



Microstructural Degradation of Superalloys during Service: Mechanical and/or Corrosion

Guest Editors:

Prof. Dr. Yanhui Chen

Beijing Key Lab of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing 100124, China

Prof. Dr. Yunsong Zhao

Science and Technology on Advanced High Temperature Structural Materials Laboratory, Beijing Institute of Aeronautical Materials, Beijing 100095, China

Deadline for manuscript submissions:

closed (15 December 2021)

Message from the Guest Editors

Dear Colleagues,

Superalloys used as blade material for gas turbines are strengthened by small intermetallic γ' -precipitates of the Ni_3Al type. γ' -precipitation provides excellent mechanical properties at high temperatures, but its efficiency strongly depends on the size and morphology of the γ' -precipitates. During high temperature service in aircraft and power gas turbines, the γ/γ' -microstructure of nickel-base superalloys gradually degrades. This degradation of the microstructure deteriorates the mechanical properties.

In this issue, we invite contributions on the microstructure degradation of superalloys and the microstructural characterization and relationships between microstructure and its properties. The submitted works are expected to feature but are not limited to the following topics:

- Microstructural characterization of superalloys;
- Relationship between microstructural variation and its properties;
- Microstructural variation during corrosion of superalloys;
- Stress corrosion induced microstructural degradation in superalloys;
- Evaluation of serviced turbine blade;
- Newly developed superalloys: high entropy alloys, etc.





an Open Access Journal by MDPI

Editor-in-Chief

Prof. Dr. Alessandra Toncelli

Department of Physics, University
of Pisa, 56126 Pisa, Italy

Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

Author Benefits

Open Access: free for readers, with [article processing charges \(APC\)](#) paid by authors or their institutions.

High Visibility: indexed within [Scopus](#), [SCIE \(Web of Science\)](#), [Inspec](#), [CAPus / SciFinder](#), and [other databases](#).

Journal Rank: JCR - Q2 (*Crystallography*) / CiteScore - Q2 (*Condensed Matter Physics*)

Contact Us

Crystals Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
www.mdpi.com

mdpi.com/journal/crystals
crystals@mdpi.com
[X@Crystals_MDPI](#)