Título:

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Optimization has been playing a key role in the design, planning and operation of chemical and related processes for nearly half a century. Although process optimization for multiple objectives was studied by several researchers back in the 1970s and 1980s, it has attracted active research in the last 10 years, spurred by the new and effective techniques for multi-objective optimization. In order to capture this renewed interest, this monograph presents the recent and ongoing research in multi-optimization techniques and their applications in chemical engineering.

Following a brief introduction and general review on the development of multi-objective optimization applications in chemical engineering since 2000, the book gives a description of selected multi-objective techniques and then goes on to discuss chemical engineering applications. These applications are from diverse areas within chemical engineering, and are presented in detail. All chapters will be of interest to researchers in multi-objective optimization and/or chemical engineering; they can be read individually and used in one's learning and research. Several exercises are included at the end of many chapters, for use by both practicing engineers and students.

Contents:
Introduction (G P Rangaiah)
Multi-Objective Optimization Applications in Chemical Engineering (Masuduzzaman & G P Rangaiah)
Multi-Objective Evolutionary Algorithms: A Review of the State-of-the-Art and Some of Their Applications in Chemical Engineering (A L Jaimes & C A Coello Coello)
Multi-Objective Genetic Algorithm and Simulated Annealing with the Jumping Gene Adaptations (M Ramteke & S K Gupta)
Surrogate Assisted Evolutionary Algorithm for Multi-Objective Optimization (T Ray et al.)
Why Use Interactive Multi-Objective Optimization in Chemical Process Design? (K Miettinen & J Hakanen)
Net Flow and Rough Sets: Two Methods for Ranking the Pareto Domain (J Thibault)

Multi-Objective Optimization of Multi-Stage Gas-Phase Refrigeration Systems (N M Shah et al.)

Feed Optimization for Fluidized Catalytic Cracking Using a Multi-Objective Evolutionary Algorithm (K C Tan et al.)

Optimal Design of Chemical Processes for Multiple Economic and Environmental Objectives (E S-Q Lee et al.)

Multi-Objective Emergency Response Optimization Around Chemical Plants (P S Georgiadou et al.)

Array Informatics Using Multi-Objective Genetic Algorithms: From Gene Expressions to Gene Networks (S Garg)

Optimization of a Multi-Product Microbial Cell Factory for Multiple Objectives _ A Paradigm for Metabolic Pathway Recipe (F C Lee et al.)