



F D F C 2004

2nd France – Deutschland Fuel Cell
Conference

Fuel Cells: Materials, Engineering, Systems and Applications

Congress Centre - Belfort (France)
November 29th – December 2nd 2004

jointly organized by:

- French Fuel Cell Association - Club PAC
- French Fuel Cell Research and Innovation Network - PACo
- Deutsche Forschungsgemeinschaft - DFG
- Verein Deutscher Ingenieure - VDI
- Laboratory in Electrical Engineering and Systems – L2ES

Committee

Conference Chairmen

Philippe STEVENS (Electricité de France – Club PAC)
Renaut MOSDALE (PaxiTech – Club PAC)

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Welcome Message

The French Fuel Cell Association, the French Fuel Cell Research and Innovation Network, the Deutsche Forschungsgemeinschaft, the Verein Deutscher Ingenieure and the Laboratory in Electrical Engineering and Systems are pleased to welcome you to the 2nd France - Deutschland Fuel Cell Conference 2004, held in the Atria Novotel of Belfort.

We have proposed a technical program to discuss the latest researches and developments on fuel cell materials, fuel cell stacks, fuel cell systems and fuel cell applications. Some 50 oral presentations will be delivered in 8 sessions. Seventy posters will be presented in open dialogue sessions. Exhibits will be held in the conference hall.

By joining participants from different countries, we hope this conference will contribute to intensify international scientific exchanges between laboratories, fuel cells suppliers, components manufacturers and industrial end-users.

The organizers

Conference schedule

	Monday 29.11	Tuesday 30.11	Wednesday 01.12	Thursday 02.12	
8.00		Registration	Registration	Registration	
9.00		Opening	Oral Session O4	Oral Session O7	
10.00		Oral Session O1			Poster presentation
		Coffee break	Coffee break	Coffee break	
11.00		Oral Session O2	Oral Session O5	Poster Session P3	
12.00		Poster presentation	Poster presentation		
13.00		Lunch	Lunch	Lunch	
14.00		Technical Visits	Poster Session P1	Poster Session P2	Oral Session O8
15.00			Coffee break	Coffee break	
16.00			Oral Session O3	Oral Session O6	Conclusion
17.00	Registration				
18.00			FC Programs		
19.00		Reception City Hall	Banquet		

Program

Monday November 29th

14.00 - Technical Visits (National Fuel Cell Test Laboratory (Belfort) & Stationary PEMFC installation (Girromagny))
Departure : Congress Centre

18.00 - Registration

Tuesday November 30th

8.00 - Registration

9.00 – 9.30 Opening session

9.30 – 10.30 Oral Session O1

Applications: Transportation and Stationary

Chairmen: E.Bergaglio (Ansaldo), J.P.Lisse (PSA)

O1-1 Development Update on Delphi's SOFC System

MUKERJEE S., SHAFFER S. (DELPHI (USA))

O1-2 Fuel Cell Locomotive

MILLER A R. (Fuel Cell propulsion Institute, USA)

O1-3 Solid Oxide Fuel Cells for Future Power Generation

FREY E. (Siemens, Germany)

O1-4 Integrated Central Energy Supply at Zentralklinik Bad Berka: Efficiency Leap for Power, Cold and Heat

RAINER H. (E.ON Energie, Germany)

10.30 – 11.00 Coffee break

11.00 – 12.15 Oral Session O2

Applications: Stationary and Portable

Chairmen: A.Weber (U.Karlsruhe), E.Claude (Axane)

O2-1 Operational Experiences with a 4.6kW PEM Gas Driven Fuel Cell. Heating Appliance for Residential and Small Commercial Use

KRAMER M. (RWE Fuel Cells, Germany)

O2-2 Technical Feedback of Fuel Cell Field Tests

COINCE A. S., RABALAND D. (EIFER, Germany)

O2-3 Stationary Fuel Cells at EnBW - Different Applications and Results of Operation

FREY H., EDEL M., KESSLER A., MUNCH W. (EnBW, Germany)

- O2-4 **Development of Micro Fuel Cell using Microelectronic Process for next Generation of Portable Equipment**
LAURENT J.Y. (CEA/DTEN, France)
- O2-5 **MEA Development at PaxiTech**
MOSDALE R., MOSDALE A. (PaxiTech, France)

12.15 – 12.30 Presentation of Poster session P1
Chairmen: Ph.Stevens (ElfER), J.M.Kauffmann (L2ES)

12.30 – 14.00 Lunch

14.00 – 15.30 Poster Session P1
Applications – Fuel cells market – Systems
Chairmen: Ph.Stevens (ElfER), J.M.Kauffmann (L2ES)

