

*Special Issue Reprint*

## **Multiscale and Innovative Kinetic Approaches in Heterogeneous Catalysis**

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Kinetics and reactor modeling for heterogeneous catalytic reactions are prominent tools for investigating and understanding catalyst functionalities at nanoscale and the related rates of complex reaction networks. This book illustrates some examples related to the transformation of simple to more complex feedstocks, including different types of reactor designs, i.e., steady-state, transient plug flow reactors, and TAP reactors for which there is sometimes a strong gap in the operating conditions from ultra-high-vacuum to high-pressure conditions. In conjunction, new methodologies have emerged, giving rise to more robust microkinetics models. As exemplified, they include the kinetics and the dynamics of the reactors and span a large range of length and time scales. The objective of this Special Issue is to provide contributions that can illustrate recent advances and novel methodologies for elucidating the kinetics of heterogeneous reactions and the necessary multiscale approach for optimizing the reactor design. This book is dedicated to postgraduate and scientific researchers, and experts in heterogeneous catalysis. It may also serve as a source of original information for the elaboration of lessons on catalysis for Master students.

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