

Industrial Catalysis: Chemistry and Mechanism
by
James D. Burrington

Jim Burrington has skillfully targeted the needs of modern chemical engineers and chemists in his new book *Industrial Catalysis: Chemistry and Mechanism*, which is an insightful integration of the underlying mechanisms and industrial practice of catalysis. Burrington draws on both his own considerable expertise as well as the modern literature on catalysis and catalyst characterization to fashion a unique blend of fundamentals and applications in catalysis.

The obligatory chapter on concepts, definitions and physical chemistry background is made remarkably interesting through Burrington's placement of catalyst development in a historical context. The essential concepts of activity (including the very useful distinction between batch and flow reactor measures), selectivity, and life are covered along with the fundamentals of turnover and mechanism.

Most books with this level of industrial relevance have very little coverage of chemistry and mechanism, focusing instead on process flow sheets and technology. Burrington provides a welcome juxtaposition of the most fundamental aspects of catalysis, i.e., mechanism, with its most relevant, i.e., industrial application.

The heart of *Industrial Catalysis: Chemistry and Mechanism* is its coverage of five major categories of industrial catalysis organized by mechanistic principles. The discussion of acid catalysis includes the concepts of acidity and solid acids as well as their application in many processes, including cracking, alkylation, isomerization, and MTG, to name a few. This is followed by a chapter on oxidation catalysis, which is particularly strong owing to Burrington's own career in research in this area. Polymerization catalysis, reduction catalysis and environmental catalysis follow, each with a portion of the chapter devoted to the underlying concepts and fundamentals common to the industrial category followed by numerous examples of adoption in industry. The final chapter on catalyst characterization is a useful compendium that does not break the flow of the essential theme of mechanism and industrial application.

Industrial Catalysis: Chemistry and Mechanism is an incisive update on industrial catalysis organized according to mechanism. Both aspects will provide helpful and useable guidance to chemical engineers and chemists involved in the linkage of fundamental and process chemistry. Readers will enjoy both the practical and scholarly perspectives of this work.

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