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Nota di contenuto	Foreword. -- Preface. -- List of Contributors. -- Part I Introduction, Organometallic Aspects and Mechanism of Homogeneous Hydrogenation. -- 1 Rhodium (Luis A. Oro and Daniel Carmona). -- 1.1 Introduction. -- 1.2 The Early Years (1939-1970). -- 1.3 The [RhH(CO)(PPh3)3] Catalyst. -- 1.4 The [RhCl(PPh3)3] Complex and Related Catalysts. -- 1.5 The Cationic[Rh(diene)(PR3)X]+ Catalysts. -- 1.6 Enantioselective Rhodium Catalysts. -- 1.7 Some Dinuclear Catalyst Precursors. -- 1.8 Concluding Remark. -- Abbreviations. -- References. -- 2 Iridium (Robert H. Crabtree). -- 2.1 Introduction. -- 2.2 Historical Aspects. -- 2.3 Organometallic Aspects. -- 2.4 Catalysis. -- Acknowledgments. -- Abbreviations. -- References. -- 3 Ruthenium and Osmium (Robert H. Morris). -- 3.1 Introduction. -- 3.2 Ruthenium. -- 3.3 Osmium. -- Acknowledgment. -- Abbreviations. -- References. -- 4 Palladium and Platinum (Paolo Pelagatti). -- 4.1 Introduction. -- 4.2 Palladium. -- 4.3 Platinum. -- Abbreviations. -- References. -- 5 Nickel (Elisabeth Bouwman). -- 5.1 Introduction. -- 5.2 Coordination Chemistry and Organometallic Aspects of Nickel. -- 5.3 Hydrogenation Catalysis. -- 5.4 Concluding Remarks. -- Abbreviations. -- References. -- 6 Hydrogenation with Early Transition Metal, Lanthanide and Actinide Complexes (Christophe Coperet). -- 6.1 Introduction. -- 6.2 Mechanistic Considerations. -- 6.3 Group IV Metal Hydrogenation Catalysts. -- 6.4 Hydrogenation Catalysts Based on Group III,

Lanthanide, and Actinide Complexes. -- 6.5 Hydrogenation Catalysts Based on Groups V-VII Transition-Metal Complexes. -- 6.6 Supported Early Transition-Metal Complexes as Heterogeneous Hydrogenation Catalysts. -- 6.7 Conclusions. -- Acknowledgments. -- Abbreviations. -- References. -- 7 Ionic Hydrogenations (R. Morris Bullock). -- 7.1 Introduction. -- 7.2 Stoichiometric Ionic Hydrogenations. -- 7.3 Catalytic Ionic Hydrogenation. -- 7.4 Ruthenium Complexes Having an OH Proton Donor and a RuH as Hydride Donor. -- 7.5 Catalytic Hydrogenation of Ketones by Strong Bases. -- 7.6 Conclusion. -- Acknowledgments. -- Abbreviations. -- References. -- 8 Homogeneous Hydrogenation by Defined Metal Clusters (Roberto A. Sanchez-Delgado). -- 8.1 Introduction. -- 8.2 Hydrogenation of C=C Bonds. -- 8.3 Hydrogenation of CC Bonds. -- 8.4 Hydrogenation of Other Substrates. -- 8.5 Concluding Remarks. -- Abbreviations. -- References. -- 9 Homogeneous Hydrogenation: Colloids - Hydrogenation with Noble Metal Nanoparticles (Alain Roucoux and Karine Philippot). -- 9.1 Introduction. -- 9.2 Concepts. -- 9.3 Hydrogenation of Compounds with C=C Bonds. -- 9.4 Hydrogenation of Compounds with CC Bonds. -- 9.5 Arene Hydrogenation. -- 9.6 Hydrogenation of Compounds with C=O Bonds. -- 9.7 Enantioselective Hydrogenation. -- 9.8 Conclusion. -- Abbreviations. -- References. -- 10 Kinetics of Homogeneous Hydrogenations: Measurement and Interpretation (Hans-Joachim Drexler, Angelika Preetz, Thomas Schmidt, and Detlef Heller). -- 10.1 Introduction. -- 10.2 The Basics of Michaelis-Menten Kinetics. -- 10.3 Hydrogenation From a Kinetic Viewpoint. -- Abbreviations. -- References. -- Part II Spectroscopic Methods in Homogeneous Hydrogenation 11 Nuclear Magnetic Resonance Spectroscopy in Homogeneous Hydrogenation Research (N. Koen de Vries). -- 11.1 Introduction. -- 11.2 NMR Methods. -- 11.3 Outlook. -- Abbreviations. -- References. -- 12 Parahydrogen-Induced Polarization: Applications to Detect Intermediates of Catalytic Hydrogenations (Joachim Bargon). -- 12.1 In-Situ Spectroscopy. -- 12.2 Ortho- and Parahydrogen. -- 12.3 Applications of PHIP-NMR Spectroscopy. -- 12.4 Catalyst-Attached Products as Observable Intermediates. -- 12.5 Colloidal Catalysts. -- 12.6 Transfer of Proton Polarization to Heteronuclei. -- 12.7 Catalysts Containing other Transition Metals. -- 12.8 Summary and Conclusions. -- Acknowledgment. -- Abbreviations. -- References. -- 13 A Tour Guide to Mass Spectrometric Studies of Hydrogenation Mechanisms (Corbin K. Ralph, Robin J. Hamilton, and Steven H. Bergens). -- 13.1 Introduction. -- 13.2 A General Description of ESI-MS. -- 13.3 Mechanistic Hydrogenation Studies. -- 13.4 Conclusions. -- Acknowledgments. -- Abbreviations. -- References. -- Part III Homogeneous Hydrogenation by Functional Groups. -- 14 Homogeneous Hydrogenation of Alkynes and Dienes (Alexander M. Kluwer and Cornelis J. Elsevier). -- 14.1 Stereoselective Homogeneous Hydrogenation of Alkynes to Alkenes. -- 14.2 Homogeneous Hydrogenation of Dienes to Monoenes. -- Abbreviations. -- References. -- 15 Homogeneous Hydrogenation of Aldehydes, Ketones, Imines and Carboxylic Acid Derivatives: Chemoselectivity and Catalytic Activity (Matthew L. Clarke and Geoffrey J. Roff). -- 15.1 Introduction. -- 15.2 Hydrogenation of Aldehydes. -- 15.3 Hydrogenation of Ketones. -- 15.4 Domino-Hydroformylation-Reduction Reactions. -- 15.5 Reductive Amination of Ketones and Aldehydes. -- 15.6 Hydroaminomethylation of Alkenes (Domino Hydroformylation-Reductive Amination). -- 15.7 Hydrogenation of Carboxylic Acid Derivatives. -- 15.8 Summary and Outlook. -- Abbreviations. -- References. -- 16 Hydrogenation of Arenes and Heteroaromatics (Claudio Bianchini, Andrea Meli, and Francesco Vizza).

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-- 42 Immobilization Techniques (Imre Toth and Paul C. van Geem). -- Part VI Miscellaneous Topics in Homogeneous Hydrogenation 43 Transition Metal-Catalyzed Regeneration of Nicotinamide Cofactors (Stephan Lutz). -- 44 Catalyst Inhibition and Deactivation in Homogeneous Hydrogenation (Detlef Heller, Andre H.M. de Vries, and Johannes G. de Vries). -- 45 Chemical Reaction Engineering Aspects of Homogeneous Hydrogenations (Claude de Bellefon and Nathalie Pestre). -- Subject Index.