Biomedical Engineering Challenges: A Chemical Engineering Insight

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DESCRIPTION

An important resource that puts the focus on the chemical engineering aspects of biomedical engineering

In the past 50 years remarkable achievements have been advanced in the fields of biomedical and chemical engineering. With contributions from leading chemical engineers, *Biomedical Engineering Challenges* reviews the recent research and discovery that sits at the interface of engineering and biology. The authors explore the principles and practices that are applied to the ever-expanding array of such new areas as gene-therapy delivery, biosensor design, and the development of improved therapeutic compounds, imaging agents, and drug delivery vehicles.

Filled with illustrative case studies, this important resource examines such important work as methods of growing human cells and tissues outside the body in order to repair or replace damaged tissues. In addition, the text covers a range of topics including the challenges faced with developing artificial lungs, kidneys, and livers; advances in 3D cell culture systems; and chemical reaction methodologies for biomedical imagining analysis. This vital resource:

- Covers interdisciplinary research at the interface between chemical engineering, biology, and chemistry
- Provides a series of valuable case studies describing current themes in biomedical engineering
- Explores chemical engineering principles such as mass transfer, bioreactor technologies as applied to problems such as cell culture, tissue engineering, and biomedical imaging
Written from the point of view of chemical engineers, this authoritative guide offers a broad-ranging but concise overview of research at the interface of chemical engineering and biology.

ABOUT THE AUTHOR

**Vincenzo Piemonte** is Associate Professor at University Campus Biomedico of Rome, Faculty of Engineering, Italy. His research activity is primarily focused on the study of Transport phenomena in the artificial and bioartificial organs; new biotreatment technology platform for the elimination of toxic pollutants from water and soil.

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**Luigi Marrelli** is Full professor of Chemical Reactors and of Applied Thermodynamics at University Campus Biomedico of Rome, Faculty of Engineering, Italy. His main research activity deals with thermodynamics of fluid phase equilibria and with kinetics of chemical and biochemical reactions. Some of the results obtained have been applied in the field of artificial and bio-artificial organs.

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