



*materials*



an Open Access Journal by MDPI

## Physics and Applications of Epsilon-Near-Zero Materials

Guest Editor:

### **Dr. Alessandro Ciattoni**

CNR - SPIN, Superconducting and other Innovative materials and devices institute, L' Aquila, Coppito, Italy

Deadline for manuscript submissions:

**closed (30 June 2021)**

### **Message from the Guest Editor**

Materials exhibiting very small dielectric permittivity, or epsilon-near-zero (ENZ) materials, belong to the family of media able to affect electromagnetic radiation in a very unconventional way because the medium effective wavelength is much larger than the vacuum wavelength so that they host a regime where both field amplitude and phase are slowly-varying over relatively large portions of the bulk. Such a key feature allows the electromagnetic field to be manipulated down to its finest details, and it can be put to work to achieve a number of different functionalities.

Other interesting phenomena arise when the ENZ regime is combined with matter nonlinearity since their crucial interplay allows the all-optical transition from dielectric to metal behavior of the medium. Furthermore, such interplay benefits from the nonresonant enhancement of the normal electric field component across the vacuum-ENZ medium interface, producing intriguing effects like transmissivity directional hysteresis.



[mdpi.com/si/35855](https://mdpi.com/si/35855)

**Special** issue



an Open Access Journal by MDPI

## 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

## 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.

## 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 - Q1 (Metallurgy and Metallurgical Engineering) / CiteScore - Q2 (*Condensed Matter Physics*)

## Contact Us

---

Materials Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland

Tel: +41 61 683 77 34  
[www.mdpi.com](http://www.mdpi.com)

[mdpi.com/journal/materials](http://mdpi.com/journal/materials)  
[materials@mdpi.com](mailto:materials@mdpi.com)  
[X@Materials\\_Mdpi](https://twitter.com/Materials_Mdpi)