

Special Issue

IEEE TBME Letters

Neuronanoengineering and Neuroprostheses

Recently, fast emerging technological advances in bioelectronics, bio-nano-sensor-technology, and neural engineering have created exciting advancements in the understanding in several areas of neuroscience. Advanced technological developments are critical to address challenges of improving our basic knowledge of the nervous system, neurophysiology and neurological disorders, and to develop devices to interface with neural tissue. The neuroscientific information gathered can be used to design more effective technologies (for example by exploiting the potentialities related to bioinspiration) and also to develop systems to help disabled people to deal with the physical and cognitive limitations due to neurological disorders. New bio-nano-sensor electronic devices and interfacing systems would have a significant impact in neuroscientific and clinical applications.

The TBME Letters announces a forthcoming Special Issue on Neuro-nano-electronics, Neuro-engineering, and Neuro-prostheses to be published in August, 2009. The aim of this Special Issue is to publish highly innovative, novel and interesting research activities with potential impact in neural engineering and related areas with a specific attention to the development of emerging technologies and innovative approaches to:

- (i) increase our understanding of the neurological functions,
- (ii) develop efficient neural sensing and interfacing systems, and
- (iii) develop and test more effective and clinically usable systems to restore sensorimotor or other neural functions for neural-rehabilitation in disabled people.

Possible topics (not exhaustive)

1. Bio-nano sensors and electronics
2. Implantable neural interfaces
3. Biophysics of neural computation
4. Neuro-mechanical models of neural regeneration
5. Neuromorphic systems
6. Micro- and nanoparticles for neuroprotection and neural regeneration
7. Motor neural prostheses and brain-to-machine systems
8. Sensory neural prostheses (vestibular, cochlear, visual, etc.)
9. Cybernetic prostheses

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Timetable

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- Notification of acceptance: April 15, 2009
- Final manuscript due: May 15, 2009
- Publication date: August, 2009