Special Issue

Advanced Concrete Formulations: Nanotechnology and Hybrid Materials

Message from the Guest Editor

In recent years, nanotechnology and hybrid materials have emerged as transformative innovations in concrete technology. The incorporation of nanomaterials such as nano-silica, nano-clay, carbon nanotubes, and graphene oxide has shown significant improvements in the mechanical, rheological, and durability properties of concrete. These nanoscale additives enhance the microstructure, promote denser packing, and improve the hydration process, leading to superior performance in both fresh and hardened states. Moreover, hybrid material systems—combining nanomaterials with supplementary cementitious materials (SCMs), polymers, or fibers—offer synergistic benefits, paving the way for multifunctional and smart concrete composites. This Special Issue invites original research articles and review papers that explore innovations in nanotechnology-enhanced and hybrid concrete materials. Topics of interest include material characterization, performance evaluation, durability studies, sustainability assessments, and practical applications in infrastructure. Contributions that bridge laboratory findings with field implementation are particularly encouraged.

Guest Editor

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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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