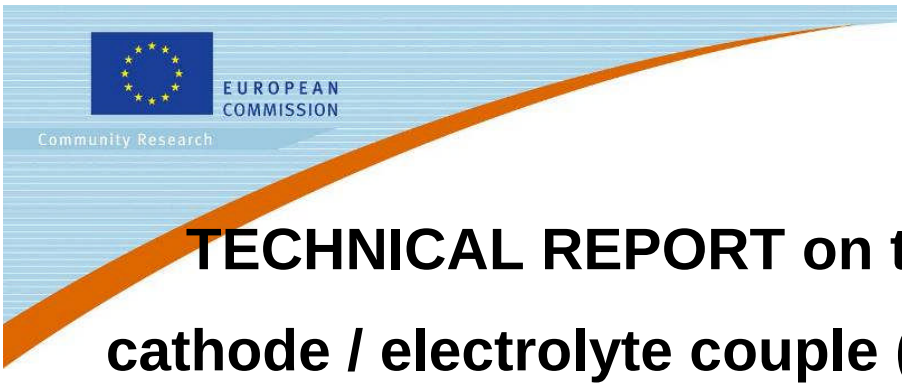
Project Acronym: **IDEAL-Cell**
Project Title: **Innovative Dual mEmbrAne fueL-Cell**

Funding Scheme: **Collaborative project**
Small of medium-scale focused research project

Date of latest version of Annex I against which the assessment will be made: **11/07/2009**



TECHNICAL REPORT on the cathode / electrolyte couple (D2.1)

M24 – 8th of March, 2010

IDEAL-Cell project

Funded by the European Commission within the Seventh Framework Programme: 2008-2012

Project's coordinator:

Dr. Alain THOREL
ARMINES – Mines ParisTech
Boulevard Saint-Michel – 60
PARIS – CEDEX 06 – 75272 France
Tel.: 01 40 76 30 30 – Fax: 01 40 76 31 50 – E-mail: alain.thorel@ensmp.fr

Project website address: **http://www.ideal-cell.eu/**

Logo of the project:

ECOLE NATIONALE SUPERIEURE DES MINES DE PARIS
ARMINES – Centre des Matériaux Pierre Marie Fourt
10 rue Henry Desbruères BP 87
91003 Evry cedex

Summary

This technical report summarizes the final results from the implementation of WP2, which is subordinated to the target for the first part of the project (years 1 and 2) – "proof of the dual membrane fuel cell concept". The objective of this Work Package concerns the development of the oxygen electrode/electrolyte couple applying: (i) well-selected routine materials (YDC15 for the electrolyte and LSCF48 (or LSCF40) for the electrode) produced inside the consortium and (ii) standard shaping technologies (tape casting, plasma spraying and screen printing). YDC15 electrolyte material with high relative density (> 95%), compositional homogeneity and conductivity about 1.1×10^{-2} S cm^{-1} at 600 °C and 2.4×10^{-2} S cm^{-1} at 700 °C, and LSCF48 electrode material with good adhesion towards the electrolyte, appropriate (porous) microstructure and conductivity about 0.20-0.26 S cm^{-2} at 600 °C and 1.25-2.80 S cm^{-2} at 700 °C were developed. Their electrical parameters are comparable with the data from the literature. The developed materials were implemented in the fabrication of the "proof of concept" model cells – the so-called PoC cells – (WP4). They will also serve as a starting point for the optimization of the dual membrane fuel cell performance in the second part (years 3 and 4) of the IDEAL-Cell project.