



2nd European Hydrogen Energy Conference - EHEC 2005
2nd Professional Meeting on Hydrogen and Fuel Cells
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Time	Tuesday 22 Nov.	Wednesday 23 Nov.	Thursday 24 Nov.	Friday 25 Nov.	
8:30 – 10:00	Registration and conference opening	Plenary Session 2: Hydrogen production	Plenary Session 3: Storage and safety	Plenary Session 4: Fuel cells	
10:00 – 10:30	Coffee - break				
10:30 – 12:40	Plenary Session 1: Situation at EU, USA and Japan, and perspectives	Parallel session 2: a Production 2 b Transports c Safety d Professional Meeting	Parallel session 5: a Storage 2 b Fuel cells R&D 2 c H2 transp. & dist. d Professional Meeting	Plenary Session 5: Industrial projection Closing act	
12:40 – 14:10	Lunch				
14:10 – 16:20	Parallel session 1: a Production 1 b Stationary Aplic. 1 c Economy d Professional Meeting	Parallel session 3: a Storage 1 b Fuel cells R&D 1 c Policies & soc.accep. d Professional Meeting	Parallel session 6: a Production 4 b Stationary Aplic. 2 c Standards & envir. d Professional Meeting	Technical visits: 1. Madrid H2 filling station. 2. Barcelona H2 filling station 3. Zaragoza Labs. and Wind Museum.	
16:20 – 16:50	Coffee - break				
16:50 – 19:00	Commercial exhibition and Poster session 1: a Hydrogen prod b Systems and applic. NaturalHy workshop*	Parallel session 4: a Production 3 b Service stations c Simulations d Professional Meeting	Commercial exhibition and Poster session 2: a Storage, service stations b Fuel Cell R&D c Other topics		

* **NaturalHy Workshop.** Workshop of NaturalHy (European Integrated Project), performed by the NaturalHy consortium and open to all the participants of the EHEC 2005.

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PLENARY SESSIONS Mozart Hall

Plenary Session 1 (Tuesday 22-NOV 10:30 – 12:40):

Chair: Antonio G. García-Conde (AeH, Spain), Co-chair: Lars Sjunesson (EHA, Europe)

- **Situation at EU: Pablo Fernández-Ruiz** (EC DG-ENERGY, Belgium)
- **Situation at USA: Graham Pugh** (DoE, USA)
- **Situation at Japan: Yoshitaka Tamou** (NEDO, Japan)
- **European Hydrogen and Fuel Cell Technology Platform (HFP) vision, and market perspectives in Europe: Elisabet Fjermestad-Hagen** (HFP, Norway)

Plenary Session 2 (Wednesday 23-NOV 8:30 – 10:00):

Chair: Ian Stuart Williamson (BOC, United Kingdom)

- **Hydrogen production from fossil fuels: Julian Ross** (Univ. Limerick, Ireland)
- **Hydrogen production from renewable sources: Manuel Romero** (CIEMAT, Spain)

Plenary Session 3 (Thursday 24-NOV 8:30 – 10:00):

Chair: Ulrich Schmidtchen (DWV, Germany).

- **Storage: Gary Sandrock** (Sandia N.L., USA)
- **Safety: Frederic Barth** (Air Liquide, France)

Plenary Session 4 (Friday 25-NOV 8:30 – 10:00):

Chair: Georges Fratacci (AFH2, France)

- **PEMFC, transport applications: Bernd Müller** (GM, Germany)
- **SOFC, stationary applications: Alan Atkinson** (Imperial College, UK)

Plenary Session 5 (Friday 25-NOV 10:30 – 12:00):

Chair: Javier Navarro Espada (Gobierno de Aragón, Spain)

- **Standards: Randy Dey** (ISO/TC 197, Canada), and **Reinhold Wurster** (LBST, DE)
- **The European Technology Platforms and JTIs in the context of the 7th Framework Programme: Angel Landabaso** (EC DG-RTD, Belgium)

Closing act (Friday 25-NOV 12:00 – 12:40):

Carl Peter Forster (GM, Germany), **Lars Sjunesson** (EHA, Sweden), **Antonio González** (AeH, Spain)



