilisation of metal reagents and catalysts for synthesis. The diversity of materials available for this purpose is fast increasing, and chemists who wish to develop supported versions of reagents have considerable choice. In the early days, the answer was generally to use a modified polystyrene; this was often unsuitable, and metal reagents in particular usually leached off to some extent. More appropriate choices may now be made, with the polymer tailored to particular needs.

The book is produced from the authors' original manuscripts. With a few exceptions the quality of both texts and figures is high, and there are relatively few typographic errors. The index is somewhat selective; rhodium, ruthenium titanium, hydrogenation

tion and hydroformylation do not appear. Overall this is an interesting and useful volume, which libraries should certainly buy; individual purchase is likely to be limited to polymer chemists.

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