

# Chemical Reactor Analysis and Design Fundamentals

2nd Edition

James B. Rawlings  
John G. Ekerdt



# Chemical Reactor Analysis And Design Fundamentals

**Gilbert F. Froment, Kenneth B.  
Bischoff, Juray De Wilde**



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**Applying Multiple-Reaction Stoichiometry to Chemical Reactor Modelling** Guillermo Fernando Barreto, Carlos Daniel Luzi, 2024-03-12 This book delves into the realm of Chemical Reaction Engineering CRE by showcasing the practical application of multiple reaction stoichiometry The authors critically assess various approaches commonly taught in undergraduate CRE courses to establish the relationships between changes in chemical species In doing so they propose an innovative conceptual alternative that is specifically tailored for undergraduate lectures The book carefully selects composition measures that effectively harness the power of stoichiometric relationships in elementary reacting systems and models which are typically covered in these courses Going beyond the basics it also offers a profound discussion on the value of chemical stoichiometry for tackling more intricate reaction systems and detailed models Moreover the book presents a simplified procedure that minimizes the reliance on complex linear algebra techniques making the book accessible to a wider range of readers [Transport Phenomena in Multiphase Systems](#) João M.P.Q. Delgado, Antonio Gilson Barbosa de Lima, 2018-05-09 This book presents a collection of recent contributions in the field of transport phenomena in multiphase systems namely heat and mass transfer It discusses

various topics related to the transport phenomenon in engineering including state of the art theory and applications and introduces some of the most important theoretical advances computational developments and technological applications in multiphase systems domain providing a self contained key reference that is appealing to scientists researchers and engineers alike At the same time these topics are relevant to a variety of scientific and engineering disciplines such as chemical civil agricultural and mechanical engineering

Introduction to Chemical Engineering Kinetics and Reactor Design Charles G. Hill, Thatcher W. Root, 2014-05-27 The Second Edition features new problems that engage readers in contemporary reactor design Highly praised by instructors students and chemical engineers Introduction to Chemical Engineering Kinetics Reactor Design has been extensively revised and updated in this Second Edition The text continues to offer a solid background in chemical reaction kinetics as well as in material and energy balances preparing readers with the foundation necessary for success in the design of chemical reactors Moreover it reflects not only the basic engineering science but also the mathematical tools used by today's engineers to solve problems associated with the design of chemical reactors Introduction to Chemical Engineering Kinetics Reactor Design enables readers to progressively build their knowledge and skills by applying the laws of conservation of mass and energy to increasingly more difficult challenges in reactor design The first one third of the text emphasizes general principles of chemical reaction kinetics setting the stage for the subsequent treatment of reactors intended to carry out homogeneous reactions heterogeneous catalytic reactions and biochemical transformations Topics include Thermodynamics of chemical reactions Determination of reaction rate expressions Elements of heterogeneous catalysis Basic concepts in reactor design and ideal reactor models Temperature and energy effects in chemical reactors Basic and applied aspects of biochemical transformations and bioreactors About 70% of the problems in this Second Edition are new These problems frequently based on articles culled from the research literature help readers develop a solid understanding of the material Many of these new problems also offer readers opportunities to use current software applications such as Mathcad and MATLAB By enabling readers to progressively build and apply their knowledge the Second Edition of Introduction to Chemical Engineering Kinetics Reactor Design remains a premier text for students in chemical engineering and a valuable resource for practicing engineers

Chemical Solution Synthesis for Materials Design and Thin Film Device Applications Soumen Das, Sandip Dhara, 2021-01-09 Chemical Solution Synthesis for Materials Design and Thin Film Device Applications presents current research on wet chemical techniques for thin film based devices Sections cover the quality of thin films types of common films used in devices various thermodynamic properties thin film patterning device configuration and applications As a whole these topics create a roadmap for developing new materials and incorporating the results in device fabrication This book is suitable for graduate undergraduate doctoral students and researchers looking for quick guidance on material synthesis and device fabrication through wet chemical routes Provides the different wet chemical routes for materials synthesis along with the most relevant thin film structured materials for device applications Discusses

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