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Mechanical Properties of High-Temperature Alloys

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Message from the Guest Editor

High-temperature alloys have a vast field of application ranging from temperature-exposed components in thermal power plants to combustion engines, gas turbines, furnace applications or even high-temperature fuel cells. These applications demand mechanical properties such as high strength, ductility, specific deformation behavior or resistance against creep and/or fatigue. In addition, the properties of interest may deteriorate during long-term service. Current scientific questions deal with optimizing the production processes, mechanically testing the (long-term) properties, material modeling or linking microstructural features to the macroscopically observable material behavior. The ultimate goal is to achieve a deeper understanding of the material properties by linking fundamental scientific insight to real life industrial applications in order to optimize production routines, improve component properties or increase the longevity of the materials involved.



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