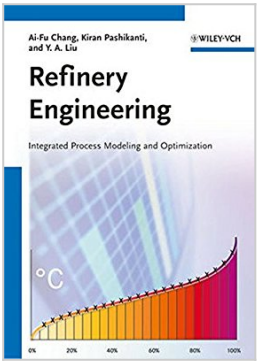

Refinery Engineering: Integrated Process Modeling and Optimization

By Ai-Fu Chang, Kiran Pashikanti, Y. A. Liu

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A pioneering and comprehensive introduction to the complex subject of integrated refinery process simulation, using many of the tools and techniques currently employed in modern refineries.
Adopting a systematic and practical approach, the authors include the theory, case studies and hands-on workshops, explaining how to work with real data. As a result, senior-level undergraduate and graduate students, as well as industrial engineers learn how to develop and use the latest computer models for the predictive modeling and optimization of integrated refinery processes. Additional material is available online providing relevant spreadsheets and simulation files for all the models and examples presented in the book.

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- Sales Rank: #1602245 in Books
- Published on: 2012-05-21
- Original language: English
- Number of items: 1
- Dimensions: 9.40" h x .90" w x 6.70" l, 2.29 pounds
- Binding: Paperback
- 522 pages

Editorial Review

From the Back Cover

Petroleum refining is one of the most important yet challenging industries, and continues to be a major contributor in the production of transportation fuels and chemicals. Current economic, regulatory and environmental concerns place significant pressure on refiners to upgrade and optimize the refining process. At the same time, new product demands are urging refiners to explore alternative processing units and feedstocks.

This textbook represents a pioneering and comprehensive introduction to this complex subject, using many of the tools and techniques currently employed in modern refinery process simulation.

Adopting a systematic and practical approach, the authors include the theory, case studies and hands-on workshops, explaining how to work with real data. As a result, senior-level undergraduate and graduate students, as well as industrial engineers learn how to develop and use the latest computer models for the predictive modeling and optimization of integrated refinery processes.

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About the Author

Ai-Fu Chang received his Ph.D. in the Department of Chemical Engineering at Virginia Polytechnic Institute and State University in September, 2011. He received his B.S. in chemical engineering from National Taiwan University in 2001. He completed his doctoral dissertation on integrated process modeling and product design of biodiesel manufacturing, and refinery reaction and fractionation systems. The latter was the basis of this textbook. He has worked on several industrial modeling projects, including poly(acrylonitrile-vinyl acetate), hydrocracking, and biodiesel. These projects were collaborative efforts between Virginia Tech, Aspen Technology, and industrial manufacturers. He is currently employed by Chevron Phillips Chemical Company.

Kiran Pashikanti was a PhD student in the Department of Chemical Engineering at Virginia Tech. He received his B.S. in chemical engineering from Virginia Commonwealth University in 2005, and his Ph.D. in chemical engineering from Virginia Tech in September, 2011. He has worked on several industrial modeling projects on integrated modeling of reaction and fractionation systems, and of carbon-dioxide capture processes. This textbook grows out of his doctoral dissertation on the predictive modeling of fluid catalytic cracking and catalytic reforming processes. He is currently employed by Chevron Phillips Chemical Company.

Prof. Y.A. Liu is the Frank C. Vilbrandt Endowed Professor of Chemical Engineering at Virginia Polytechnic Institute and State University. He received his B.S. (1967), M.S. (1970), and Ph.D. (1974) degrees from National Taiwan University, Tufts University and Princeton University, respectively. He has published numerous papers and eight books, including four pioneering chemical engineering textbooks on artificial intelligence in chemical engineering (with Thomas E. Quantrille) and on neural networks in bioprocessing and chemical engineering (with D. Richard Baughman). Professor Liu's contributions to chemical engineering teaching and research have been recognized by university, national and international awards and he is a Fellow of the American Institute of Chemical Engineers. For his contributions to teaching, research and industrial outreach, he received the Virginia Outstanding Faculty Award from Governor Jim Gilmore in 2000. He also received the National Friendship Award from China's Premier Zhu Ronjie in 2000.

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