- P1-1 **Fuel Cell based Power-trains in Urban Transport Vehicles**
SCHNEIDER M., JONAS K., KLINGNER M. (Fraunhofer Institute, Germany)
- P1-2 **Fuel Cell Power-train for Scooter Application**
CORBO P., CORCIONE F.E., MIGLIARDINI F., VENERI O. (Istituto Motori, Italy)
- P1-3 **Fuel Cell Technology for Aviation Application within EADS Bus**
GODULA-JOPEK A. (EADS CRC, Germany)
- P1-4 **Hydroxy 3000 : bateau pile à combustible de la 3^{ème} génération**
AFFOLTER J. F. (EIVD, Switzerland)
- P1-5 **Operation Experiences with a 250kW MCFC and Solutions for Industrial and Commercial Applications for Natural Gas and Biogas**
KRUMBECK M., MESCHGBIZ A., HUSTER Ch. (RWE Fuel Cells, Germany)
- P1-6 **Survey and Characterization Methods for MCFC Components**
SABATTINI A., BERGAGLIO E., CAPOBIANCO P., BELAIR S., RINGUEDE A., CASSIR M. (Ansaldo Fuel Cells, Italy, LECA, France)
- P1-7 **Operation of Stationary 5kW Hpower PEMFC**
LOMBARD Ch., MARQUAIRE P. M., LAPICQUE F., LE DOZE S., LE-NOC D. (LSGC, GDF, France)
- P1-8 **Application of the FMECA & Fault Tree Methods for Analysing Generator Protection System Dependability**
KARAKACHE M., NADJI B., OUAHDI I. (RLIEE, Algeria)
- P1-9 **New Technological Solutions for Miniature Fuel Cells**
PICHONAT T., GAUTHIER-MANUEL B. (IEMN, FEMTO-ST, France)
- P1-10 **Fuel Cell Heating Appliances; Activities in Germany**
BELLO B., JUNKER M. (ALPHEA, France)
- P1-11 **Distributed generation: scenarios and strategies leading to fuel cell commercialisation**
EVERS A. A. (FAIR-PR, Germany)
- P1-12 **Technology Roadmap of Fuel Cells for Stationary Applications using Laws of Technical System Evolution**
KUCHARAVY D., GAUTIER L., STEVENS Ph., LELAIT L. (INSA, France, ElfER, Germany)
- P1-13 **Fuel Cells design Criteria and Urban Dilemmas**
HULTEN P., KARLSTROM M. (Dpt Infrastructure/Urban Design, Sweden)
- P1-14 **Experimental 10kW PEM Fuel Cell System for Electricity, Heat and Water Supply in Aircraft**
EBNER S., HAGER J., JÖRISSEN L., KABZA A., KACZEROWSKI J., KNAUPP H., LOCHER H., NEUGEBAUER M., RUPP G., SCHOLTA J., SCHLUMBERGER G. (ZSW, Germany)
- P1-15 **Experimental Validation of Control Algorithms for Fuel Cells Powered Applications**
VALERO I., BACHA S., RULLIERE E. (LEG, France)
- P1-16 **Using a Demonstrator fed by a Proton Exchange Membrane Fuel Cell to Study Hybrid Energy Source Performances**
SZADKOWSKI B., RULLIERE E., BARBAROUX J. (LEG, France)

- P1-17 **Study of a PEFC Power Generator Modular Architecture based on a Multi-Stack Association**
GARNIER J., DE BERNARDINIS A., PERA M. C., KAUFFMANN J.M., COQUERY G. (L2ES, LTN/INRETS, France)
- P1-18 **Cost Saving Humidity Measurement in PEM Fuel Cells**
HEIDECCK G., PURMANN M., STYCZYNSKI Z. (IESY/LENA, Germany)
- P1-19 **Hydrogen Re-circulation by Means of an Ejector (Jet Pump)**
TSUKADA A., BUCHI F., DIETRICH Ph., SCHERER G. G. (PSI, Switzerland)
- P1-20 **Dynamic PEFC System Modeling for Control System Development**
GRASSER F., RUFER A. (STHSE-LEI, Switzerland)
- P1-21 **Concept of a High Temperature DMFC Test Facility**
POFAHL St., FREY T., GOGEL V., FRIEDRICH K.A., JÖRISSEN L. (ZSW, Germany)
- P1-22 **Behaviour of a Proton Exchange Membrane Fuel Cell (PEMFC) supplying a low Voltage Static Converter**
SADLI I., THOUNTHONG P., MARTIN J.-P., RAEL S., DAVAT B. (GREEN, France)
- P1-23 **Studies od a 2-way Stack Temperature Control**
KUPPERS L., SCHLUMBERGER G. (ZSW, Germany)
- P1-24 **A simple Model of Gas Heating System and Heat Recovery for SOFC**
LOTTIN O., DESEURE J., VOARINO C., FEIDT M. (LEMETA, France)
- P1-25 **Optimization of Solid Oxide Fuel Cell and Gas Turbine combined Hybrid Systems**
NEHTER P. (Fuel cell Laboratory, Germany)
- P1-26 **Kerosene and Diesel Fuel Processors for FC APU Applications**
AICHER Th., SIEGEL C., LENZ B., FEDERICI F., PARODI L., CAPRILE L. (Fraunhofer ISE, Germany, Ansaldo Fuel Cells, Italy)
- P1-27 **Hydrogen Production from Sodium Borohydride**
RANGEL C., SILVA R.A., PINTO A.M.F.R., FALCAO D.S., MARTINS L.M., NETO R., ELIAS G., CAMPOS RODRIGUES J. INETI, FEUP, SRE, Portugal)
- P1-28 **Removal of CO from Methanol Reformate by Micro-reactor Technology**
ROHLAND B., FOKKENS E., KOLB G. (HIAT, IMM, Germany)
- P1-29 **Hydrocarbons to Hydrogen for Fuel Cells. The Key Steps**
GATEAU P. (CEO of SYNGAS, France)
- P1-30 **Photohydrogen Production by Rhodobacter Capsulatus and its Coupling ti Fuel Cells**
SANCHEZ B., MONTARU M., BULTEL Y., MAGNIN J.P., ROUX C., FOULETIER J. WILLISON J.C. (LEPMI, DRDC/BBSI /CEA, France)

