Implantable Neural Interfaces

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Neural interfaces are connections that enable the two-way exchange of information with the nervous system. These connections can occur at multiple levels, including with the peripheral nerves, the spinal cord, or the brain; in many instances, fundamental biophysical and biological challenges are shared across these levels. There are several issues to be considered: selectivity, stability, resolution versus invasiveness, implant-induced injury, and the host-interface response. The engineered solutions to these challenges include electrode designs and geometry, stimulation waveforms, materials, and surface modifications. The emerging opportunities to improve neural interfaces include cellular-level silicon to neuron connections, optical stimulation, and approaches to control inflammation. Overcoming the biophysical and biological challenges will enable effective high-density neural interfaces for stimulation and recording. This Special Issue will promote new ideas, approaches, and paradigms toward the development of the next generation of implantable neural interfaces.

Special Issue

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Message from the Editor-in-Chief

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