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Smart Cementitious Materials for Sustainable Building Engineering

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Message from the Guest Editor

Dear Colleagues,

Concrete is the most used construction material worldwide, its global consumption reaching 25 Gt per year. Due to this huge production, the cement industry contributes to global warming through an estimated 5–7% of CO₂ emissions. Cracking is known to be the most challenging problem for the life-cycle performance of cementitious materials, which are inherently weak in tensile strength. Thus, the development of improved durability concretes and alternative binders to Ordinary Portland Cement (OPC) are research subjects of pivotal relevance in the field of sustainable building.

Promising strategies to improve the sustainability of concrete are:

- New smart cementitious nanocomposites for health-monitoring of structures, thus increasing both the structural safety and service life of structures;
- Graphene-based cementitious nanocomposites capable of refining the pore structure and reducing flaws and cracks in the cement based matrix;
- The use of alternative binders to OPC, such as geopolymers, with the potential to reduce CO₂ emissions from the cement industry;
- Self-healing cementitious materials.

Dr. Francesca Romana Lamastra
Guest Editor



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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal-organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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