15.30 – 16.00 Coffee break

16.00 – 18.00 Oral Session O3

Systems and applications

Chairmen: L.Jörissen (ZSW), R.Mosdale (Paxitech)

- O3-1 **Comparison of Energy Management Controls for Fuel Cells Applications**
VALERO I., RULLIERE E., BACHA S. (LEG, France)
- O3-2 **Model based Studies of Fuel Cell System for Electrical Rail Transport**
LACHAIZE J., CAUX S., FADEL M., SCHOTT P., NICOD L. (LEEI, LHPAC/CEA, ALSTOM Transport, France)
- O3-3 **Particle Swarm Optimization Method applied for Energy Optimization of an Embedded PEM Fuel Cell Generator**
TEKIN M., HISSEL D., PERA M.C., KAUFFMANN J.M. (L2ES, France)
- O3-4 **Study of a small Heat and Power PEM Fuel Cell System Generation**
HUBERT C.E., ACHARD P., METKEMEIJER R. (CENERG, France)
- O3-5 **Concept of a High Temperature DMFC Test Facility**
POFAHL St., FREY T., GOGEL V., FRIEDRICH K.A., JÖRISSEN L. (ZSW, Germany)
- O3-6 **Conversion of Diesel Oil, Aviation Fuels and Bio-oils into a Reformate Gas SOFC Feeding**
CZERNICHOWSKI A., CZERNICHOWSKI P., WESOLOWSKA K. (ECP, HC Synergy, France, Spring, USA)

- O3-7 **Influence of Cellular Structure in catalytic reactors for H₂ Production: Application to Improvement of Methanol Steam Reformer by the Addition of a Copper Foam**
CATILLON S., LOUIS C., TOPIN F., VICENTE J., ROUGET R. (LRS, IUSTI, SCPS, France)
- O3-8 **Safety Aspects of Fuel Cell Systems**
LINSSEN J., WALBECK M. (Juelich, Germany)

19.00 – Reception at the City Hall Belfort

Wednesday December 1st

8.00 - Registration

8.30 – 10H30 Oral Session O4

Fuel cell materials (low temperature)

Chairmen: E.Gülzow (DLR), J.F.Fauvarque (CNAM)

- O4-1 **Alternative Catalysts and Carbon Support Materials for PEMFC**
WIKANDER K., PALMQVIST A., HOLMBERG K., EKSTROM H., LUNDBLAD A., LINDBERGH G. (Dpt Materials and Surface Chemistry, Dpt Applied Chemistry, Sweden)
- O4-2 **Effect of Gas Dilution on PEM Fuel Cell Performance and Impedance Response**
BOILLOT M., BONNET C., JATROUDAKIS N., CARRE P., DIDIERJEAN S., LAPICQUE F. (LSGC, LEMTA, France)
- O4-3 **Bi₂Pt₃Ir₂O₇ Pyrochlores as Methanol Tolerant Electrocatalysts for Oxygen Reduction**
LEMPOLA N., STEIGER B., SCHERER G. G., WOKAUN A. (PSI, Switzerland)
- O4-4 **Characterization of PEMFC Cs Gas Diffusion Layers Properties**
ESCRIBANO S., BLACHOT J.F., ETHEVE J., MOSDALE R. (DRT/LITEN/CEA, PaxiTech, France)
- O4-5 **Improved Catalysts for the Cathodic Oxygen Reduction Reaction in Direct Methanol Fuel Cells**
RACZ A., LEVERATTO D., SAVINOVA E., SCHOLZ M., CREMERS C., STIMMING U. (TU München, ZAE Bayern, Germany)
- O4-6 **Modelistic Interpretation of Mass Transfer within the Gas Backing Layer of PEMFC**
BULTEL Y., CAVALAGLIO S., JAOUEN F., OZIL P., LINDBERGH G. (LEPMI, France, KTH, Sweden)
- O4-7 **Three-phase Boundaries in Membrane-Electrode Assemblies (MEA)**
MARTZ N., SCHEIBA F., ROTH C., FUESS H. (IMS, Germany)
- O4-8 **Development of Electrocatalysts for Solid Alkaline Fuel Cell**
DEMARCONNAY L., COUTANCEAU Ch., LAMY C., LEGER J.M. (LACCO, France)

10.30 – 11.00 Coffee break

11.00 – 12.15 Oral Session O5

Fuel cell materials (high temperature)