TECHNICAL VISITS:
Friday 25 NOV

1. Madrid hydrogen filling station (EMT)

- 13:30 - 17:00 Travel to Madrid
17:00 - 18:30 Visit to the facilities of *Empresa Municipal de Transportes de Madrid* (EMT), with refuelling station and hydrogen production plant by natural gas steam reformed (AIR LIQUIDE, REPSOL YPF and GAS NATURAL SDG)
18:30 - 19:00 Travel to Madrid centre
19:00 - 19:45 Continuation to Madrid Barajas International Airport
Fee for this technical visit: 75,40 € (VAT and taxes included)
This visit is limited to 46 persons.

2. Barcelona hydrogen filling station (TMB)

- 13:30 - 16:30 Travel to Barcelona
16:30 - 18:30 Visit to the facilities of *Transports Metropolitans de Barcelona* (TMB), with refuelling station and hydrogen production plant by electrolysis (BP)
18:30 - 19:00 Travel to Barcelona centre
19:00 - 19:45 Continuation to Barcelona el Prat International Airport
Fee for this technical visit: 75,40 € (VAT and taxes included)
This visit is limited to 46 persons.

3. Zaragoza: Laboratories of the Institute of Carbochemistry (ICB-CSIC) and Wind Museum

- 13:30 - 14:00 Travel to the Institute of Carbochemistry (ICB-CSIC) at Zaragoza
14:00 - 15:30 Visit to the laboratories of the Institute of Carbochemistry (ICB-CSIC) at Zaragoza
15:30 - 16:00 Travel to La Muela
16:00 - 17:30 Visit to the Wind Museum
17:30 - 18:00 Travel to Zaragoza centre
Fee for this technical visit: 40,60 € (VAT and taxes included).
This visit is limited to 46 persons.

General conditions:

- Visits are prepared to full registered delegates. It is not possible to make the visits without participating in the EHEC 2005.
- As the number of posts is limited, they will be assigned by rigorous registration order.
- Technical visits should be booked by e-mail to aperdiguero@pacifico-meetings.com, indicating which visit and the way of payment: credit card (preferable) or bank transfer.
- It is absolutely necessary that the visit registration is paid in advance.
- Timetables are tentative.
- The fee will cover exclusively the transportation. EMT, TMB and ICB are acknowledged for their kind collaboration with EHEC 2005.



PROFESSIONAL MEETING: Luis Galve Hall

Session 1: Tuesday 22nd. 14:10 - 16:20. Chair: Lars Sjunesson (EHA, Europe)

European National Hydrogen Associations

- The European Hydrogen Association, Lars Sjunesson
- French Hydrogen Association, Thierry Alleau
- Norwegian Hydrogen Association, Helle Brit Mostad
- Dutch Hydrogen Association, E. A. M. De Nie
- Development of the homologation of H2 Fuel Cell Vehicle, Pablo Laguna
- Development of European regulations for fuelling stations, Marieke Reijalt

Session 2: Wednesday 23th. 10:30 - 12:40. Chair: Domingo Guinea (IAI-CSIC, Spain)

Fuel cells, hydrogen generators, auxiliaries and components manufacturers.

- AJUSA
- EXIDE / TUDOR
- HYDRO
- HYDROGENICS
- PLUG POWER INC.

Session 3: Wednesday 23th. 14:10 – 16:20. Chair: Emilio Domingo Aquilue (Oerlikon Soldadura, Spain)

Gas companies and auxiliaries:

- AIR LIQUIDE
- CARBUROS METÁLICOS / AIR PRODUCTS
- LINDE
- SWAGELOK / V.C.I.

