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Special Issue Reprint

Advanced Nanoscience of Biomaterials for Biomedical Applications (Volume II)

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This Reprint presents recent advancements in the development and biomedical application of nanostructured biomaterials, focusing on bioinspired and multifunctional nanosystems. This compilation includes 14 peer-reviewed articles, encompassing both experimental studies and comprehensive reviews. Key topics include polymeric and inorganic nanoparticle systems, extracellular-vesicle-based nanocomposites, and stimuli-responsive drug delivery platforms. Applications span oncology, neuropharmacology, gastrointestinal treatment, and anti-infective therapy. Notable innovations include PEGylated magnetite nanoparticles for targeted gene modulation, intranasal transferosomal gels for enhanced brain delivery, and casein nanoparticles for pH-triggered anticancer activity. The reviews featured in this Reprint explore graphene–cellulose wound healing platforms and photothermal/photodynamic synergies for antimicrobial action. Collectively, these studies reflect emerging trends in nanoscale engineering aimed at improving therapeutic specificity, bioavailability, and tissue compatibility. This Reprint serves as a valuable reference for researchers developing next-generation biomaterials for clinical translation.

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