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Editorial

Multiscale Modelling and Characterization of Mechanical Properties in Heat-Resistant Alloys

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Various heat-resistant alloys have been used in industry; however, the bridge between the bulk mechanical properties and the underlying micro- and nanoscopic local properties remains an issue. In the Special Issue on the topic of "Multiscale Modelling and Characterization of Mechanical Properties in Heat-Resistant Alloys", both theoretical and experimental approaches were discussed to evaluate its mechanical properties from multiscale aspects. In the Special Issue, six original articles were published.

T. Saito et al. [1] and T. Chen et al. [2] investigated creep behavior; T. Saito et al. [1] focused on the deformation mechanism of a single-crystal high-entropy superalloy at intermediate temperature from theoretical and experimental aspects. T. Chen et al. [2] developed a measurement method of strain-rate-dependent plasticity using a high-temperature instrumented indentation test and its computational simulations. E. Bonifaz and I. Watanabe [3] developed a multiscale simulation method for an arc-welded joint, in which the residual stress state after the welding process was estimated in consideration of the anisotropic microstructure. Y. Yamabe-Mitarai et al. [4] and H. Park et al. [5] investigated the mechanical properties of high-temperature wrought alloys; Y. Yamabe-Mitarai et al. [4] studied the correlation between solution treatment temperature, microstructure, and yield strength. H. Park et al. [5] developed an inverse analysis method of the stress–strain curve from a high-temperature compression test. H. Zhou et al. [6] studied the relationship between the microstructure and mechanical property in a powder metallurgy.

The state-of-the-art technologies are condensed in the above-mentioned articles. We hope that they will be helpful for further research.

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