Chairmen: J.C.Grenier (ICMCB), A.Mc Evoy (EPFL)

- O5-1 **Sintering of Microwave Nanopowders of ITSOFC Applications**
COMBEMALE L., CABOCHE G., STUERGA D., GROSJEAN A., THOREL A. (LRRS, Mines de Paris, France)
- O5-2 **Electrochemical Characterization of Ni-doped Lanthanum Silicates Cermets deposited by Spin Coating**
BRISSE A., THOMAS S., ESCUDIE K., SAUVET A.L., BARTHET Ch. (CEA, France)
- O5-3 **Electrochemical Behaviour of Porous Ln_{2-x}NiO_{4+δ} as SOFC Cathodes**
GRENIER J.C., LALANNE C., MAUVY F., BASSAT J.M., STEVENS Ph. (ICMCB, France, EIfER, Germany)

- O5-4 **Growth Rates and Electrical Conductivity of Solid Scales on Ferrite Steels proposed as Interconnect Materials for SOFC**
HUCZKOWSKI P., CHRISTIANSEN N., SHEMET V., SINGHEISER L., QUADAKKERS W.J. (Haldor Topsoe, Denmark, Juelich, Germany)
- O5-5 **SOFC Application Oriented Studies on $Ba_2In_{2(1-x)}Ti_2O_{5+x}\square_{1-x}$ Anionic Conductors**
DELAHAYE T., JOUBERT O., PIFFARD Y., CALDES M.-T., STEVENS Ph., BROHAN L. (IMN, France, EIFER, Germany)

12.15 – 12.30 Presentation of Poster session P2

Chairmen: F.Lefèbvre-Joud (CEA), M.Cassir (LECA)

12.30 – 14.00 Lunch

14.00 – 15.30 Poster Session P2

Fuel cell materials

Chairmen: F.Lefèbvre-Joud (CEA), M.Cassir (LECA)

- P2-1 **Computational Approach of Transport Phenomena in PEMFC: a Transient Model of Heat, Mass and Charge Transfer as well as Electrochemistry**
TOPIN F., DAURELLE J.V., OCCELLI R. (IUSTI, France)
- P2-2 **Fuel Cell Material Modelling and Numerical Simulation of Electrical Properties**
MANDIN Ph., BROTO A., RINGUEDE A., CASSIR M. (LECA, France)
- P2-3 **Optimization of Anode Microstructure in a SOFC Core obtained by Aqueous Tape-coating**
GROSJEAN A., SANSEAU O., JEULIN D., THOREL A. (Mines de Paris, France)
- P2-4 **Performance of a LSFC Cathodes in Cell and Stack Tests**
TIETZ F., HAANAPPEL V.A.C., MAI A., MERTENS J., VINKE I.C., STOVER D. (Juelich, Germany)
- P2-5 **Electrochemical Characterization of $La_{0.05}Ca_{0.95}Cr_{0.05}Ti_{0.95}O_{3-\delta}$ / 8YSZ Composite for SOFC Anodes**
AHLBORN K., GUTH U., TU H., APFEL H., STIMMING U. (Kurt-Schwabe Institute, TU München, Germany)
- P2-6 **Protective coating for MCFC cathode: Low Temperature Potentiostatic Deposition of CoOOH on Nickel in Aqueous Media containing Glycine**
MANSOUR C., PAUPORTE T., RINGUEDE A., ALBIN V., CASSIR M. (LECA, France)
- P2-7 **Elaboration of a Planar SOFC working under Methane and Including a Conductive (La,Sr)CrO₃ Anode**
GAUTHIER G., EL MOUDNI M., MANIN M., HUET S., CHABROL C., GIRAUD S., MOREL B., LAURENCIN J. (CEA, France)
- P2-8 **Impact of Electrolyte / Electrode Materials Interfaces in SOFC Ageing**
PETOT-ERVAS G., PETOT C., RAULOT J.M., BALDINOZZI G. (SPMS, France)
- P2-9 **Protonic Electroceramics for Fuel Cells**
BOEHM E., McEVOY A. J. (LPI, Switzerland)
- P2-10 **A SIMS Study on Reaction Pathways of Oxygen in Structured $(La_{0.8}Sr_{0.2})_{0.92}MnO_{3-\delta}$ SOFC Cathodes on YSZ under Cathodic Polarization Conditions**
ARGIRURIS Ch., FLEIG J., JOMARD F., KILO M., BORCHARDT G., HABERMEIER H.-U., MAIER J. (TU Clausthal, Max-Planck Institute, Germany, LPSC, France)
- P2-11 **Identifying Corrosion Mechanisms in Solid Oxide Fuel Cells**
GROSS S., HAANAPPEL V., KOPPITZ Th., MENZLER N., SHEMET V., STEINBERGER-WILCKENS R., ZAHID M. (Juelich, Germany)
- P2-12 **Reactivity and Diffusion between $La_{0.8}Sr_{0.2}MnO_3$ and ZrO_2 at Interfaces in SOFC Cores by TEM Analyses on FIB Samples**
GROSJEAN A., SANSEAU O., RADMILOVIC V., THOREL A. (Mines de Paris, RHODIA, France, University of California, USA)
- P2-13 **Ageing, Lifetime and Degradation mechanisms of Polymer Electrolyte Fuel Cells**
LEFEBVRE-JOUD F., GEBEL G., FRIEDRICH K.A. (CEA, France, ZSW, Germany)
- P2-14 **Impedance Response of a CO Poisoned Fuel Cell Anode**
HAJBLOURI F., ANDREAUS B., SCHERER G. G., WOKAUN A. (PSI, Switzerland)

