Special Issue

Optoelectronic Properties and Performance of Advanced Photocatalytic Nanomaterials

Message from the Guest Editor

This Special Issue will focus on novel nanomaterials for advanced oxidation processes, particularly in relation to enhancements in charge carrier mobility, the influence of semiconductors' band gag on solar light absorption and the mechanism of photoelectrons excitement. In recent decades, numerous studies have investigated visible light activation and charge carrier separation in titanium dioxide through elemental doping and heterostructure engineering, establishing it as one of the most effective photocatalysts. More recently, alternative materials, such as ferrites, bismuth vanadates, molybdenum-based chalcogenides and transition metal phosphides, have been developed. In parallel, novel nanostructures, including carbon dots, covalent organic frameworks or MXenes, have been fabricated, exhibiting promise in environmental applications. This Special Issue will focus on the optoelectronic properties of photocatalytic materials applied to wastewater treatment, air purification, surface sterilization and disinfection, CO2 photoconversion to hydrocarbons, hydrogen evolution and solar energy conversion.

Guest Editor

Dr. Michalis K. Arfanis

Section of Condensed Matter Physics, Department of Physics, National and Kapodistrian University of Athens, University Campus, Zografou, GR-157 84 Athens, Greece

Deadline for manuscript submissions

20 March 2026

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/248576

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

mdpi.com/journal/materials

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/journal/materials

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)