Special Issue

High Performance and Advanced Crystal Plasticity Methods in Metals and Metallic Alloys

Message from the Guest Editor

Advanced theoretical and computational crystal plasticity methods in crystalline materials are well-defined means of discovering and analyzing the underlying dislocation mechanisms used to develop constitutive models. Crystal plasticity finite element (CPFE) methods are used to employ some of the extensive knowledge gained from the experimental and theoretical studies of single crystal behaviors, such as plastic deformation and dislocation activities, in order to inform the further development of continuum field theories of deformation. The high performance crystal plasticity frameworks expedite and enhance the efficiency of the computations, which can be utilized in hierarchical multi-scale schemes to bridge length scales to simulate and design metallic alloys for superior mechanical properties. Enormous progress in these fields has been achieved in recent years, initiating novel theoretical, analytical, and experimental approaches to illuminate prospective paths. In this Special Issue, research, improvements, and ideas in the subsequent fields in metals and metallic alloys are welcomed.

Guest Editor

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