Special Issue

Graphene Based Nanocomposites for Antibacterial Applications and Biosensors

Message from the Guest Editors

The interaction of graphene with living cells opens up several interesting fields of application. Due to their hydrophobic nature, thin layers of graphene can penetrate biological membranes. Graphene flakes or sheets are also known to wrap around cells. These processes can lead to cellular damage, both via disruption of the membrane lipid bilayer or induction of oxidative stress. Bacteria are especially susceptible to damage caused by graphene and this has recently led to interesting advances in antibacterial applications of graphene-based nanocomposites. Another aspect of graphene useful in bio-applications is its extreme sensitivity to electrical perturbations. Charged moieties approaching the graphene sheet affect its electrical conductivity, and this can be readily measured. Based on this property, there are efforts to develop various graphene-based nano-devices that can operate as sensors. These range from sensors of small molecules/metabolites, peptides and proteins, to detection of whole bacterial cells attaching to surfaces. We convinced that this forum gives us an excellent opportunity to collect papers dealing with the recent achievements in the field.

Guest Editors

Prof. Dr. Ivan Mijakovic

Division of Systems and Synthetic Biology, Chalmers University of Technology, SE-412 96 Göteborg, Sweden

Prof. Dr. August Yurgens

Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-412 96 Göteborg, Sweden

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Nanomaterials
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
nanomaterials@mdpi.com

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

Editor-in-Chief

Prof. Dr. Eugenia Valsami-Jones
School of Geography, Earth and Environmental Science, University of Birmingham, Birmingham B15 2TT, UK

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