

## Foreword

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The Convenors are grateful to the Standing Committee for the Physical and Engineering Sciences (PESC) of the European Science Foundation (ESF) for the sponsorship of this Exploratory Workshop on Proton Conducting Materials for Next-Generation Solid Oxide Fuel Cells.

Following ESF indications, with up to 30 participants from several different countries, our aim was to group prominent researchers in the fields of PC-SOFC and of traditional SOFC, in order to achieve synergy among scientists aware of the opportunities and issues relating to these two technologies. The choice was difficult and, in addition to leading researchers in the two fields, a few scientists involved in the FP7-project IDEAL-Cell were invited. This was because IDEAL-Cell, through the development of an original fuel cell coupling a protonic, with a traditional, SOFC, really matched the spirit the Workshop.

From the scientific and technological point of view SOFC and PC-SOFC are at different stages of development. SOFCs are in an advanced development status, but

several issues keep them from being fully available for real commercial applications. On the other hand PC-SOFCs offer important advantages but their development is still in the initial stages. In the papers presented in this special issue both these aspects are highlighted.

Fuel cells are, in principle, very simple and attractive systems, but many issues remain to be resolved. Breakthroughs can only be expected from multidisciplinary investigations, from the molecular and structural design of materials, through compatibility studies to functional properties of devices. To this end, integrated R&D activities focusing on the development of multi-functional compatible materials should be stimulated as well as the exchange of experience in neighboring scientific areas.

This was the main idea of the workshop. It provided a fruitful opportunity for learning and we hope the reading of the papers contained in this special issue will give the same opportunity to a broader readership.

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