

Special Issue

High Temperature Materials Development beyond Ni-Base Superalloys

Message from the Guest Editors

Gas turbines have benefited from the development of nickel-base superalloys for decades. However, a new material class is still required for further efficiency and environmental friendliness. In addition to high temperature metallic alloys, only a few material classes (e.g., ceramics, intermetallic and refractory metal alloys) can meet the severe demands of gas turbines. For example, Co-Al-W alloys with vastly improved melting temperature show promise. Also, Si-containing alloys are explored to showcase good oxidation resistance for engine applications. Although some prospects are on the horizon, many hurdles are still to be overcome. The search for new material particularly with many other advantages continues. Moreover, the in situ techniques simulating operational temperature and mechanical load should be stressed. Here, neutron and synchrotron diffraction are powerful tools to observe macro- and micro- structure changes during heat treatment and operation. We invite all researchers in the challenging area of high-temperature materials to contribute to this Special Issue “High Temperature Materials Development beyond Ni-Base Superalloys” in the journal *Metals*.

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About the Journal

Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

Editors-in-Chief

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