Special Issue

AI-Driven Biofabrication: Accelerating Design, Optimization, and Translation

Message from the Guest Editor

Biofabrication is evolving rapidly, yet traditional workflows remain inefficient, resource-heavy, and reliant on trial-and-error. Artificial intelligence (AI) now offers a powerful solution to these bottlenecks. This Special Issue explores how AI transforms biofabrication—optimizing everything from biomaterial design and construct geometry to cell behavior prediction and functional integration. The fusion of machine learning, high-throughput data, and simulation is shifting the field toward predictive, autonomous, and sustainable manufacturing. AI enhances process control and real-time feedback, accelerating development while minimizing waste. Applications span regenerative medicine, soft robotics, and sustainable engineering. We invite original research, reviews, and perspectives on AI-driven design automation, parameter optimization, tissue modeling, and validation methods. Contributions at the intersection of data science, computational biology, and materials science are highly encouraged. Join us in defining the era of smart biofabrication for precise, scalable, and eco-friendly production. I look forward to your contributions.

Guest Editor

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Message from the Editor-in-Chief

Micromachines (ISSN 2072-666X) is a forum for cutting-edge interdisciplinary research on micro and nanoscale science and technology. We emphasise the practical, real-world value of micro and nanotechnologies that will place *Micromachines* in a leading position among engineering and technology journals.

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