Session 4: Wednesday 23th. 16:50 – 19:00. Chair: César Dopazo (LITEC-UZ, Spain)

Energy companies:

- ACCIONA ENERGÍA S.A.
- ELCOGAS
- ENDESA
- EON ENERGY
- GAMESA ENERGÍA

Session 5: Thursday 24th. 10:30 – 12:40. Chair: Agustín Aragón Mesa (FITSA, Spain)

Transports:

- BMW
- EADS ST
- FITSA
- HYWAYS
- MAN

Session 6: Thursday 24th. 14:10 – 16:20. Chair: Jesús Collantes Vivancos (Aragonesas Industrias y Energía, Spain)

Engineering, consultancy and others:

- ARIEMA
- ARNO EVERS
- BESEL
- HYNENERGREEN
- INTA
- VEA QUALITAS



COMMERCIAL EXHIBITION:

	AIR LIQUIDE (ES)
	AJUSA (ES)
	ARIEMA (ES)
	CARBUROS METÁLICOS / AIR PRODUCTS (ES/UK)
	CEA (FR)
	ELCOGAS (ES)
 EUROPEAN HYDROGEN ASSOCIATION	European Hydrogen Association EHA (EU)
	Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (ES)
	GENERAL MOTORS ESPAÑA (ES)
	IBERFLUID INSTRUMENTS, S.A. (ES)
	HYCHAIN (EU)
	IEA Hydrogen Implementing Agreement (HIA)
	INTA (ES)
	LINDE AG (DE)
	MESSER (DE/ES)
	NEOMAN BUS GmbH / MAN Vehículos Industriales (España), S.A. (DE)
	Pdc Machines, Inc (US)
	POWERGEN INTERNATIONAL PTY LTDAC (US)
	SWAGELOK / V.C.I. (ES)

Companies are still invited to become an exhibitor, by contacting the Organization at stands@ehec.info.
Updated list of exhibitors at www.ehec.info



PARALLEL SESSION 1 (Tuesday 22-NOV 14:10 – 16:20)

1a. Hydrogen production 1 Mozart Hall. Chair: Yongdam Li (Tianjin University, China)

- 14:10 Keynote: "Autothermal catalytic pyrolysis of methane as a new route to hydrogen production with reduced CO₂ emissions" **N. Muradov**, F. Smith, C. Huang, A.T-Raissi (Florida Solar Energy Center, USA)
- 14:40 "Hydrogen Production by Catalytic Decomposition of Methane: Ni and Ni-Cu catalyst development" **I. Suelves**, M.J. Lázaro, R. Moliner, Y. Echegoyen (ICB/CSIC, Spain), J.M. Palacios (ICP/CSIC, Spain)
- 15:00 "GENHSTOK: More pure hydrogen production with CO₂ capture" **P. Marty**, D. Grouset, S. Lecoq, J.C. Hoguet (N-GHY S.A., France)
- 15:20 "Hydrogen from concentrated solar thermal energy: High temperature solar chemical reactor for production of hydrogen from natural gas cracking" **S. Abanades**, G. Flamant (PROMES-CNRS, France)
- 15:40 "The SOLREF project – Solar Steam Reforming for Hydrogen Production" **S. Möller** (DLR, Germany), A. Konstandopoulos (CERTH/CPERI, Greece), M. Epstein (WIS, Israel), A. Steinfeld (ETH Zurich, Switzerland), M. Feaviour (Johnson Matthey Fuel Cell Ltd, UK), M. Walter (Hexion B.V., The Netherlands), T. Caselli (SHAP S.p.A., Italy), G. Rasola (Regione Basilicata, Italy)
- 16:00 "Pure hydrogen production from CH₄ pyrolysis: Comparative routes of regeneration of mixed oxides catalysts from hydrotalcite-like precursors" **R. Guil-López**, V. La Parola, M.A. Peña, J.L.G. Fierro (ICP/CSIC, Spain)

1b. Stationary Applications 1 Mariano de Gracia Hall. Chair: Eugenio Guelbenzu (Acciona Energía, Spain)

