Special Issue for Micro and Nanosystems

Guest Editor: Rui Lima (IPB/CEFT-FEUP), Portugal

Advances in flow visualization and measurements in biomedical microsystems

Aims & Scope: Flow visualization techniques have become an indispensable tool to understand the flow behavior of several kinds of biological fluids in living systems and medical devices. Doppler ultrasound, computer tomography (CT) and magnetic resonance imaging (MRI) are the most commonly used medical instruments to investigate physiological flow both in vivo and in vitro. However, due to limited spatial resolution and signal noise, it is difficult to obtain quantitative flow information. In recent years, as a result of advances in computers, optics, fluorescent probes and image analysis, several new visualization techniques have been developed. One example of success is the micro-scale particle image velocimetry (PIV) technique, which can be used to quantify the velocity field of biological flows in medical devices. This special issue, will invite front-line researchers and authors to submit original researches and review articles on the latest advances and challenges in flow visualization and measurement techniques currently used in biomedical microdevices.

Key words: Blood flow, biomicrofluidics, blood-on-chips, biomedical microdevices, micro-PIV/PTV.

Subtopics: Potential topics include, but are not limited to:

- Diagnostic Imaging based on Biological Flow Analysis;
- Cellular and Molecular Imaging;
- Computational bioengineering and Biofluid Mechanics;
- Cardiovascular Fluid Dynamics Analysis from Images;
- Biorheology;
- Biomedical microdevices,
- Lab-on-chip and Microfluidics for Biological Flows Analysis
- Visual Computing and Visualization Techniques for Bioflows.

Schedule:

Manuscript submission deadline: October 31st 2014

Peer Review Due: November 31st 2014

Revision Due: December 31st 2014

Notification of acceptance by the Guest Editor: January 9th 2015

Final manuscripts due: June 31st 2015