- P2-15 **Characterization of Co-sputtered Pt/C films**
HAJBOLOURI F., ABOLHASSANI-DADRAS S., SCHNYDER B., VAD T., HORISBERGER M., SCHERER G. G., WOKAUN A. (PSI, Switzerland, Juelich, Germany)
- P2-16 **Synthesis of Catalyst Layer by CVD and PECVD for Fuel Cell Application**
LUC F., MAILLEY S., BEDEL L., CAPRON Ph. (LITEN/CEA, France)
- P2-17 **Influence of the Morphology on the Platinum Electrode Surface Activity**
REINER A., STEIGER B., SCHERER G. G., WOKAUN A. (PSI, Switzerland)
- P2-18 **Investigation of the Degradation of the Hydrophobic Components in Low Temperature Fuel Cell Electrodes**
SCHULZE M., GULZOW E., REISSNER R., CHRISTENN C. (DLR, Germany)
- P2-19 **Investigation of Fuel Cell Processes in Low Temperature Fuel Cells**
SCHULZE M., GULZOW E. (DLR, Germany)
- P2-20 **Electrochemical Impedance Spectroscopy (EIS) and X-Ray Absorption Spectroscopy (EXAFS) as In-situ Methods to Study the PEMFC Anode**
MAZUREK M., MARTZ N., ROTH C., BUHRMESTER Th., FUESS H. (TU Darmstadt, Germany)
- P2-21 **Optimization of PEMFC Cs Gas Diffusion Layers Production**
MOSDALE A., MOSDALE R., ESCRIBANO S., SOLAN S. (Paxitech, LITEN/CEA, France)

15.30 – 16.00 Coffee break

16.00 – 18.00 Oral Session O6

Fuel cell electrochemistry

Chairmen: J.Rozière (LAMMI), G.Scherer (PSI)

- O6-1 **Characterization of Perfluorinated membrane Durability for Fuel Cell Applications**
CAPRON Ph., TIQUET P., ROUGEAUX I., BLACHOT J.F., ESCRIBANO S. (LITEN/CEA, France)
- O6-2 **Study of a Proton Dynamics in Ironmer Membranes by NMR relaxometry**
PERRIN J.Ch., LYONNARD S., LEVITZ P., GEBEL G., GUILLERMO A. (SPRAM, LPMC, France)
- O6-3 **Functional Fluoropolymers for Fuel Cell Membranes**
AMEDURI B. (LMC, France)
- O6-4 **Fuel Cell Membranes based on Sulfonated Polysulfones**
MERCIER R., SALOMON J., SANCHEZ J.Y., MARECHAL M., GUINET J. (LMOPS, LEPMI, France)
- O6-5 **Processing of Oxyapatite Materials prepared by Sol-Gel route. Applications as Electrolytes for Solid Oxide Fuel Cells**
CELERIER S., LABERTY-ROBERT C., ANSART F., STEVENS Ph. (CIRIMAT, France, EIfER, Germany)
- O6-6 **About the Utilisation of Sulfonated Polysulfone as Membrane in Fuel Cells**
BAUTISTA M., MARECHAL M., IOJOIU C., BULTEL Y., GUINET J., SANCHEZ J.Y. (LEPMI, ERAS, France)
- O6-7 **Reactive Sputter Deposition of LaMoX Electrolyte Coatings for Intermediate Temperature Solid Oxide Fuel Cells (IT-SOFC)**
BRIOIS P., BILLARD A. (LSGS, France)
- O6-8 **Materials Developments for Medium Temperature Proton Exchange Membrane Fuel Cells**
BAUER B., HOLDIK H., ROZIERE J., JONES D.J., PASSALACQUA E., GAUTIER L., CASCIOLA M., ALBERTI G., ORNELAS R., VOGT H. (FuMA-Tech, EIfER, Germany, LAMMI, France, CNR-ITAE, LCI, Nuvera Fuel Cells, Italy, SEFAR, Switzerland)

18.00 – 18.30 EC and French Fuel Cell Programs

Chairman: D.Clément (ADEME)

FCTESTNET

TSOTRIDIS G. (JRC, Netherlands)

SOFCNET

F.LEFEBVRE-JOUD (CEA-France)

18.45 – Departure by bus to Museum Peugeot in Sochaux Banquet

8.00 - Registration

8.30- 10.15 Oral Session O7

Fuel cell electrochemistry

Chairmen: U.Stimming (TU München), J.M.Léger (LACCO)

