Special Issue

Electrochemical CO_2 Reduction: Electrocatalyst, Reaction Mechanism, and Process Engineering

Message from the Guest Editors

The electrochemical reduction of CO2 (CO2RR) is a promising approach to converting CO2 into value-added fuels and chemicals using renewable electricity, offering a sustainable means of carbon management and energy production. This Special Issue aims to showcase recent developments in CO2 electrolysis, covering key aspects such as catalyst design, reaction mechanisms, electrolyte and reactor optimization, product purification, and system integration. Additionally, we welcome contributions that present approaches to CO2 capture and purification that are tailored to electrochemical conversion. The scope of this Special Issue includes, but is not limited to, the following topics:

- Development and characterization of electrocatalysts;
- Mechanistic studies and theoretical modelling;
- Electrolyte and reactor design for improved performance;
- Strategies to enhance product selectivity and energy efficiency;
- Product collection, separation, and industrial applications;
- Integration of CO2 capture with electrochemical conversion.

Guest Editors

Dr. Cátia Azenha

1. LEPABE—Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
2. ALiCE—Associate Laboratory in Chemical Engineering, Faculty of Engineering, University of Porto, 4100 Porto, Portugal

Dr. Ana Mafalda Vaz Martins Pereira

1. LEPABE—Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
2. ALiCE—Associate Laboratory in Chemical Engineering, Faculty of Engineering, University of Porto, 4100 Porto, Portugal

Deadline for manuscript submissions

30 September 2026

Energies

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 7.3

mdpi.com/si/234118

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

mdpi.com/journal/energies

Energies

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 7.3

mdpi.com/journal/energies

About the Journal

Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

Editor-in-Chief

Prof. Dr. Enrico Sciubba
Department of Mechanical and Industrial Engineering, University Niccolò Cusano, 00166 Roma, Italy

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), Ei Compendex, RePEc, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank:

CiteScore - Q1 (Control and Optimization)