

SCIENTIFIC PROGRAM

MONDAY, OCTOBER 16TH

8:30 – 9:00 Registration

9:00 – 9:15

WELCOME

Dr. M. Marrony, Dr. J. Dailly, EIFER, Germany
Prof. F. Mauvy, Prof. M. Maglione, CNRS-ICMCB, France
Dr. S. Ricote, Colorado School Mines, US



PLENARY SESSION

PCC MARKET AND PROSPECTS

Chairmen: Prof. Fabrice Mauvy, Dr. M. Marrony

9:15 – 10:00

KN1 “Development of Protonic Ceramic Conductors for SOFC and other devices”

Dr. N. Taniguchi (Panasonic, Japan)

10:00 – 10:45

KN2 “Highly Durable, Coke and Sulfur-Tolerant Fuel-Flexible Protonic Ceramic Fuel Cells and the path towards commercialization”

Prof. R. O’Hayre (Colorado School of Mines US)

10:45 – 11:00

Coffee –Break

11:00 – 11:30

KN3 “Proton conducting ceramic electrolyzers: tubular design for pressurized hydrogen production”

Dr. M-L. Fontaine (SINTEF, Norway)

11:30 – 12:15

KN4 “Stability of perovskite air electrode materials under injection of humid air”

Dr. R. Ihringer (Fiixell, Switzerland)

12:15 – 14:00

Lunch

SESSION 1

PCC-BASED MATERIALS PROPERTIES, FUNDAMENTAL STUDIES AND INNOVATION

Chairman: Dr. S. Ricote, Prof. G. Taillades

14:00 - 14:45

KN5 “Electrochemical CO₂ and N₂ reduction: low and high temperature electrolysis”

Prof. E. Skúlason (Uni. Iceland, IS)

14:45 – 15:15

O01: “Similarity in the behavior of protons and holes in BZY: mobility, trapping, thermodynamics”

D.S. Tsvetkov (DPIC, Russia)

15:15 – 15:45

O02: “Effect of Ni on sintering and properties of Ba(Zr,Ce,Y)O_{3-δ}”

Y. Huang (MPI, Germany)

15:45 – 16:15

O03: “Effect of transition metal on BZCY-based protonic conductor”

Y-H. Lee (WPI-I2CNER, Japan)

16:15 – 16:30

Coffee break

- 16:30 – 17:00** **O04 “Influence of the synthesis conditions on the conduction properties of BaCe_{0.8}Zr_{0.1}Y_{0.1}O_{3-δ} electrolyte material”**
A. Le Gal -La Salle (IMN, France)
- 17:00 – 17:30** **O05: “Interaction of H₂, H₂O and O₂ with proton conducting oxides La_{1-x}Sr_xScO_{3-α} and BaZr_{1-y}Y_yO_{3-α}”**
M. Ananyev (IHTE UB RAS, Russia)
- 17:30 – 18:00** **O06: “Hydration and structural properties of mixed conductor Ba_{1-x}Gd_{0.8}La_{0.2+x}Co₂O_{6-δ} (BGLC)”**
R. Strandbakke (FERMiO Uni. Oslo, Norway)
- 18:00 – 18:30** **O07: “Transport properties and stability of Molten salts/Oxide composite as hybrid fuel cell electrolyte”**
A. Ringuede (IRCP, France)
- 18:30 – 20:00** **POSTER SESSION AND APPETIZER**
- P1: “Proton uptake of lanthanum tungstate La_{28-x}W_{4+x}O_{54+δ}V_{2-δ} as function of La/W ratio and doping”**
R. Merkle (MPI SSR, Germany)
- P2: “Special aspects of water uptake in La_{0.9}Sr_{0.1}ScO_{3-δ}”**
A. Farlenkov (IHTE UB RAS, Russia)
- P3: “Energy levels in La_{1-x}Sr_xScO_{3-x/2} forbidden gap under H₂, H₂O and O₂ atmospheres and role of oxygen vacancies in hydrogen uptake”**
M. Vlasov (IHTE UB RAS, Russia)
- P4: “Structural and electrical investigations of BaZr_{0.7}Ce_{0.2}Y_{0.1}O_{3-δ} Proton Conductor prepared by Spark Plasma Sintering”**
J. Wallis (LIPST, Germany)
- P5: “Multi-tube high temperature steam electrolyser”**
J. M. Serra (ITQ UPV-CSIC, Spain)
- P6: “Evaluation of Nd_{0.5}Ba_{0.5}Fe_{0.9}M_{0.1}O_{3-δ} (M=Ni,Cu, Co) oxides as cathodes for protonic ceramic fuel cells”**
J. Lyagaeva (IHTE UB RAS, Russia)
- P7: “Development of PCFC with BaZrO₃ based proton conductor”**
K. Yamauchi (Panasonic, Japan)
- P8: “The functional properties of Zn-and Fe-doped YBaCo₄O_{7+δ} materials as air electrodes for protonic ceramic electrochemical cells”**
N. Danilov (IHTE UB RAS, Russia)
- P9: “Ceramic membrane development for membrane reactors at Forschungszentrum Jülich”**
W.A. Meulenber (FZ JÜLICH, Germany)
- P10: “Model Predictions of Chemo-Thermal-Mechanical Stress Coupling in BZY10/BCZY27 Protonic Ceramic Membranes”**
A. Dubois (Colorado School of Mines, US)
- P11: “Feasibility assessment of the electron beam PVD process for the preparation of thin BZCY-18 electrolytes for proton-conducting ceramic fuel cells (PCFC)”**
M. Bindi (Edison SpA, Italy)
- P12: “Assessment of electrolytic properties of BaCe_{0.5}Zr_{0.3}Dy_{0.2}O_{3-δ} in fuel cell mode”**
D. Medvedev (IHTE, Russia)
- P13: “In situ investigations of potential mixed proton and electron conducting oxides for use as cathode materials in SOFCs” - Mona Baout (Institut des Sciences Chimiques de Rennes - France)**

