



Optimization in Chemical Engineering

By Suman Dutta

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Optimization in Chemical Engineering By Suman Dutta

Optimization is used to determine the most appropriate value of variables under given conditions. The primary focus of using optimisation techniques is to measure the maximum or minimum value of a function depending on the circumstances. This book discusses problem formulation and problem solving with the help of algorithms such as secant method, quasi-Newton method, linear programming and dynamic programming. It also explains important chemical processes such as fluid flow systems, heat exchangers, chemical reactors and distillation systems using solved examples. The book begins by explaining the fundamental concepts followed by an elucidation of various modern techniques including trust-region methods, Levenberg-Marquardt algorithms, stochastic optimization, simulated annealing and statistical optimization. It studies the multi-objective optimization technique and its applications in chemical engineering and also discusses the theory and applications of various optimization software tools including LINGO, MATLAB, MINITAB and GAMS.

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Editorial Review

About the Author

Suman Dutta received his Ph.D. from Jadavpur University, Kolkata and has published a number of research papers in national and international journals. He was a visiting researcher at the Centre of Water Science in Cranfield University, UK. He teaches courses on chemical engineering thermodynamics, chemical reaction engineering, fluid mechanics, process modelling and optimisation and process instrumentation and control. His areas of research include wastewater treatment, membrane technology, advanced oxidation process, process simulation and optimisation.

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