

Submission Deadline—February 1, 2021



Multifunctional Halide Perovskites

Halide perovskites have recently emerged as a new family of inorganic-based materials that are revolutionizing the fields of photovoltaics and opto-electronics. These materials can be either organic-inorganic hybrid or all-inorganic in composition, and they exhibit highly tunable crystallographic and electronic dimensionality from 3D to 0D. These unique features have opened the door to various novel perovskite-based energy and electronic devices such as solar cells, light-emitting diodes, X-ray medical imaging, radiation detectors, and memristors. Importantly, halide perovskites combine the characteristics of conventional hard materials and soft matter, leading to an unprecedented research platform with numerous opportunities for discovering new fundamental materials science.

This Focus Issue will cover the latest research results on topics of structure, characterization, and properties of halide perovskites for multifunctional device applications. We invite contributions from the leading scientists in the perovskite field.

Contributing papers are solicited in all areas of halide perovskites, with emphasis on the following areas:

- ♦ Synthesis and characterization of halide perovskites
- ♦ Defects and structures of halide perovskites
- ♦ Electronic and energy applications of halide perovskites

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CALL FOR PAPERS

Submission Deadline—February 26, 2021



3D Printing of Biomedical Materials and Devices

3D printing, or additive manufacturing, is a transformative technology platform that impacts various disciplines including biomaterials and biomedical devices. Use of 3D printing technology can shorten the product development time for biomedical devices, or help manufacture those devices on-demand. 3D printing can also help to innovate next-generation biomaterials and biomedical devices that would not be possible otherwise. In this Focus Issue, our intent is to capture the perspectives of professionals from different disciplines including science, engineering, and medicine to application of 3D printing in biomaterials and biomedical devices. More specifically, this Focus Issue is geared toward understanding of the structure-process-property relationship involving different materials under *in vitro*, *in vivo* and *in silico* environments.

Suggested topical areas include, but not limited to:

- ◆ 3D printing of biomaterials
- ◆ Surface modification via 3D printing
- ◆ Drug delivery from 3D printed scaffolds
- ◆ Bioprinting
- ◆ Texture and microstructure in 3D printed devices
- ◆ Mechanical properties of 3D printed materials
- ◆ Process development for 3D printed biomedical devices
- ◆ 3D printing in organ and tissue engineering applications
- ◆ Modeling and simulation involving 3D printed biomaterials and devices
- ◆ Patient-specific implants and biomedical devices
- ◆ In-hospital medical 3D printing for improving patient care
- ◆ Creating pre-surgical models using 3D printing

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Submission Deadline—March 15, 2021



Advanced Nanocatalysts for Electrochemical Energy Storage and Generation: Batteries, Supercapacitors, Electrolyzers and Fuel Cells

The development of nanomaterials for electrochemical energy storage and generation is gaining increased attention world-wide. Electrochemical devices include batteries supercapacitors, electrolyzers and fuel cells. The development of functional, active and electrochemically stable nanomaterials is highly important to advance the commercial capability of these devices. Commercial development is particularly imperative for alkaline fuel cells and electrolyzers, considering the increase in research in recent years as an outcome of the development of anion exchange membranes. Highly active nanomaterials are also needed for rechargeable batteries and supercapacitors. Experimental evaluation techniques such as in situ Fourier-transform infrared spectroscopy (FTIR), and differential electrochemical mass spectrometry (DEMS), provide valuable insights into the electrochemical reactions taking place on novel nanomaterials, leading to the determination of reaction mechanisms. The design of nanostructured catalysts by application of powerful ab initio calculations is also highly relevant.

This *JMR* Focus Issue will review the state of the art and accelerate fundamental understandings of nanostructured materials used in alkaline fuel cells (hydrogen or alcohols as fuels) and electrolyzers, rechargeable batteries and supercapacitors. Contributions are solicited on experimental and theoretical studies of novel nanostructured materials for such electrochemical devices.

Manuscripts are solicited in the following areas:

- ♦ Advanced nanostructured anodes and cathodes for anion exchange membrane fuel cells
- ♦ Novel nanocatalysts for alkaline direct alcohol fuel cells
- ♦ Development of new nanocatalysts for alkaline electrolyzers
- ♦ Novel active nanomaterials for supercapacitors
- ♦ Advanced active nanomaterials for rechargeable batteries

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