TUESDAY, OCTOBER 17TH**SESSION 1****PCC-BASED MATERIALS PROPERTIES, FUNDAMENTAL STUDIES AND INNOVATION
(FOLLOW-UP)****Chairman:**

9:00 – 09:30

O08: “Novel composite air cathodes for Proton Conducting Fuel Cells by Exsolution”*M-A. Einarsrud (NTNU, Norway)*

9:30 – 10:00

O09: “Effect of preparation conditions on the polymorphism and transport properties of lanthanum molybdates”*J.M. Porras-Vazquez (DQI Uni. Malaga, Spain)*

10:00 – 10:30

O10: “Proton Uptake in Perovskite PCFC Cathode Materials: Effects of Cation Composition and Non-ideal behaviour”*R. Zohourian (MPI FKF, Germany)*

10:30 – 10:45

Coffee break

SESSION 2**PCC-BASED SYSTEM MANUFACTURING: INNOVATION AND SIZING****Chairmen: Dr J. Dailly, Dr. W. Meulenberg**

10:45 – 11:30

KN6: “New architectures and catalysts for future PC applications in energy and chemistry”*Prof. J-M. Serra (ITQ UPV-CSIC, Spain)*

11:30 – 12:00

O11: “Combination of chemical solution deposition of Ba(Zr,Y)O₃ thin films and micromachining as an approach to micro-solid oxide fuel cells”*T. Schneller (IWE12, Germany)*

12:00 – 12:30

O12: “Manufacturing of Metal Supported Protonic Ceramic Electrolyser Cells (MS-PCEC)”*M. Stange (SINTEF, Norway)*

12:30 – 14:00

Lunch

14:00 – 14:30

O13: “Development of support structures for Hydrogen Separation Membranes”*W. Deibert (FZ JÜLICH, Germany)*

14:30 – 15:00

O14: “Materials, Architecture and Prospects for Proton Conducting Ceramic based Metal Supported Cells”*N. Sata (DLR, Germany)*

15:00 – 15:15

Coffee break

SESSION 3:**PCC APPLICATIONS: INVESTIGATIONS IN THE ENERGY MARKET****Chairmen: Prof. O. Joubert, Prof. H. Matsumoto**

15:15 – 16:30

KN7: “Benchmarking potential cost and performance benefits between Protonic Ceramic and Solid Oxide Fuel Cell Systems”*A. Dubois (Colorado School of Mines, US)*

- 16:00 – 16:30** **O15: Single-part Ceramic Fuel Cell (SCFC) prepared by multi-doped Ceria and Ceramic Semiconductor Composite**
A. H-Y. Chang (NTOU, Taiwan)
- 16:30 – 17:00** **O16: “Reliable and High Performing Proton Conducting Ceramic Cell”**
J. Dailly (EIFER, Germany)
- 17:00 – 17:30** **O17: “Combination of Methane Steam Reforming and Ammonia Synthesis in an Electrochemical Membrane Reactor”**
M. Stoukides (CPERI CERTH, Greece)
- 20:00** **GALA DINNER** (Le Café du Port, Bordeaux)

WEDNESDAY, OCTOBER 18TH

SESSION 3

PCC APPLICATIONS: TOWARDS THE ENERGY MARKET (FOLLOW-UP)

Chairmen: Prof. O. Joubert, Prof. H. Matsumoto

- 9:00 – 9:30** **O18: “Intensified conversion of natural gas using proton conducting ceramics”**
H. Malerød-Fjeld (CoorsTek Membrane Sciences AS, Norway)
- 9:30 - 10:00** **O19: “High performance dual phase mixed protonic-electronic conductors for hydrogen permeable membranes”**
G. Taillades (ICG AIME, France)
- 10:00 – 10:30** **O20: “Hydrogen compression with protonic-ceramic membranes”**
S. Ricote (Colorado School of Mines, US)
- 10:30 – 11:00** **O21: “Reversibility of Dual Conduction Fuel Cell with catalysts”**
P. Abellard (Mines Paris Tech, France)
- 11:00 – 11:15** *Coffee Break*
- 11:15 – 12:30** **Highlights & Discussion**
Round-table: Conference highlights and suggestions
Chairmen (women) & Scientific Committee
Next steps & conclusions
Organization Committee
- 12:30 - 14:00** **Lunch**