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Advances in Antibacterial Nanomaterials and Surface

Guest Editor:

Prof. Dr. Elena Ivanova
School of Science, STEM College, RMIT University, Melbourne, VIC 3000, Australia

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Message from the Guest Editor

The formation of bacterial biofilms has been prevented for many years through adapting the physical and chemical properties of a variety of medical tools, particularly the surfaces of instruments and implants. Recent studies of insect wings have shown that they are covered with nano-pillared arrays lethal to most species of pathogenic bacteria. Rather than relying on a combination of physical and chemical properties to combat biofilm formation, the mechanism of the antibacterial activity of nanostructured surfaces has been described in terms of purely physical, "mechano-bactericidal" effects.

The fabrication of synthetic antibacterial surfaces was first inspired by the anti-wetting and anti-biofouling properties of insect wings, and other topologies found in nature. Synthetic antibacterial, micro- and nano-structured, biomimetic surfaces fabricated on an array of different materials are the key in fighting non-pathogenic and pathogenic bacteria.

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Editor-in-Chief

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

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.

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Contact Us

Nanomaterials Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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