- O7-1 **Elaboration of Intermediate Temperature SOFC Cores by Sintering of Co-tape-cast Elements with an Aqueous Solvent**
GROSJEAN A., SANSEAU O., THOREL A. (Mines de Paris, RHODIA, France)
- O7-2 **Thermo-mechanical model of Solid Oxide Fuel Cell fed with Methane**
LAURENCIN J., MOREL B., BULTEL Y., LEFEBVRE-JOUD F. (LHPAC/CEA, LEPMI, France)
- O7-3 **Identification of a Nonlinear Model for the Electrical Behavior of a Solid Oxide Fuel Cell**
HASCHKA M., EICKERT Th., KREBS V., SCHAFFER S., IVERS-TIFFEE E. (TH Karlsruhe, Germany)
- O7-4 **Fuel Cell and Staci Modelling and Numerical Simulation of Performances**
MANDIN Ph., TRAN-DAC S., CASSIR M. (LECA, France)
- O7-5 **Synthesis, Structure and Transport Properties of Ln_4GeO_8 and $Ln_4Ga_2O_9$ related Compunds**
JOUBERT O., LACHGAR A., CHESNAUD A., CALDES M.T., PIFFARD Y., BROHAN L. (IMN, France)
- O7-6 **Polyimide/ SiO_2 - B_2O_3 - P_2O_5 Nanocomposite Membranes an an Electrolyte for a Fuel Cell working from 100°C to 200°C**
MORIN A., MOSDALE R., GAUTIER L., JONES D.J., ROZIERE J. (LITEN/CEA, Paxitech, LAMMI, France, ElFER, Germany)
- O7-7 **Thermal Management of a PEMFC Stack by nodal modelling**
DUMERCY L., GLISES R., LOUAHLIA-GUALOUS H., KAUFFMANN J.M. (L2ES, FEMTO-ST, France)

10.15 – 10.30 Presentation of Poster session P3

Chairmen: F.Barbier (PACo), K.D.Kreuer (Stuttgart)

10.30 – 11.00 Coffee break

11.00 – 12.30 Poster Session P3

Fuel cell materials and fuel cell stacks

Chairmen: F.Barbier (PACo), K.D.Kreuer (Stuttgart)

- P3-1 **Degradation of PEMFC: Sulfonated polyimides**
MEYER G., PERROT C., GONON L., GEBEL G., ROUX Ch., GARDETTE J.L. (SPRAM, LSEM/CEA, France)
- P3-2 **Sorption of Water in Naphtalenic Sulfonated Polyimides. Characterization of two Sorption Modes. Influence of the Temperature and the Ionic Form**
LANGEVIN D., DETALLANTE V., CHAPPEY C., METAYER M. (LPBM, France)
- P3-3 **Synthesis and Characterization of new Sulfonated Peeks for Fuel Cell Membranes**
MARESTIN K., BALICHARD B., MERCIER R., DIAT O., GEBEL G. (LMOPS, SPRAM, France)
- P3-4 **A Novel Concept of Membrane for PEM Fuel Cell using Sol-Gel Hybrid Chemistry**
PEREIRA F., VALLE K., BELLEVILLE Ph., SANCHEZ C. (CEA, LCMC, France)
- P3-5 **Proton Conducting Sulfon Functionalized Polymer Electrolytes for Fuel Cells based on Inorganic-organic Matrices**
JACOB S., POPALL M., POINSIGNON Ch. (LEPMI, France, Fraunhofer Institute, Germany)
- P3-6 **On New Lanthanum Molybdate Fast-Oxide Ion Conductors**
LACORRE Ph., CORBEL G., SELMI A., GEORGES S., GOUTENOIRE F., LALIGANT Y., BOHNKE O. (LOF,

