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Strong Coupling of Thermo-Chemical and Thermo-Mechanical States in Applied Materials

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Deadline for manuscript
submissions:

closed (15 February 2021)

Message from the Guest Editor

Many applied materials, like metals and solid-state polymers, consist of multiple phases. The mutual interaction between chemistry and mechanics in applied materials is the central goal of manuscripts in this Special Issue. Examples of such materials are high-strength steels, where the supersaturated crystal lattice locks plastic relaxation, and Ni-base superalloys, in which a two-phase structure is stabilized by mechanical interaction. Immiscible polymer blends show enhanced stiffness and toughness due to phase separation between the components. In filled elastomers and fiber-reinforced polymers, the mechanical properties depend on the chemical state of an interfacial layer which changes under external mechanical load. All these materials cannot be understood if neglecting the interplay between phase structure and mechanics.



mdpi.com/si/47025



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Message from the Editor-in-Chief

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