

# **Bioreactors: Design, Operation and Novel Applications**

By Carl-Fredrik Mandenius



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In this expert handbook both the topics and contributors are selected so as to provide an authoritative view of possible applications for this new technology. The result is an up-to-date survey of current challenges and opportunities in the design and operation of bioreactors for high-value products in the biomedical and chemical industries.

Combining theory and practice, the authors explain such leading-edge technologies as single-use bioreactors, bioreactor simulators, and soft sensor monitoring, and discuss novel applications, such as stem cell production, process development, and multi-product reactors, using case studies from academia as well as from industry. A final section addresses the latest trends, including culture media design and systems biotechnology, which are expected to have an increasing impact on bioreactor design.

With its focus on cutting-edge technologies and discussions of future developments, this handbook will remain an invaluable reference for many years to come.



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About the Author

Carl-Fredrik Mandenius is professor of Engineering Biology at Link?ping University (Sweden) since 1999 and head of the Division of Biotechnology. He holds a master and PhD degree in Engineering from Lund University. His main research interests are bioprocess engineering, biosensor technology and biotechnology design.

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