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Book review

Organic Synthesis via Organometallics,
D. Enders, H.-J. Gais and W. Keim (eds.), F. Vieweg
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The advances in organometallic chemistry that have taken place in the last 20 years have had an immense impact on organic synthesis. It is important that these advances are regularly reviewed in order to disseminate novel methodology as it becomes available. A series of symposia on organometallics in synthesis has been sponsored by the 'Volkswagen-Stiftung'. The 4th symposium was held in Aachen in July, 1992 and the 15 chapters of this book are based on lectures given at the meeting.

They include chapters on chiral diamines in asymmetric organometallic synthesis (A. Alexakis); new catalytic asymmetric C-C bond forming reactions using rare earth alkoxides (M. Shibasaki); applications of high pressure techniques in mechanistic and synthetic studies of organometallic systems in solution (R. van Eldik); cleavage of the carbon-hydrogen bond on achiral and chiral transition metal complexes, organometallic chemistry of excited states (R.H. Crabtree); transition metal catalysed dimerization of olefins (M.S. Brookhart et al.); stereoselective C-C bond formation with chiral α -substituted organolithium compounds (R.W. Hoffmann); synthetic aspects of the metal-mediated cyclo-oligomerization of phosphalkynes (M. Reitz); metal containing compounds—precursors for new

reactions and materials (H. Roesky); titanocenevinylidene—a versatile building block (R. Beckhaus); enantioselective oligomerisation of α -olefins with chiral zirconocene/aluminoxane catalysts (W. Kaminsky et al.); recent advances in palladium-catalysed oxidation (J.E. Backvall); novel developments in zinc mediated organic synthesis (G. van Koten); organometallics in organic synthesis via radicals (B. Giese); and synthetic applications of 1,2-metallate rearrangements (P.J. Kocienski). Each chapter is followed by a number of pertinent references to the original literature.

The reviews describe many of the current applications of organometallic compounds in synthesis. Several discuss asymmetric reactions whilst others describe the application of new carbon-carbon bond forming reactions. Some interesting cyclizations based on palladium catalysed reactions are reported. The use in synthesis of radicals generated by organometallic means is reviewed, and the proposal that some organo-zinc reactions proceed by a radical mechanism is discussed.

This is a useful collection of reviews which should find its place in the library of any department actively involved in using organometallic chemistry in synthesis.

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