

## Book review

### Organometallic chemistry and catalysis

Edited by K. Kirchner and W. Weissensteiner, Springer-Verlag, Wien, 2000, pp. xiv + 158. ISBN 3-211-83599-7; DM 228

Transition metals occupy a central position in organometallic chemistry. Their reactions and compounds with unsaturated species such as olefins and carbon monoxide are particularly relevant to various important catalytic processes. This book is a Special Edition issue of *Chemical Monthly*, volume 31, number 12, 2000, and contains personal accounts of the researches of the authors of recent work in organometallic chemistry and catalysis involving the late transition metals, including mechanistic and synthetic studies, ligand design, and new applications in homogenous catalysis. The volume contains two reviews and 13 research papers covering a wide range of topics, and the authors are well-known scientists in their respective fields. There is a good balance between articles on fundamental research topics and those where the main emphasis is on application.

The contents of the book are summarized here. A review article of Nagashima describes the activation of  $H_2$  by a triruthenium carbonyl cluster bearing acenaphthylene or aceanthrylene as the face-capping ligands. Recent results of the role of  $\mu_3$ -hemilabile  $\pi$ -ligands in a triruthenium carbonyl clusters are summarized and discussed. A paper by Kirchner, Schmid and coworkers gives an overview of recent chemistry based on the species  $[RuCp(CH_3CN)_3]^+$ , focusing on its synthetic potential and on mechanistic aspects and applications in homogenous catalysis. New developments in the synthesis and structure of Cu(I) species containing the 1,1'-bis-(diphenylphosphino)-ferrocene ligand are reported by the group of Calhorda. In the contribution by the Jalón group, the fluxional behaviour of dinuclear palladium complexes with a half-A-frame structure is described. The contribution of the Ziólkowski group deals with new mechanistic aspects of palladium chemistry related to benzyl bromide carbonylation. Amatore and Jutand and their collaborators report on the nickel-catalyzed electrosynthesis of ketones by heterocoupling of acyl and benzyl halides. Avilés et al. describe a

self-assembly process of Ag(I) with *trans*-azobenzene to afford a novel coordination polymer with a two-dimensional supramolecular structure. The novel solid-state rearrangement of hydrido(alkynyl)ruthenium complexes to give their vinylidene tautomers is described by Puerta and coworkers. Kölle's group then reports on the oxidation of alcohols by Rh(III) complexes.

Further articles describe recent developments in homogeneous catalysis. The contribution by Beller and coworkers deals with the rhodium-catalyzed amination of aromatic olefin and Studer's group reports a new homogeneous hydrogenation process of monosubstituted pyridines and furans. In contrast, Togni and coworkers deal with Ir(I)-catalyzed asymmetric intermolecular hydrogenation of norbornene with benzamide and the Gladiali's group presents their investigation of the coordination chemistry of (*S*)-BINAPO with Rh(I), in order to exploit the potential for Rh-catalyzed enantioselective reactions. The article of the Skoda-Földes group describes the synthesis and characterization of novel 3- and 17-diphenylphosphinoandrostane derivatives via a homogeneous P-C coupling reaction. The last contribution, from the Brunner group, deals with a new stereoselective hydrogenation of folic acid and 2-methylquinoxaline with optically active Rh(I)-phosphane compounds.

In most cases the publications cited in these articles are not confined to the authors' earlier work, but include other key references, so that the reader can dig more deeply into the topic concerned. The editors have succeeded well in presenting the very heterogeneous subject matter in as clear a form as possible. However, it is not a comprehensive guide to the subject, nor was it intended to be so. The book is well produced and should find a place in all chemistry libraries.

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