

## Special Issue

# Multiscale Physics Phenomena and Near-Wall/Electrode Effects in Non-thermal Plasmas

### Message from the Guest Editors

Cold, non-equilibrium plasma discharges are crucial for material processing, plasma propulsion, plasma medicine, and catalysis for gas conversion.

Understanding the interplay of processes at various length scales and electrode boundaries is fundamental. For instance, in a capacitively coupled discharge, electrons move via ambipolar diffusion over large-scale bulk plasma, but exhibit different behavior near electrodes and reactor walls. Energy transport from small to large lengths can create spoke structures in magnetized ExB plasmas, demonstrating multiscale interactions found in most plasma discharges.

Discovering scaling laws is vital for industrial upscaling of plasma film deposition and miniaturization for atmospheric micro-plasma jets. Modeling plasma processes with different power supplies can lead to better understanding and predictability of plasma properties.

The Special Issue invites research on plasma science and technology linking different length scales, offering innovative results at the forefront of multiscale plasma physics and applications. Combination of plasma diagnostics with data-driven models is expected to be transformative.

---

### Guest Editors

Dr. Carles Corbella Roca

Department of Mechanical & Aerospace Engineering, George Washington University, Washington, DC 20052, USA

Dr. Denis Eremin

Institute of Electrical Engineering, Ruhr University Bochum, D-44801 Bochum, Germany

---

### Deadline for manuscript submissions

closed (31 October 2024)



## Plasma

---

an Open Access Journal  
by MDPI

---

Impact Factor 1.7  
CiteScore 3.1



[mdpi.com/si/191811](https://mdpi.com/si/191811)

*Plasma*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[plasma@mdpi.com](mailto:plasma@mdpi.com)

[mdpi.com/journal/  
plasma](https://mdpi.com/journal/plasma)





# Plasma

an Open Access Journal  
by MDPI

Impact Factor 1.7  
CiteScore 3.1



[mdpi.com/journal/  
plasma](https://mdpi.com/journal/plasma)



## About the Journal

### Message from the Editor-in-Chief

---

#### Editor-in-Chief

Prof. Dr. Andrey Starikovskiy  
Department of Mechanical and Aerospace Engineering, Princeton  
University, Princeton, NJ 08540, USA

---

#### Author Benefits

##### High Visibility:

indexed within ESCI (Web of Science), Scopus, Inspec,  
CAPlus / SciFinder, and other databases.

##### Rapid Publication:

manuscripts are peer-reviewed and a first decision is  
provided to authors approximately 22.6 days after  
submission; acceptance to publication is undertaken in 4.6  
days (median values for papers published in this journal in  
the first half of 2025).

##### Recognition of Reviewers:

reviewers who provide timely, thorough peer-review  
reports receive vouchers entitling them to a discount on  
the APC of their next publication in any MDPI journal, in  
appreciation of the work done.