Special Issue

Nanomaterials for Drug Delivery and Cancer Immunotherapy

Message from the Guest Editor

Nanomaterials have revolutionized drug delivery and cancer immunotherapy by enabling targeted, controlled, and efficient therapeutic strategies. Their unique physicochemical properties allow for precise engineering to improve drug solubility, protect therapeutic agents from degradation, and enhanced permeability and retention (EPR) effect. Functionalized nanocarriers can be tailored to deliver chemotherapeutics or immunomodulatory agents directly to tumor cells or the tumor microenvironment. In cancer immunotherapy, nanomaterials serve as delivery vehicles. These systems can reprogram immune cells, including tumor-associated macrophages (TAMs) and dendritic cells (DCs), to convert the tumor milieu from immunosuppressive to immunostimulatory. This reprogramming enhances the recruitment and activation of cytotoxic T cells, leading to improved anti-tumor responses. Integrating nanotechnology with immunotherapy boosts therapeutic efficacy and significantly reduces systemic side effects, paving the way for next-generation precision medicine in oncology.

Guest Editor

Dr. Anbu Mozhi Thamizhchelvan

Department of Radiology and Imaging Sciences, Emory University School of Medicine, Emory University, Atlanta, GA 30322, USA

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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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