DESCRIPTION

Learn to apply modeling and parameter estimation tools and strategies to chemical processes using your personal computer.

This book introduces readers to powerful parameter estimation and computational methods for modeling complex chemical reactions and reaction processes. It presents useful mathematical models, numerical methods for solving them, and statistical methods for testing and discriminating candidate models with experimental data. Topics covered include:

- Chemical reaction models
- Chemical reactor models
- Probability and statistics
- Bayesian estimation
- Process modeling with single-response data
- Process modeling with multi-response data
Computer software (Athena Visual Studio) is available via a related Web site http://www.athenavisual.com enabling readers to carry out parameter estimation based on their data and to carry out process modeling using these parameters. As an aid to the reader, an appendix of example problems and solutions is provided.

Computer-Aided Modeling of Reactive Systems is an ideal supplemental text for advanced undergraduates and graduate students in chemical engineering courses, while it also serves as a valuable resource for practitioners in industry who want to keep up to date on the most current tools and strategies available.

ABOUT THE AUTHOR

The Late Warren E. Stewart, PhD, was a professor of chemical engineering at the University of Wisconsin–Madison, published numerous research articles, coauthored the landmark textbook Transport Phenomena, and was the recipient of many awards from AIChE, ACS, ASEE, and the University of Wisconsin. He was a fellow of the American Institute of Chemical Engineers and a member of the National Academy of Engineering.

Michael Caracotsios, PhD, is a Senior Modeling and Optimization Specialist in research and development at UOP LLC, a company that has been delivering cutting-edge technology to the petroleum refining, gas processing, petrochemical production, and other major manufacturing industries for over ninety years. He is also an Adjunct Professor of Chemical Engineering at the Northwestern University.

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