

## Special Issue

# Superplasticity, Plastic Deformation, and Grain Refinement of Metals and Alloys

### Message from the Guest Editor

Superplasticity (SP) is the exceptional capability of materials including metals and alloys to exhibit high elongation or ductility, typically more than 400% elongation. Quasi-superplasticity usually obtains 200–300% elongation. Superplastic forming can manufacture alloy components with a complex shape on small tonnage equipment. This special issue plans to give an overview of the most recent advances in the field of metallic SP research. It aims to bring forward new ideas and innovation knowledge relevant to SP of metals and alloys, and explore the opportunity of superplastic forming. Potential topics include but are not limited to:

- Superplastic ductility achieved in a variety of alloys;
- Underlying deformation mechanism of superplasticity and dislocation creep;
- Mechanical behavior and microstructural evolution of various alloys deformed at elevated temperature;
- Modelling of superplasticity and dislocation creep;
- Grain refinement and its evolution mechanism by various approaches of severe plastic deformation and conventional thermomechanical processing;
- Superplastic forming, and so on.

### Guest Editor

Dr. Furong Cao

1. School of Materials Science and Engineering, Northeastern University, Shenyang 110819, China
2. State Key Laboratory of Rolling and Automation, Northeastern University, Shenyang 110819, China

### Deadline for manuscript submissions

closed (20 April 2024)



## Materials

an Open Access Journal  
by MDPI

Impact Factor 3.2  
CiteScore 6.4  
Indexed in PubMed



[mdpi.com/si/157117](https://mdpi.com/si/157117)

*Materials*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[materials@mdpi.com](mailto:materials@mdpi.com)

[mdpi.com/journal/  
materials](https://mdpi.com/journal/materials)





# Materials

---

an Open Access Journal  
by MDPI

---

Impact Factor 3.2  
CiteScore 6.4  
Indexed in PubMed



[mdpi.com/journal/  
materials](https://mdpi.com/journal/materials)



## About the Journal

### Message from the Editor-in-Chief

*Materials* (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

---

### Editor-in-Chief

Prof. Dr. Maryam Tabrizian

1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

---

### 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), PubMed, PMC, Ei Compendex, CaPlus / SciFinder, Inspec, Astrophysics Data System, and other databases.

#### Journal Rank:

JCR - Q2 (Metallurgy and Metallurgical Engineering) /  
CiteScore - Q1 (Condensed Matter Physics)