- France)
- P3-7 **Radiation Grafted Proton Exchange Membranes based on ETFC-G-Polystyrene for Low Temperature Fuel Cells**
GUBLER L., PROST N., GURSEL S. A., KRAMER M., SCHERER G. G. (PSI, Switzerland)
- P3-8 **Electrical Properties of Thin Bilayered YSZ/CGO DOFC Electrolyte Elaborated by Sputtering**
BRAHIM C., RINGUEDE A., GOURBA E., CASSIR M., BILLARD A., BRIOIS P. (LECA, LSGS, France)
- P3-9 **Preparation by Solar Routes and Characterization $Zr_{1-x}Y_xO_{2-\delta}$, $Ce_{1-x}Gd_xO_{2-\delta}$, δ -($Bi_{1-x}Y_x$) $_2O_{3-\delta}$ Nanophases**
MONTY C., SIBIEUDE F. (PROMES, France)
- P3-10 **Microstructural and Electrical Characterization of a High Temperature Protonic Conductor Complex Perovskite**
BERGER M.H., SAYIR A. (Mines de Paris, France, NASA, USA)
- P3-11 **Experimental Study of a 5kW PEM Fuel Cell for Transportation Applications**
CANDUSSO D., HAREL F., FRANCOIS X., DE BERNARDINIS A., HISSEL D., PERA M.C. (LTN-LTE/INRETS, L2ES, France)
- P3-12 **Study of the mechanical interaction between Gas Diffusion Layers and Bipolar Plates in Low Temperature Fuel Cells**
ESCRIBANO S., GULZOW E., KNORI T., SCHULZE M. (LITEN/CEA, France, DLR, Germany)
- P3-13 **Parametric study of a PEM Fuel Cell Stack for a Telemetry Application**
NETO R., CAMPOS RODRIGUES J., SILVA R.A., RANGEL C. (SRE, INETI, Portugal)
- P3-14 **Experimental and Numerical Predictions of Pressure Drops for Gas Flow through Isotropic Metallic Foams**
GERBAUX O., CROSNIER S. (LTGD/CEA, France)
- P3-15 **First Experimental Results of PEMFC Durability under Different Power Solicitation Constraints**
HAREL F., FRANCOIS X., CANDUSSO D., HISSEL D., PERA M.C. (LTN-LTE/INRETS, L2ES, France)
- P3-16 **Embedded Fuel Cell Generator Efficient Modeling through Dynamical Recurrent Neural Network**
JEMEI S., HISSEL D., PERA M.C., KAUFFMANN J.M. (L2ES, France)
- P3-17 **A Chaotic Micro Heat-Exchanger for PEMFC Cooling Applications**
LASBET Y., AUVITY B., CASTELAIN C., PEERHOSSAINI H. (LT, France)
- P3-18 **Fuel Cell Operation Characterization using Simulation**
SCHOTT P., BAURENS P. (LITEN/CEA, France)
- P3-19 **Study of the Gas Pressures and Flow Rates Influences on the Behaviour of a 500W PEM Fuel Cell thanks to the Experimental Design Methodology**
WAHDAME B., CANDUSSO D., KAUFFMANN J.M. (L2ES, LTN/INRETS, France)
- P3-20 **Bipolar Concept for Alkaline Fuel Cells**
GULZOW E., SCHULZE M., GERKE U. (DLR, Germany)
- P3-21 **Advances in the Investigation of Polymer Electrolyte Fuel Cells by Electrochemical Impedance Spectroscopy**
KUHN H., ANDREAUS B., WOKAUN A., SCHERER G. G. (PSI, Switzerland)
- P3-22 **Opportunity of Metallic Interconnectors for ITSOFC: Reactivity and Electrical Property**
CABOURO G., CABOCHE G., CHEVALIER S., PICCARDO P. (LRRS, France, University of Genova, Italy)

12.30 – 14.00 Lunch

14.00 – 16.00 Oral Session O8

Fuel cell stacks

Chairmen: E.Siebert (LEPMI), C.Rangel (INETI)

- O8-1 **A Diagnostic Tool for Static PEMFC Overvoltage Models**
NIEMEYER J., KREBS V. (TH Karlsruhe, Germany)

- O8-2 **Description of Heat, Mass and Charge coupling Transfers inside PEMFC single Cell**
RAMOUSSE J., DESEURE J., DIDIERJEAN S., LOTTIN O., MAILLET D. (LEMETA, France)
- O8-3 **Development of a 50W Direct Methanol Fuel Cell Stack for Low Air Flow and Low Temperature Operation**
CREMERS C., SCHOLZ M., KNECHTEL W., RITTMAYR J., GRAFWALLNER F., PELLER H., STIMMING U. (ZAE Bayern, TU München, EnergieTechnologie, Germany)
- O8-4 **Bond Graph Model of a PEM Fuel Cell**
SAISSET R., FONTES G., TURPIN Ch., ASTIER S. (LEEI, France)
- O8-5 **Early Detection of Degradation and Malfunctions in Technical Fuel Cells Systems**
GULZOW E., SCHONBAUER S. (DLR, Germany)
- O8-6 **Nonlinear State Space Modelling of a PEMFC**
HERNANDEZ A., HISSEL D., OUTBIB R. (L2ES, France)
- O8-7 **Corrosion Behaviour of Stainless Alloys Bipolar Plates in PEMFC Working Conditions**
AGNEAUX A., PLOUZENNEC M. H., RAQUET O. (SCCME/CEA, France)
- O8-8 **Direct Methanol Fuel Cell Stack Operation at 120°C: the Optimet Project**
JONES D.J., ROZIERE J., MARRONY M., LAMY C., COUTANCEAU Ch., LEGER J.M., GLIPA X., GETTON F., DUPONT M. (LAMMI, LACCO, PSA, THALES, France)

16.00 – 16.30 Conclusions and closing session
R.Mosdale, Ph.Stevens

Exhibition

A number of exhibition stands will be held in the conference hall for all participants to view going to and from the lecture theatre and during the coffee breaks.

Journals

A selection of best papers will be proposed for publication in journals, i.e. special issues.

- International Journal of Hydrogen Energy
- Fuel Cells: From fundamentals to Systems
- Journal of Power Sources

Social events

Included in the registration fees are two evening events. A reception in the 18th century City Hall of Belfort will be hosted on Tuesday evening.

