

Special Issue

Multimodal AI-Assisted Bioprinting: From Material Selection to Automated Fabrication

Message from the Guest Editors

As the field of bioprinting rapidly evolves toward fully automated and personalized fabrication of tissue constructs, the integration of multimodal artificial intelligence—encompassing imaging, machine learning, bioinformatics, and robotics—has emerged as a transformative force. This Special Issue aims to highlight cutting-edge advances in AI-driven bioink optimization, closed-loop fabrication systems, real-time process monitoring, and the design of intelligent bioprinting platforms capable of tailoring complex, functional tissue analogs. By bringing together multidisciplinary perspectives, this collection will provide readers with a comprehensive understanding of the technical innovations and biomedical applications reshaping regenerative medicine and biofabrication. We welcome the submission of original research articles, reviews, and perspective pieces addressing topics including, but not limited to, AI-guided bioink formulation, multimodal data fusion, robotic bioprinting, digital twin modeling, and intelligent quality control. We look forward to your valuable contributions and to advancing the frontiers of AI-assisted bioprinting together.

Guest Editors

Prof. Dr. Ewa Stodolak-Zych

Prof. Dr. Ryszard Tadeusiewicz

Dr. Kamila Rawojć

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Bioengineering
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
bioengineering@mdpi.com

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Editor-in-Chief

Prof. Dr. Anthony Guiseppi-Elie

Department of Biomedical Engineering, Texas A&M University, College Station, TX 77843, USA

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