Special Issue

Challenges in Additive Manufacturing of Metals and Their Alloys: Microstructure and Mechanical Properties

Message from the Guest Editor

The development of additive manufacturing methods has now reached the re-evaluation stage, with many problems and challenges facing R&D, especially during the pandemic period when all activities were ceased. These problems relate to increasing the production rate and final product sizes, obtaining high-quality, fully dense metallic components, avoiding the inconsistency of the components printed, developing efficient post-processing methods, optimizing the source materials and rheology of the powder blends, providing the compatibility of alloy structures when growing multi-materials, and many others. Direct energy wire-feed deposition methods allow fabricating large and fully dense components while powder-bed ones ensure higher accuracy and more complex shapes. Other methods are effective that utilize powder metallurgy approaches, including printing green samples and then sintering them. In the post-pandemic period, more effort should be put into developing the most promising solutions for each type of final product and the standardization of digital manufacturing.

Guest Editor

Prof. Dr. Sergei Tarasov

Institute of Strength Physics and Materials Science of Siberian Branch Russian Academy of Sciences (ISPMS SB RAS), 2/4, pr. Akademicheskii, 634055 Tomsk, Russia

Deadline for manuscript submissions

closed (15 December 2024)

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/101716

Materials
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
materials@mdpi.com

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

MDPI

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)