Special Issue

Nanotechnology-Based Materials in Developing Disease-Modifying Therapies and Early Detection

Message from the Guest Editors

Over the years, nanotechnology-based materials have transformed disease-modifying therapies and advanced diagnostic systems for various medical conditions. Their unique physicochemical properties, such as their high surface-to-volume ratio, tunable size, and surface chemistry, facilitate the development of targeted drug delivery systems (DDSs) with enhanced therapeutic efficacy and reduced systemic toxicity. Furthermore, nanomaterials can be engineered to respond to specific stimuli, such as pH changes or enzymatic activity, enabling controlled, localized, and sustained drug release. Additionally, nanoscale biosensors and imaging agents are revolutionizing early detection, offering increased sensitivity and specificity in identifying biomarkers associated with diseases such as cancer and degenerative disorders. These strategies can be used to intervene in disease progression with efficiency. Despite the promise of these innovations, challenges related to biocompatibility, regulatory frameworks, and large-scale production still exist. These breakthroughs hold the potential to improve disease management via improved detection and personalized treatments.

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Deadline for manuscript submissions

20 December 2025

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/240347

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mdpi.com/journal/materials

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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