

Preface

The *International Workshop on Molten Carbonate Fuel Cells and Related Science and Technology 2005*, was held in Toulouse France, between the 29th to the 31st of August within the *7th International Symposium on Molten Salts Chemistry and Technology*. It was chaired by Professor Michel Cassir (ENSCP-France, with the help of his team: Dr. Armelle Ringuedé, Dr. Virginie Lair and Valérie Albin) and co-chaired by Dr. Angelo Moreno (ENEA-Italy), Dr. Carina Lagergren (KTH-Sweden) and Dr. Loreto Daza (CSIC-Spain). It was the most important international event on MCFC since 1997 (Montreal-Meeting of the Electrochemical Society). It is due to a continuous effort in Europe to preserve the scientific activity and coherence of the MCFC industrial and research community. In effect, the present workshop follows five previous events held in Europe in the last years:

- 1992: “International workshop: MCFC cathode modelling, oxygen reduction mechanism and related melt chemistry”, TU-Delft, The Netherlands;
- 1995: “Workshop on MCFC”, KTH, Sweden;
- 1997: “Micro Symposium on MCFC” (MS 5), Dresden, Germany;
- 1999: “NEDO Workshop on MCFC”, TU-Delft, The Netherlands;
- 2001: “MCFC European Workshop 2001”, ENSCP, France.

The “International Workshop on Molten Carbonate Fuel Cells and Related Science and Technology 2005” was spread over 3 days and was a success. About 50 participants, 24 oral presentations among which 5 keynotes and a plenary conference, 10 posters, the majority of the international developers (MTU-Germany, FCE-United-States, Ansaldo-Italy, KEPRI-KEPCO Korea, IHI-CRIEPI Japan) and most of the significant scientific community proceeding from 10 different countries (apart of the mentioned countries: France, Spain, Sweden, Poland, China). This event counted also on the active participation of a responsible of the US Department of Energy, DOE. A round-table was organised at the end of the workshop on the advances

and difficulties of the technology, as well as on the scientific trends related to development and market prospects. A special attention was given to some interesting similarities between MCFC and intermediate temperature SOFC (Fuel Cell Energy in the United-States being a good example of a parallel development of both MCFC and SOFC devices). It should be reminded that for stationary systems >10 kW, MCFC technology has the leading position in the last years (replacing PAFC). More than 40 systems from 100 kW to 2 MW were installed in hospitals, universities, residential areas or public buildings in seven different countries. One of the systems installed in Germany is reaching a lifetime of more than 25,000 h. In France, a 250 kW MCFC, commercialised by MTU, will be installed in the centre of Paris in the next months and will co-generate heat and electric power for a 280-apartments residential building. This project is financed by a consortium of industries and public organisms (Veolia, Dalkia, EDF, city of Paris, French fuel cell network, ADEME). This very important and rapid growth of MCFC technology should be accompanied by a serious and integrated research effort on both fundamental and technological aspects in view of optimising and improving the presents systems, increasing the lifetime (in particular, by solving the corrosion problems and controlling the electrolyte losses) and reducing the costs. In the past 10 years the scientific community involved in MCFC research and development was very reduced, with respect to other competitive fuel cell technologies (SOFC and PEMFC), that is why this workshop is of particular importance to show a come-back of the research activity and the will of both industrial and university partners to promote this molten salt electrochemical device and to favour new European and international scientific projects on different aspects concerning MCFC improvement (fine comprehension of electrode mechanisms, new corrosion-resistant materials, new catalysts for varied fuels, molecular and system modelling, etc.). As invited editor of this special issue, I have the pleasure to introduce this selection of works presented within the frame of “The International Workshop on Molten Carbonate Fuel Cells and Related Science and Technology 2005”, which gives an overall idea of the industrial and research activity in the field of

MCFC. I wish to thank the team of Journal of Power Sources and, in particular, Doctor Moseley, for offering us the opportunity to share this experience with a larger scientific community. I wish also to thank the co-chair colleagues and all the participants for their active input and their enthusiasm, which is a guarantee for fruitful collaborations at the service of science and long-term development in the fields of environment and energy.

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Available online 5 June 2006