- 14:10 **Keynote**: "Experimental study of a hydrogen assisted diesel generator engine equipped with a proprietary gas-liquid mixer" V. Rouillard, M. Sek (Victoria University, Australia), **D. May** (Hydrogen Assisted Combustion Technologies Pty Ltd, Australia)
- 14:40 "Compressed Hydrogen-rich Fuel Gas (CHFG) from wet biomass by gasification in supercritical water" **J.M.L. Penninger** (SPARQLE International, The Netherlands)
- 15:00 "Electrical integration of renewable energy into stand-alone power supplies incorporating hydrogen storage" **M. Little**, M. Thomson, D. Infield (CREST - Loughborough University, UK)
- 15:20 "Installation of an LPG fuelled stationary fuel cell system in a TOTAL service station" **S. Lethier**, P. Mulard (TOTAL, France)
- 15:40 "Optimization of a solar hydrogen storage system: exergetic considerations" **E. López**, F. Isorna, F. Rosa (INTA, Spain)
- 16:00 "Hydrogen based uninterruptible power supply" **E. Varkaraki**, N. Lymberopoulos, M. Zoulias (CRES, Greece), D. Guichardot (CReed, France), G. Poli (TECHNICATOME, France)

1c. Economy Room 11. Chair: Francisco García Peña (ELCOGAS, Spain)

- 14:10 **Keynote**: "IEA Hydrogen Implementing Agreement's Second Generation R&D and the Hydrogen Economy" **N. Beck** (NRCAN, Canada), A. G. Garcia-Conde (INTA, Spain), T.U. Riis (Norwegian Research Council, Norway), A. Luzzi (Institut fuer Solartechnik, Switzerland), M.R. de Valladares (IEA HIA, USA)
- 14:40 "Scenarios for hydrogen energy: A case study in the UK" **A.G. Dutton** (CLRC Rutherford Appleton Laboratory, UK), A.L. Bristow (Loughborough University, UK), M.W. Page (University of Leeds, UK), J. Watson (University of Sussex, UK)
- 15:00 "Realistic costs of wind-hydrogen fuel production" **R. Steinberger-Wilckens**, J. Linnemann (PLANET, Germany)
- 15:20 "The role of the regions in the shift to the hydrogen economy – The case of Aragón" J.Navarro, **L. Correas** (Fundación Hidrógeno Aragón, Spain)
- 15:40 "Planning the transition to a hydrogen economy using multi-criteria techniques" **A. Castro Rosende**, C. Rodríguez Bordallo, V. Gallardo García-Orta (Hynergreen Technologies, S.A. Spain), R. Brey Sánchez, I. Contreras Rubio, A. Fernández Carazo, A. García Hernández-Díaz (Pablo de Olavide University, Spain)
- 16:00 "A comparison between Zecomix High Efficiency Zero Emission Plant and modern Hydrogen and Power IGCC Plants" **P. Deiana**, A. Calabrò, P. Fiorini, S. Stendardo, G. Girardi (ENEA, Italy)



PARALLEL SESSION 2 (Wednesday 23-NOV 10:30 – 12:40)

2a. Hydrogen production 2 Mozart Hall. Chair: Claude Mirodatos (CNRS, France)

- 10:30 **Keynote:** "Optically accessible channel reactor for kinetic investigations of gasoline reforming reactions" M. Bosco, T.B. Truong, E. DeBoni, **F. Vogel** (Paul Scherrer Institut, Switzerland)
- 11:00 "Prereforming introduction into gasoline autothermal reforming for hydrogen production" Y. Chen, **H. Xu**, G. Xiong (Chinese Academy of Science, China), X. Jin (Daqing petrochemical Research Institute, China)
- 11:20 "Hydrogen production in a 5 kW diesel autothermal reformer" D. Sopeña, A. Melgar, G. Morillo, **Y. Briceño** (CIDAUT, Spain), R. Navarro (ICP/CSIC, Spain), F. Rosa (INTA, Spain)
- 11:40 "Basic promoters effect over nickel/alumina catalyst on hydrogen production via methane catalytic partial oxidation" J. Requies, M.A. Cabrero, **V.L. Barrio**, J.F. Cambra, P.L. Arias, B. Güemez (UPV/EHU, Spain), V. La Parola, M.A. Peña, J.L.G. Fierro (ICP/CSIC, Spain)
- 12:00 "Catalytic oxidative conversion of C₁, C₃-C₄ saturated hydrocarbons to H₂-containing fuels" **K. Dosumov**, S.A. Tungatarova (D.V.Sokolski Institute of Organic Catalysis and Electrochemistry, Republic of Kazakhstan)
- 12:20 "Plasma assisted fuel reforming for on-board hydrogen rich gas production" **J.D. Rollier**, J. Gonzalez-Aguilar, R. Metkemeijer, L. Fulcheri (Ecole des Mines de Paris, France), A. Darmon, E. Duval-Brunel (Renault Research Department, France)

