Special Issue

Neural Microelectrodes: Design, Integration, and Applications

Message from the Guest Editors

Microelectrode arrays serve as critical interfaces between biological systems and electronic devices, enabling the recording and stimulation of neural activity with high spatial and temporal precision. Over the past decades, they have played a foundational role in neuroscience research, neuroprosthetics, and brain–machine interfaces. With recent advances in materials science, microfabrication, and circuit integration, the next generation of microelectrode arrays offers unprecedented capabilities—including higher channel counts, improved biocompatibility, and enhanced mechanical flexibility. These innovations are driving a shift from basic research tools toward clinically and commercially viable technologies, opening new possibilities in both understanding and modulating complex neural systems. This Special Issue aims to highlight recent advances in the application of next-generation microelectrode arrays for neural interfacing. As microelectrode technologies continue to evolve in terms of resolution, flexibility, biocompatibility, and scalability, their role in both fundamental neuroscience and translational neurotechnology is rapidly expanding.

Guest Editors

Dr. Felix Deku

Department of Bioengineering, University of Oregon, 1505 Franklin Boulevard, Eugene, OR 97403, USA

Dr. Loren Rieth

Department of Mechanical, Materials and Aerospace Engineering, Benjamin M. Statler College of Engineering and Mineral Resources, West Virginia University, Morgantown, WV 26506, USA

Deadline for manuscript submissions

30 April 2026

Micromachines

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 6.0
Indexed in PubMed

mdpi.com/si/252672

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

mdpi.com/journal/micromachines

Micromachines

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 6.0
Indexed in PubMed

mdpi.com/journal/micromachines

About the Journal

Message from the Editor-in-Chief

You are invited to contribute research articles or comprehensive reviews for consideration and publication in *Micromachines* (ISSN 2072-666X). *Micromachines* is published in the open access format. Research articles, reviews and other contents are released on the internet immediately after acceptance. The scientific community and the general public have unlimited free access to the content as soon as it is published. As an open access journal, *Micromachines* is supported by the authors or their institutes by payment of article processing charges (APC) for accepted papers. We are pleased to welcome you as our authors.

Editor-in-Chief

Prof. Dr. Ai-Qun Liu
1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China
2. School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore 639798, Singapore

Author Benefits

High Visibility:

indexed within Scopus, SCIE (Web of Science), PubMed, PMC, Ei Compendex, dblp, and other databases.

Journal Rank:

JCR - Q2 (Instruments and Instrumentation) / CiteScore - Q1 (Mechanical Engineering)

Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.2 days after submission; acceptance to publication is undertaken in 1.9 days (median values for papers published in this journal in the first half of 2025).

MDPI