

Special Issue

Modeling and Simulation of Solid State Phenomena in Metals and Alloys

Message from the Guest Editor

Dear Colleagues, The mechanical and functional properties of metals are strongly related to their microstructures, which are, themselves, inherited from thermal and mechanical processing. Thus, the precise numerical modeling of metallic materials is an important topic, largely due to the interest in using predictive simulations of material behavior to facilitate the development of new materials, as well as the academic interest in such strategies to improve our understanding of metallurgical phenomena. In recent decades, several discretization/resolution-based numerical methods have been developed to model solid-state phenomena that occur during thermomechanical treatments of metallic materials under the concepts of computational metallurgy, digital materials, digital shadows and digital twins. Metallurgical mechanisms include: recrystallization, grain growth, recovery, ductile damage, fracture, martensitic transformations, solid/solid diffusive phase transformations and, more globally surface and volume diffusion mechanisms.

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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