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Materials Frontiers for Solid Oxide Fuel Cells (SOFCs): Structure-Performance Correlation

Guest Editors:

Dr. Alessandro Dell'Era

Department SBAI, Sapienza
University of Rome, 00161 Rome,
Italy

Dr. Enrico Bocci

Energy and Mechanic, Università
degli studi Guglielmo Marconi,
Rome, Italy

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Message from the Guest Editors

Fuel cells can operate at low and high temperatures depending on the electrolyte used. Among the high-temperature cells, solid oxide fuel cells (SOFCs) show high potentiality due to their total efficiency, which is up to 85% when heat cogeneration is considered. These devices can convert various kinds of fuels into electricity with high efficiency and low levels of catalyst degradation. In addition, if the syngas produced from the biomass gasification process is used as fuel, in order to preserve the performance of the catalyst, hot gas conditioning is normally performed in order to reduce the number of typical contaminants. Thus, for the durable operations of SOFC fuel cells, an efficient gas cleaning phase is essential to remove the critical pollutants that significantly deteriorate the fuel cell systems. In particular, the purpose of this Special Issue is to publish high-quality research papers and review articles that address the study, synthesis, and characterization of advanced materials for SOFC fuel cells, as well as the materials and processes enable to perform a gas cleaning treatment with high efficiency and low cost for the fuel conditioning stage in SOFC applications.



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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

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Materials Editorial Office
MDPI, St. Alban-Anlage 66
4052 Basel, Switzerland

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