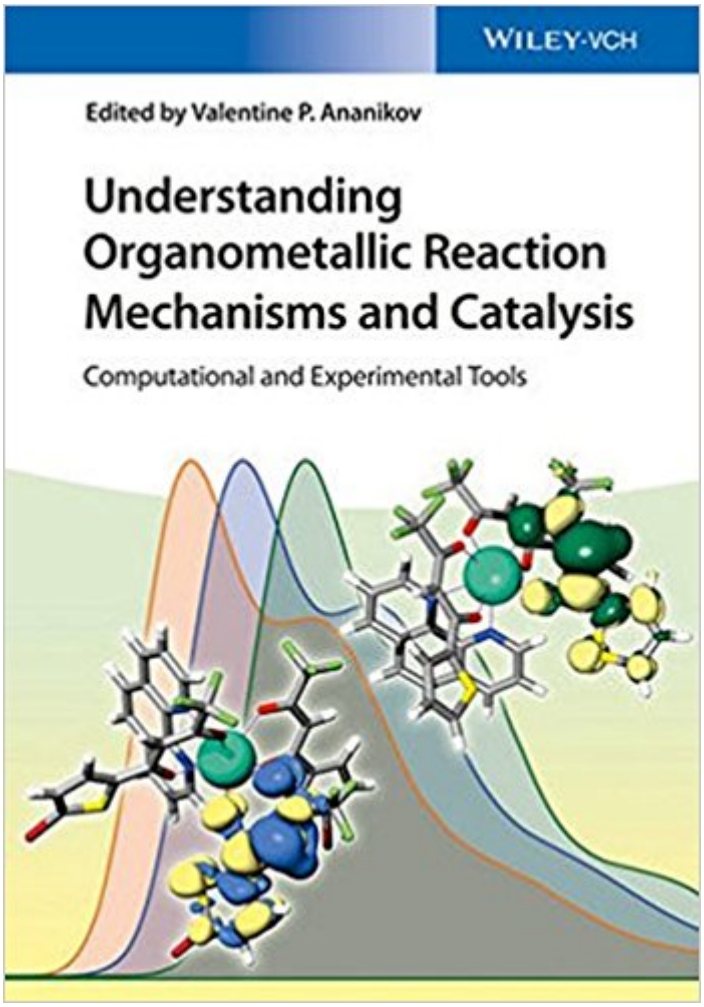
Understanding Organometallic Reaction Mechanisms And Catalysis: Computational And Experimental Tools



Synopsis

Exploring and highlighting the new horizons in the studies of reaction mechanisms that open joint application of experimental studies and theoretical calculations is the goal of this book. The latest insights and developments in the mechanistic studies of organometallic reactions and catalytic processes are presented and reviewed. The book adopts a unique approach, exemplifying how to use experiments, spectroscopy measurements, and computational methods to reveal reaction pathways and molecular structures of catalysts, rather than concentrating solely on one discipline. The result is a deeper understanding of the underlying reaction mechanism and correlation between molecular structure and reactivity. The contributions represent a wealth of first-hand information from renowned experts working in these disciplines, covering such topics as activation of small molecules, C-C and C-Heteroatom bonds formation, cross-coupling reactions, carbon dioxide converison, homogeneous and heterogeneous transition metal catalysis and metal-graphene systems. With the knowledge gained, the reader will be able to improve existing reaction protocols and rationally design more efficient catalysts or selective reactions. An indispensable source of information for synthetic, analytical, and theoretical chemists in academia and industry.

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Customer Reviews

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Valentine Ananikov received his Ph.D. degree in 1999, Habilitation in 2003, and was appointed Professor and Laboratory Head of the ND Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences in 2005. In 2008 he was elected as a Member of Russian Academy of Sciences. In 2012 he became Professor of Chemistry, Department of Moscow State University. In 2013 he has received a Megagrant of Saint Petersburg State University and was appointed as Head of Laboratory of Cluster Catalysis. Valentine Ananikov was a recipient of the Russian State Prize for Outstanding Achievements in Science and Technology in 2004, a Science Support Foundation award in 2005, a Russian Academy of Sciences Medal in 2000. He was named a Liebig Lecturer by German Chemical Society in 2010, and was awarded the Balandin Prize for outstanding achievements in the field of catalysis in 2010. His scientific interests are focused on development of new concepts in transition metal and nanoparticle catalysis, sustainable organic synthesis and new methodology for mechanistic studies of complex chemical transformations. His research has been supported by grants of Russian Science Foundation, Russian Foundation of Basic Research and Grants of President of Russia. Valentine Ananikov is a member of the International Advisory Boards of Advanced Synthesis & Catalysis, Organometallics, Chemistry - An Asian Journal and OpenChemistry.

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