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Refreshing the aims and scope of the International Journal of Extreme Manufacturing

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Editorial

Refreshing the aims and scope of the International Journal of Extreme Manufacturing

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Launched in 2019, the *International Journal of Extreme Manufacturing* (IJEM) is devoted to publishing cutting-edge research and high-quality reviews in the areas of extreme manufacturing. IJEM has been indexed by SCI, EI, Scopus, and several other important databases, and has received extensive recognition and tremendous support from the international research community. All these achievements can be attributed to the contribution of the enthusiastic and highly-recognized editors, reviewers, authors, readers, and many other supporters.

Extreme manufacturing explores new frontiers of manufacturing science, and the related fields constantly develop towards new extremes. Therefore, IJEM, as the leading journal in this field, should keep pace with international trends in science and technology development. The scope of IJEM is amended to embrace and absorb new theories, processes, and technologies that may subvert the scientific principles of manufacturing, and overcome the limitations of existing technologies. We intend to publish cutting-edge discoveries that offer fresh perspectives on manufacturing.

1. Aims and scope of IJEM

The IJEM publishes original articles and reviews of the highest quality related to the science and technology of manufacturing functional devices and systems with extreme dimensions (extremely large or small) and/or extreme functionalities, ranging from fundamental science to cutting-edge technologies that support the manufacturing of high-performance products involving emerging techniques and breaking the limits of currently known theories, methods, scales, environments, and performance.

Extreme manufacturing is specifically manifested in manufacturing with extremely high energy density, ultrahigh precision, extremely small spatial and temporal scales, extremely intensive fields, and giant systems with extreme complexity and several factors. It involves multidisciplinary fields, including machinery, materials, optics, physics, chemistry, mechanics, and mathematics.

Subjects of interest include but are not limited to, theory, process, metrology, characterization, equipment, conditions, and system integration in extreme manufacturing, as well as materials, structures, and devices with extreme functionalities.



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1.1. Material interactions with energy beams and fields

- Metal/inorganic non-metal/polymer materials additive manufacturing
- Biomaterials additive manufacturing
- 4D printing
- Laser surface modification
- Ultrafast laser micro/nanomanufacturing
- High energy beam and special energy processing

1.2. Approaches and theories of processing techniques

- Atomic and close-to-atomic scale manufacturing
- Ultra-precision/ultrahigh-speed machining
- Extreme large/small-scale manufacturing
- Micro/nano-joining and assembly
- Molecular manufacturing
- Bionic manufacturing
- Performance-oriented manufacturing
- Novel principles/approaches for manufacturing

1.3. Materials, structures, and devices with extreme functionalities

- Quantum materials, structures, and devices
- Metamaterials and metadevices
- Flexible functional materials and devices
- Functional optical structures and devices
- High-efficient energy storage materials and devices
- Thermal materials and devices
- Biomaterials and devices
- Functional surfaces/interfaces
- New device design and manufacturing, etc.

1.4. Measurement and systems

- Micro/nano-mechanics and characterization
- Extreme performance evaluation
- Novel metrology methods
- Special sensors
- Precision instruments
- Complex structures and systems
- High-performance equipment
- Multiple extreme environments