CALL FOR SPECIAL ISSUE

ADVANCES AND OPEN CHALLENGES FOR INTEGRATED CIRCUITS DETECTING BIO MOLECULES

Guest Editors:

♦ Marco Carminati
Politecnico di Milano, Italy
marco1.carminati@polimi.it

♦ Roland Thewes
Technical University Berlin, Germany
roland.thewes@tu-berlin.de

♦ Jacob Rosenstein
Brown University, USA
jacob_rosenstein@brown.edu

♦ Hoi-Jun Yoo
KAIST, Korea
hjyoo@kaist.ac.kr
Despite the ever increasing convergence of microelectronics with biomedicine, several open issues still hinder a massive deployment of integrated circuits in micro-analytical devices for biomolecule detection.

Biomolecule detection with integrated circuits poses many challenges related to (i) sensitivity for the detection of low amounts or numbers of biological macromolecules, (ii) power consumption due to many sensors operated in parallel for increasing spatial resolution or for multi-parameter analysis, (iii) transducer material processing on CMOS wafers and packaging of related integrated circuits in contact with the biological environment, (iv) miniaturization of the full system for handheld, wearable, or implantable applications, (v) reliability and specificity of the biosensor. These challenges need to be faced within cross-disciplinary approaches by combining electronic circuitry, device fabrication, bio-chemical interfaces, and data analysis.

The purpose of this special issue is to report recent progresses in the deployment of microelectronic technologies for the development of highly sensitive biosensors.

Manuscripts describing original research as well as reviews of emerging directions are solicited for this special issue, covering a range of topics including but not limited to:

- Novel low-noise circuits for single molecule detection
- Ultra-low power biosensing systems and circuits
- Multisensor systems for monitoring biological systems at high spatial resolution
- Emerging nanoelectronic biosensors for next generation approaches
- High sensitivity / high specificity handheld, wearable, or implantable biosensors
- Fabrication of transducer materials and biosensing interfaces on CMOS wafers
- Packaging of integrated circuits for biomedical applications

The manuscript for TBioCAS must be submitted on-line using the IEEE TBioCAS manuscript template and “Information for Authors”, via the IEEE Manuscript Central found at the following Website address: https://mc.manuscriptcentral.com/tbcas. Authors should select the Special Issue manuscript titled “ICBioMol” instead of “Regular Paper”. The length of a manuscript must be minimum 8 pages in IEEE format. For any information, please contact Dr. Marco Carminati at the following Email address: marco1.carminati@polimi.it

**Important Dates:**

- Manuscript submission: February 28, 2018
- First decision to Authors: April 30, 2018
- Revision due (if necessary): May 31, 2018
- Final notification: June 30, 2018
- Final manuscripts due: July 15, 2018
- Special Issue publication: September, 2018