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F. Schüth, J. Weitkamp

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Handbook of Heterogeneous Catalysis

Second, Completely Revised and Enlarged Edition

Volume 1



Handbook Of Heterogeneous Catalysis

Mihai V. Putz



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Heterogeneous Catalysts for Clean Technology Karen Wilson, Adam F. Lee, 2013-09-17 Reactive but not a reactant Heterogeneous catalysts play an unseen role in many of today's processes and products With the increasing emphasis on

sustainability in both products and processes this handbook is the first to combine the hot topics of heterogeneous catalysis and clean technology It focuses on the development of heterogeneous catalysts for use in clean chemical synthesis dealing with how modern spectroscopic techniques can aid the design of catalysts for use in liquid phase reactions their application in industrially important chemistries including selective oxidation hydrogenation solid acid and base catalyzed processes as well as the role of process intensification and use of renewable resources in improving the sustainability of chemical processes With its emphasis on applications this book is of high interest to those working in the industry

Bridging Heterogeneous and Homogeneous Catalysis Can Li, Yan Liu, 2014-04-03 There are two main disciplines in catalysis research homogeneous and heterogeneous catalysis This is due to the fact that the catalyst is either in the same phase homogeneous catalysis as the reaction being catalyzed or in a different phase heterogeneous catalysis Over the past decade various approaches have been implemented to combine the advantages of homogeneous catalysis efficiency selectivity with those of heterogeneous catalysis stability recovery by the heterogenization of homogeneous catalysts or by carrying out homogeneous reactions under heterogeneous conditions This unique handbook fills the gap in the market for an up to date work that links both homogeneous catalysis applied to organic reactions and catalytic reactions on surfaces of heterogeneous catalysts As such it highlights structural analogies and shows mechanistic parallels between the two while additionally presenting kinetic analysis methods and models that either work for both homogeneous and heterogeneous catalysis Chapters cover asymmetric emulsion phase transfer supported homogeneous and organocatalysis as well as in nanoreactors and for specific applications catalytic reactions in ionic liquids fluorinated and supercritical solvents and in water Finally the text includes computational methods for investigating structure reactivity relations With its wealth of information this invaluable reference provides academic and industrial chemists with novel concepts for innovative catalysis research

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