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Plasticity, Damage, and Fracture for Lightweight High-Strength Metals

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Message from the Guest Editors

Metals with a high strength-to-density ratio (such as advanced high-strength steel, aluminum, magnesium, and titanium alloys) are widely applied in the automobile industry, aerospace engineering, and national defense. However, lightweight metals undergo plastic deformation during shaping into designed structures and various service conditions. Proper characterization of plastic behavior is beneficial for the reliable numerical simulation and analysis of lightweight design and metal-forming processes.

This Special Issue aims to cover recent progresses and new developments in the characterization of complicated plastic behavior, including but not limited to strain hardening at large strain and various stress states, anisotropy, tension–compression asymmetry, anisotropic hardening, distortional hardening, strain rate hardening, thermal softening, Bauschinger effect, and ductile fracture. All aspects above are covered by different approaches, such as advanced experimental techniques, analytical modeling, numerical implementation, and different verifications and applications. Review articles which describe the current state of the art are also welcomed.



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Special Issue



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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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