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TMS2019
 148th Annual Meeting & Exhibition

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March 10–14, 2019
 San Antonio, Texas, USA

JOIN US FOR THIS TMS2019 SYMPOSIUM:

BIOLOGICAL MATERIALS

Bio-Nano Interfaces and Engineering Applications

This symposium focuses on fundamental understanding of biological and biomimetic-solid interfaces as well as their implementation into engineering applications. Interfacing biological molecules predictably with solid materials at the nanoscale is the key for hybrid materials design leading to innovative functional properties. Exploiting such properties towards developing functional materials and devices depends on a better understanding and control of the interfacial interactions at the atomic to nanoscale.

This symposium will address the synthesis, modelling, and design principles of the bio-nano interfaces and their implementation into practical medical and technical applications such as tissue engineering, catalysis, sensors, electronics, and photonics. While the solids may include metals, ceramics, semiconductors, polymers, and their composites, the biopolymers include proteins, peptides, DNA, RNA, polysaccharides, glycans, lipids, and membranes as well as cells and viruses.

A special emphasis will be given to the assembly processes at solid-liquid interfaces that lead to specific surface phenomena and designed bio-nano-solid self-assembled structures and organizations towards functional materials and devices.

This symposium will encompass the following themes:

- Fundamentals on BioNano interfaces;
- Surface phenomena: Dynamic interfacial interactions;
- Biomolecular recognition of solids;
- New trends in surface characterization, in situ and ex situ;
- Modelling the interactions at the bio-nano interfaces;
- Multiscale mechanobiology and Biomechanics;
- Nanoscale assembly rules and design criteria;
- Applications to electronics and photonics devices;
- Implementations in regenerative and restorative medicine

Topics of interest for focused sessions include, but are not limited to:

- Foundation of bio-nano interfaces
- Surface phenomena and modelling of the bio-nano-assembly formation
- Multiscale mechanobiology at the interfaces and biomechanics
- Characterization of biointerfaces and surfaces
- Implementation in regenerative and restorative materials
- Applications on the basis of such technologies
- Micro/nano device application building upon bio-nano interfacial interactions

ORGANIZERS

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Nearly 4,000 presentations are planned
 at more than 80 symposia at TMS2019.

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