Special Issue

The Employment of Biocompatible Nanomaterials for Disease Diagnosis and Treatment Based on Catalytic Reactions

Message from the Guest Editor

Recent advancements in nanochemistry have ushered in an array of novel nanocatalysts, including nanoenzymes, photocatalysts, and electrocatalysts. These have been utilized in vivo to initiate catalytic reactions and modulate the biological microenvironment for therapeutic benefits. With the swift progression of nanocatalysts in biomedical applications, a new paradigm, "nanocatalytic medicine," has emerged. This concept is defined as "the employment of biocompatible nanomaterials for disease diagnosis and treatment based on catalytic reactions." By introducing non-toxic or minimally toxic nanocatalysts into pathological areas, therapeutic chemical reactions are "catalyzed," fostering a more biocompatible and sustainable approach. In these catalyzed reactions, the reactants are typically the inherent biochemicals of the pathological region, as opposed to delivered therapeutic agents. "Nanocatalytic medicine" directs catalytic reactions to optimize therapeutic outcomes, effectively translating the catalytic efficiencies and selectivity that chemists have strived to achieve over the past century into high-performance therapeutic diagnostics with reduced side effects.

Guest Editor

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