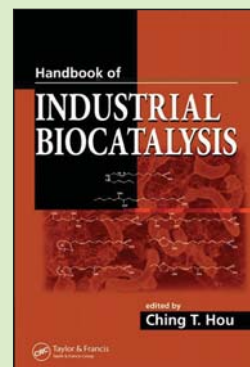


## Handbook of Industrial Biocatalysis

**Ching T. Hou, Editor, CRC Press, Taylor & Francis Group, Boca Raton, FL, , 616 pp., \$179.95, June 2005, ISBN: 0-8247-2423-2**

With chapters on virtually every aspect of biocatalysis from international experts actively researching the field, this is the first comprehensive handbook on industrial biocatalysis. The book is divided into three sections based on the type of substrates. The first section describes the newest biotechnology and bioprocesses for producing industrial products from hydrophobic substrates such as oils and fats. The discussion of biocatalysis covers single and multiple catalytic reactions involved in the creation of products as well as molecular manipulation of enzymes and product recovery. Among the products discussed are healthy food, nutritional supplements, nutraceuticals, specialty chemicals, surfactants, biopolymers, and antimicrobial agents. The second section covers the production of value-added products from carbohydrate substrates, including ethanol production, oligosaccharides and glycosides, utilization of hemicelluloses, and carbohydrate-active enzymes. The third section, which is dedicated to other potential industrial applications, such as bioelectrocatalysis for synthesizing chemicals, fuels and new drugs, explores novel nutrition-delivery systems, green chemistry, and the industrial applications of extremophiles. The text includes numerous illustrations and examples, as well as references that provide direction for further study.



## A Practical Guide to Compressor Technology, Second Edition

**Heinz P. Bloch, John Wiley & Sons, Inc., Hoboken, NJ, 574 pp., \$125.00, Oct. 2006, ISBN: 0-471-72793-8**

Compressors often represent a multi-million-dollar investment for chemical process industries plants. This book is intended to help engineers and plant managers make the most of that investment. It provides a thorough overview of the operating characteristics, efficiencies, design features, troubleshooting and maintenance of dynamic and positive-displacement process gas compressors, covering both the underlying theory and the myriad day-to-day practical issues and challenges that chemical engineers and plant operations personnel must address.



The book features the latest design and manufacturing details of gas compressors. It covers the arrangements, material composition, and basic laws governing the design of compressors, and provides guidance on selecting optimum compressor configurations, controls, components and auxiliaries to maximize reliability. Also included is information on: monitoring and performance analysis for optimal machinery condition; systematic methods to avoid failure through the application of field-tested reliability-enhancement concepts; fluid instability and externally pressurized bearings; reliability-driven asset management strategies; and upstream separator and filter issues. To build the reader's knowledge and skills, the book starts with key principles and then moves to more advanced material. Hundreds of photos depicting various types of compressors, components and processes are provided throughout.

## Engineering Optimization, Second Edition

**A. Ravindran, K. M. Ragsdell and G. V. Reklaitis, John Wiley & Sons, Inc., Hoboken, NJ, 688 pp., \$140.00, May 2006, ISBN: 0-471-55814-1**

This hands-on reference provides a practical, real-world understanding of engineering optimization. Rather than dwelling on underlying proofs and mathematical derivations, it emphasizes optimization methodology, focusing on techniques and strategies relevant to design, operations and analysis. It surveys diverse optimization methods, ranging from those applicable to the minimization of a single-variable function to those suitable for large-scale, nonlinear constrained problems. Included are discussions of not only classical methods, important for historical reasons and for their role in motivating subsequent developments in this field, but also of promising new techniques, such as those of successive quadratic programming and goal programming.



The authors devote considerable attention to practical issues, such as model formulation, implementation, preparation for solution, starting point generation, and the selection of execution strategies. A major chapter is devoted to strategies for carrying out optimization studies; another reviews state-of-the-art optimization software and the results of existing comparative studies for solving nonlinear programs; a third discusses three significant engineering case studies. A considerable fraction of each chapter is allocated to examples drawn from chemical, industrial and mechanical engineering. New material in this second edition includes the duality theory, interior point methods for solving linear programming problems, the generalized Lagrange multiplier method and generalization of convex functions, and goal programming for solving multi-objective optimization problems.