DE GRUYTER

# REVIEWS ON ADVANCED MATERIALS SCIENCE SPECIAL ISSUE: 3D AND 4D PRINTING OF ADVANCED FUNCTIONAL MATERIALS

## GUEST EDITOR

**Zi Chen**, Harvard University, USA, email: zchen33@bwh.harvard.edu
**Changchun Zhou**, National Engineering Research Center for Biomaterials, Sichuan University, Chengdu, China, email: changchunzhou@scu.edu.cn
**Edgar B. Montufar**, Brno University of Technology, Czech Republic
email: eb.montufar@ceitec.vutbr.cz
**Mizi Fan**, Brunel University, London, UK, email: mizi.fan@brunel.ac.uk

## DESCRIPTION

The special issue deals with timely critical science issues on the 3D or 4D printing of novel functional materials, such as metal based, polymer based, ceramic based, and their composite advanced functional materials.

Traditional 3D printing technologies have developed rapidly and have been widely applied in the fields of aviation & aerospace, and biomedicines. New develop 4D printing technologies have aroused widespread interest and have great potential in designing special functions. 4D printing particularly suitable for designing novel functions that can modulate of size, shape, or biological function with time last. Therefore, we refer to the traditional three-dimensional spatial dimensions (3D), combined with the changes in time dimension of printing manufacturing technology, as 4D printing.

The application of 4D printing in smart materials will have significant implications in biomedical and industrial fields. These printed novel functional materials achieve specific biological, mechanical, shape memory, magnetoelectric, photothermal, piezoelectric functions via 3D or 4D printing process. The control of material microstructure by printing processes, including nanoscale, micrometer scale, millimeter scale, macroscopic porous structures are also need to special attention.

In recent years, 3D or 4D printing technology provides powerful tools for the structural and functional design of novel materials. It plays an irreplaceable role in accelerating the speed of product launch, improving product performance, reducing product costs etc. 3D or 4D printing offer unique properties such as high speed fabrication, high-precision manufacturing, multiple materials compatibility, personalized shape design, complex porous structure design, shape memory properties and so on. Overall, the special issue aims to provide a platform for researchers to showcase their latest findings and advancements in the 3D or 4D printing of advanced functional materials, which have the potential to revolutionize various fields and have a significant impact on whole society.

The special issue will cover a wide range of topics related to 3D or 4D printing of metal based, polymer based, ceramic based, and their composite advanced functional materials. The topics will include the following keywords, but are not limited to:

- 3D printing
- 4D printing
- advanced functional materials
- metal-based materials
- polymer-based materials
- ceramic-based materials

- composite materials
- mechanical functions
- biological functions
- shape memory functions
- magnetoelectric functions
- photothermal functions
- piezoelectric functions
- nanoscale printing
- micrometer-scale printing
- millimeter-scale printing
- macroscopic porous structures
- biomedicine
- industry

## PUBLICATION SCHEDULE / HOW TO SUBMIT

**Open for submissions: 1st May 2023**
**Paper submission deadline: 31st October 2023**

When entering your submission please choose the option type of an article: "**Special Issue on 3D and 4D Printing of Advanced Functional Materials"** Submissions for the special issue are now open. In case of any technical problems, please contact the Managing Editor of ***Reviews on Advanced Materials Science***:
**Juliusz Skoryna, Ph.D.**, Juliusz.Skoryna@degruyter.com

The deadline of the first call for papers is **October 31st, 2023**; we aim to publish the special issue before the end of the year. Review articles are welcomed and must be co-authored by experts in the field. After a successful rigorous review process, such papers will be published immediately without the need to wait for the above deadline to pass.