Special Issue

Advanced Asphalt Materials and Characterization/Simulation Technologies

Message from the Guest Editors

The durability and sustainability of asphalt pavements under environmental weathering and trafficking remain critical challenges in modern road infrastructure. Asphalt mixtures are generally susceptible to component degradation, binder-aggregate interfacial weakening, and mesostructural deterioration. This Special Issue addresses these limitations by focusing on cutting-edge advancements in alternative asphalt binders and aggregates, asphalt oxidation mechanisms and rejuvenation pathways, and multiscale characterization/simulation technologies. This Special Issue brings together interdisciplinary research to advance sustainable pavement solutions and our multiphysical understanding of this process. Contributions may include, but are not limited to, studies on the following topics:

- Novel binder formulations for improved resistance to aging, cracking, and moisture damage;
- Mechanisms of asphalt oxidation and rejuvenation strategies;
- Multiscale modeling approaches for predicting material properties and performance;
- Synergistic applications of advanced characterization and simulation tools.

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Deadline for manuscript submissions

20 November 2025

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/234779

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Message from the Editor-in-Chief

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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