A banquet will be organised on Wednesday evening inside the Peugeot Museum. The museum retraces the history of Peugeot, from the first steam engine driven cars of 1889 to the latest concept cars, including the fuel cell car. These cars are exhibited, but Peugeot also has a history in scooters, motorcycles and even coffee grinders, all of which can be seen.

Conference fees

The conference fees include proceedings, coffee breaks, lunches and the Banquet

Students (please enclose a photocopy of a student card)	200 €
Conference	
Early registration (before 30 th September 2004)	290 €
Late registration	320 €

Exhibition fees

See the registration form or contact the secretary of the conference

Secretary of the conference

L2ES – UTBM, Bât F, Rue Thierry Mieg, 90010 Belfort Cedex
Phone: 33(0)384583600, **Fax:** 33(0)384583636

Organisation - Contacts

Email : fdfc@utbm.fr
D.Hissel : 33(0)3 84 58 36 21
J.M.Kauffmann : 33(0)3 84 58 36 01

Registration

Registration form is available on website <http://www.clubpac.net> or <http://l2es.utbm.fr>.

Address of the Conference

ATRIA NOVOTEL

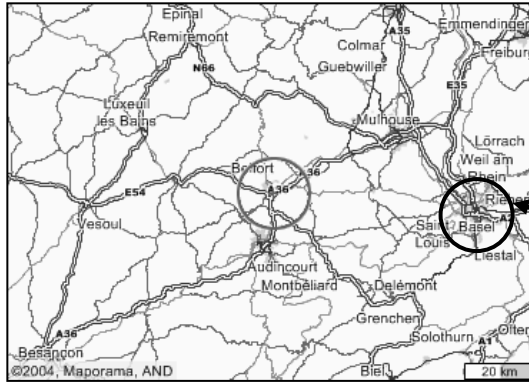
Avenue de l'Espérance, F-90000 Belfort
Tél: +33 (0)3.84.58.85.00, Fax: +33 (0)3.84.58.85.01 e-mail : H1742@accor-hotels.com

Hotels

Contact directly the hotels. A list is on website <http://www.clubpac.net> or <http://l2es.utbm.fr>. Other information concerning Belfort can be found on http://www.interfrance.com/fr/fc/fc_belfort.html

How to get to Belfort

Belfort is located close to the France/Germany/Switzerland borders, 40 km south-west from Mulhouse, and can be reached by plane (Strasbourg, Basel-Mulhouse), by train (from Paris, Mulhouse, Basel, Strasbourg and Lyon), and by car.

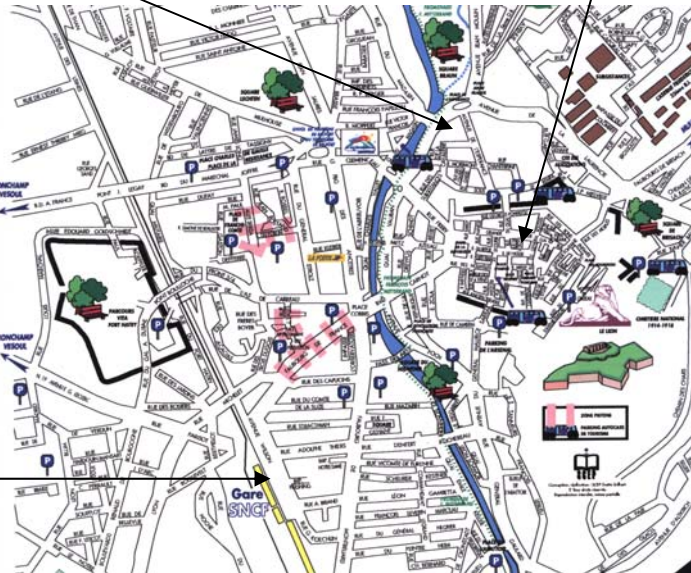


Basel-Mulhouse Airport
(exit French side – shuttle to Mulhouse railway station)

ATRIA
Congress Centre

City Hall

Railway
Station

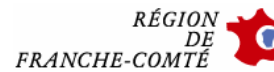




View on test benches in the National Fuel Cell Test Centre (Belfort)

Acknowledgement for Sponsors

The 2nd France - Deutschland Fuel Cell Conference Organising Committee is very grateful for the support provided by the following sponsors.



<input type="checkbox"/> Student registration Includes admission to technical sessions, symposium proceedings, lunches, coffee breaks, and gala dinner. A copy of a valid student card <u>must</u> be provided.	200 €	200 €	
<input type="checkbox"/> Exhibitor.	Full package Pre-booked stands only. Includes one full registration to the conference as well as one advertising page in the proceedings. Please contact the organizers for the conditions	1500 €	1500 €
	Poster package Two pre-booked panels. Includes one full registration to the conference as well as one advertising page in the proceedings. Please contact the organizers for the conditions	600 €	600 €
TOTAL (€)			

All authors including students must register and pay the appropriate fees, otherwise, the submitted paper will not be included in the conference proceedings.

Please attach to this form the payment form on the basis of your preference.

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2nd France Deutschland Fuel Cell Conference
Belfort, France
November 29th – December 2nd, 2004

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- For cancellations received after October, 15th, 2004, the registration fees are non-refundable.
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