# Special Issue

# Responsive Polymeric Nanomaterials and Hydrogels: Synthesis, Characterization, and Applications

## Message from the Guest Editor

Responsive polymeric nanomaterials are natural or synthetic molecules that respond to external stimuli, process signals, and execute functions accordingly. These materials can be engineered through physical or chemical crosslinking to form nanoscale porous structures such as porous organic polymers, conducting polymers, and hydrogels with varying crystallinity. They can also be combined with metals, piezoelectric materials, clays, and carbon-based structures (e.g., graphene, carbon quantum dots, g-$C_3N_4$), enhancing their properties and multifunctionality. These materials can be fabricated in various forms, including nanoparticles, nanofibers, nanorods, nanogels, and interpenetrating polymer networks. Beyond responding to stimuli like pH, temperature, and light, they may exhibit self-healing, shape memory, actuation, and smart sensory applications. This Special Issue explores the synthesis, characterization, and applications of responsive polymeric nanomaterials and hydrogels in health, energy, environment, devices, food, and agriculture.

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## Editor-in-Chief

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