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Nota di contenuto	Iridium Complexes in Organic Synthesis; Contents; Preface; List of Contributors; 1: Application of Iridium Catalysts in the Fine Chemicals Industry; 1.1 Introduction; 1.2 Industrial Requirements for Applying Catalysts; 1.2.1 Characteristics of the Manufacture of Enantiomerically Pure Products; 1.2.2 Process Development: Critical Factors for the Application of Catalysts; 1.2.3 Requirements for Practically Useful Catalysts; 1.2.3.1 Preparation Methods; 1.2.3.2 Catalysts Cost; 1.2.3.3 Availability of the Catalysts; 1.2.3.4 Catalytic Performance; 1.2.3.5 Separation 1.3 Enantioselective Hydrogenation of C=N Bonds1.3.1 Catalysts and Scope; 1.3.2 Industrial Applications; 1.4 Enantioselective Hydrogenation of C=C Bonds; 1.4.1 Catalysts and Scope; 1.4.2 Industrial Applications; 1.5 Miscellaneous Catalytic Applications with Industrial Potential; 1.6 Conclusions and Outlook; References; 2:

Dihydrido Iridium Triisopropylphosphine Complexes: From Organometallic Chemistry to Catalysis; 2.1 Introduction; 2.2 [Ir(COD)(NCMe)(PR<sub>3</sub>)]BF<sub>4</sub> (PR<sub>3</sub> = PiPr<sub>3</sub>, PMe<sub>3</sub>) and Related Complexes as Catalyst Precursors: Is 1,5-Cyclo-Octadiene an Innocent and Removable Ligand? 2.3 The Dihydrido Iridium Triisopropylphosphine Complex [IrH<sub>2</sub>(NCMe)<sub>3</sub>(PiPr<sub>3</sub>)]BF<sub>4</sub> as Alkene Hydrogenation Catalysts 2.4 The Dihydrido Iridium Triisopropylphosphine Complex [IrH<sub>2</sub>(NCMe)<sub>3</sub>(PiPr<sub>3</sub>)]BF<sub>4</sub> as Alkyne Hydrogenation Catalysts; 2.5 Dihydrido Arene Iridium Triisopropylphosphine Complexes; 2.6 Dihydrido Iridium Triisopropylphosphine Complexes as Imine Hydrogenation Catalysts; 2.7 Conclusions; Acknowledgments; References; 3: Iridium N-Heterocyclic Carbene Complexes and Their Application as Homogeneous Catalysts; 3.1 Introduction; 3.2 Types of Ir-NHC and Reactivity 3.2.1 Mono-NHC s and Intramolecular C-H Activation 3.2.2 Chelating bis-NHC s; 3.2.3 Abnormal NHCs; 3.3 Catalysis with Ir-NHC s; 3.4 Conclusions; References; 4: Iridium-Catalyzed C=O Hydrogenation; 4.1 Introduction; 4.2 Homogeneous C=O Hydrogenations; 4.2.1 Chemoselective Hydrogenations; 4.2.2 Enantioselective Hydrogenations; 4.2.3 Transfer Hydrogenation (TH); 4.2.4 Asymmetric Transfer Hydrogenation (ATH); 4.3 Heterogeneous, Supported and Biocatalytic Hydrogenations; References; 5: Catalytic Activity of Cp\* Iridium Complexes in Hydrogen Transfer Reactions; 5.1 Introduction 5.2 Hydrogen Transfer Oxidation of Alcohols (Oppenauer-Type Oxidation) 5.3 Transfer Hydrogenation of Unsaturated Compounds; 5.3.1 Transfer Hydrogenation of Quinolines; 5.3.2 Transfer Hydrogenation of Ketones and Imines; 5.4 Asymmetric Synthesis Based on Hydrogen Transfer; 5.4.1 Asymmetric Transfer Hydrogenation of Ketones; 5.4.2 Dynamic Kinetic Resolution; 5.5 Hydrogen Transfer Reactions in Aqueous Media; 5.6 Carbon-Nitrogen Bond Formation Based on Hydrogen Transfer; 5.6.1 N-Alkylation of Amines with Alcohols; 5.6.2 Cyclization of Amino Alcohols; 5.6.3 Cyclization of Primary Amines with Diols 5.6.4 Amidation of Alcohols with Hydroxylamine

## Sommario/riassunto

Ranging from hydrogenation to hydroamination, cycloadditions and nanoparticles, this first handbook to comprehensively cover the topic of iridium in synthesis discusses the important advances in iridium-catalyzed reactions, namely the use of iridium complexes in enantioselective catalysis. A must for organic, complex and catalytic chemists, as well as those working with/on organometallics.