



Neural Electrodes in Bioelectronic Medicine

Guest Editors:

Dr. Ivo Strauss

Postdoctoral Researcher,
Professur für Biomedizinische
Mikrotechnik, Institut für
Mikrosystemtechnik (IMTEK),
Albert-Ludwigs-Universität
Freiburg, Georges-Köhler-Allee
201, D-79110 Freiburg, Germany

Dr. Andres Pena

Assistant Research Professor,
Institute for Integrative and
Innovative Research (I3R),
University of Arkansas,
Fayetteville, AR, USA

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Message from the Guest Editors

Dear Colleagues,

Bioelectronic medicine (BM) is an upcoming field aiming to substitute pharmaceutical treatments by interfering with bioelectrical activity from the nervous system. BM has the advantage of acting immediately, whereas pharmaceuticals have to be metabolized by the body to take effect. Additionally, BM is very target-specific, and may therefore help to reduce drug side effects.

Neural electrodes are an essential interface in BM. They allow us to stimulate and record, and therefore interfere with neural tissue activity. Among others, neural stimulation was used to restore sensory feedback in amputees and motoric functions in SCI patients. Other groups demonstrated the potential to stimulate or record from the autonomic nervous system, restoring heart rate or digestive disorders and bladder or sexual dysfunction.

Despite recent advancements, the application of neural electrodes in long-term and clinical applications remains very challenging. Issues such as material failure, tissue inflammation, and low charge injection or SNR limit the application of neural electrodes in clinical applications.





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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

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Micromachines Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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