Special Issue

Metal Additive Manufacturing: Design, Process Development, and Characterization

Message from the Guest Editors

Metal additive manufacturing (AM) spans laser-based fusion, arc welding, friction stir processing, and binder jet sintering. This Special Issue highlights the latest advancements in these methods, offering unique advantages in design freedom, material efficiency, waste reduction, and performance optimization.
We invite contributions on how processing decisions shape microstructures and part qualities. Topics include in-situ monitoring; in situ or offline quality control; novel alloy design; AM applications at the part scale, AM modeling, simulation; the use of artificial intelligence (AI) to optimize process and property predictions, and the studies on autonomous robots and automatic control to improve AM efficiency and quality assurance. Research on microstructure characterization; physical property measurements; non-contact and non-destructive defect detection; correlations in process–structure–property; and post-processing and surface treatments for microstructure and property enhancement is also encouraged. We also welcome experimental and computational studies that link theory to real-world applications and qualify AM parts for high-stakes industrial uses.

Guest Editors

Dr. Sen Liu
Department of Mechanical Engineering, University of Louisiana at Lafayette, Lafayette, LA 70503, USA

Dr. Avik Samanta
Department of Mechanical Engineering, University of South Florida, Tampa, FL 33620, USA

Deadline for manuscript submissions

31 January 2026

MDPI

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)