Special Issue

Complex Ceramic Materials with Advanced Properties for Versatile Applications

Message from the Guest Editors

Currently, complex ceramic materials possess advanced properties and are transforming a variety of fields due to their versatility. Thus, hydroxyapatite (HAp), a bioceramic resembling human bone mineral, stands out in the biomedical field for its role in orthopedic and dental implants. Its biocompatibility and osteoconductive properties promote tissue regeneration and healing. When HAp (and other ceramic materials) is combined with biopolymers like chitosan or alginate, the obtained materials exhibit improved strength, flexibility, and bioactivity, making them suitable for applications like tissue engineering scaffolds and controlled drug delivery systems. The ceramic doping process further fine-tunes ceramics' mechanical, electrical, and antimicrobial properties. This flexibility enables their use in advanced healthcare technologies, in environmental applications, and in the field of sustainable energy technologies. With ongoing advancements in their synthesis and functionality, these materials continue to address critical challenges in medicine, the environment, and sustainable technology, solidifying their role as indispensable in modern innovation.

Guest Editors

Dr. Daniela Predoi

National Institute of Materials Physics, Atomistilor Street, No. 405A, P.O. Box MG 07, 077125 Magurele, Romania

Dr. Carmen Steluta Ciobanu

National Institute of Materials Physics, Atomistilor Street, No. 405A, P.O. Box MG 07, 077125 Magurele, Romania

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

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Editors-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

Prof. Dr. Yuguang Ma
State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou 510640, China

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