Special Issue

Novel Antibacterial and Antimicrobial Nanoparticles for Healthcare Applications

Message from the Guest Editor

Owed to the extraordinary rise in bacterial resistance towards antibiotics, infections continue to proliferate, and millions of deaths in hospitals take place. Hospital-acquired infections result in up to $4.5 billion in additional healthcare expenses annually in the US. Therefore, infection-prevention strategies are essential. Antibacterial nanoparticles are a suitable solution to antimicrobial resistance; they not only kill antibiotic-resistant bacteria via different mechanisms, but can also be combined with antibiotics to overcome antimicrobial resistance. Nanotechnology can be specially advantageous in treating bacterial infections. Examples comprise the use of nanoparticles in antibacterial coatings for implantable devices, in bacterial detection systems to provide microbial diagnostics, in medicinal nanomaterials to prevent infections and promote wound healing, and so forth. This Special Issue is devoted to both original research and review papers regarding the synthesis, design and characterization of new antimicrobial nanoparticles (e.g., carbon-based, metal and polymeric) which significantly prevent the growth of bacteria, specially focused on healthcare applications.

Guest Editor

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Deadline for manuscript submissions

closed (31 December 2022)

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.8
CiteScore 10.3
Indexed in PubMed

mdpi.com/si/67583

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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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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