2b. Transports Mariano de Gracia Hall. Chair: Charles de la Quintana (Renault, France)

- 10:30 **Keynote:** "Development methods for a hydrogen DI engine with high power density and efficiency" H. Rottengruber, **E. Berger**, M. Kaufmann, M Berckmüller (BMW AG, Germany)
- 11:00 "Hydrogen from reformer gas as novel fuel and bridging technology: a combustion perspective" **B.A. Fleck**, P. Han, M.D. Checkel (University of Alberta, Canada)
- 11:20 "Electric toy vehicle powered by a PEMFC stack" R. Beneito, **J. Vilaplana** (AIJU, Spain)
- 11:40 "CUTE - A major step towards cleaner urban transport" M. Schuckert, **W. Fleck** (EvoBus, Germany)
- 12:00 "Onboard fuel processor for PEM fuel cell vehicles" **B.J. Bowers**, J.L. Zhao, M. Ruffo (Nuvera Fuel Cells, Inc, USA), **J.C. Beziat**, F. Boudjemaa (Renault, France)
- 12:20 "Density of power: a challenge for a FC powered electric helicopter" D.M. Guinea, J.R. Jurado (ICV/CSIC, Spain), M. Roura, A. Cuerva (ETSIA/UPM, Spain), M.C. G^a-Alegre, A. Ribeiro, E. Villanueva, **D. Guinea** (IAI/CSIC, Spain)

2c. Safety Room 11. Chair: Gary Lomas (BOC, UK)

- 10:30 **Keynote:** "Assessing the safety risk arising from the use of natural gas infrastructures for transporting and distributing mixtures of hydrogen and natural gas" **G. Hankinson**, B.J.Lowesmith (Loughborough University, UK)
- 11:00 "Innovative and cost competitive hydrogen storage systems: STORHY – A European integrated Project" **V. Strubel**, G. Bartlok, G. Krainz (Magna Steyr, Austria), A. Gauthier (CEA, France), G. Mair (BAM, Germany), J. Muller (IFE, Norway), K. Barral (Air Liquide, France), J. Zieger (DaimlerChrysler, Germany)
- 11:20 "Passive Safety Device for Mitigation of Hydrogen" **R.R. Sadhankar**, K. Marcinkowska, D.K. Ryland, R.S. Swartz (Atomic Energy of Canada Limited, Canada), R. Parsons (Energy, Science and Technology, Province of Manitoba, Canada)
- 11:40 "Safety distances for hydrogen filling stations" **A.J.C.M. Matthijsen**, E.S. Kooi (CEV/RIVM, The Netherlands)
- 12:00 "Hydrogen behaviour when released in confined atmospheres: experimental study and numerical simulations" **H. Paillère**, E. Studer, I. Tkatschenko, J. Brinster (CEA, France), L. Perrette, Y. Dagba (INERIS, France)
- 12:20 "LES of large-scale liquefied hydrogen dispersion in atmosphere" E. Prost, D. Makarov, **V. Molkov** (University of Ulster, UK)



PARALLEL SESSION 3 (Wednesday 23-NOV 14:10 – 16:20)

3a. Hydrogen storage 1 Mozart Hall. Chair: María Teresa Martínez (ICB – CSIC, Spain)

- 14:10 **Keynote:** "Hydrogen desorption mechanism in air exposed magnesium and Mg- ZrCr₂ hydrides" **J.F. Fernández**, J. Bodega, F. Leardini, C. Sánchez (UAM, Spain)
- 14:40 "Development of doped NaAlH₄ for hydrogen storage applications" **M. Fichtner**, C. Frommen (Karlsruhe Research Center, Germany), N. Eigen, T. Klassen (GKSS Research Centre, Germany)
- 15:00 "Quantum chemical exploration of hydrogen energy storage in metal hydrides" **B. Sørensen** (Roskilde University, Denmark)
- 15:20 "ZnO based nanomaterials for H₂ storage" S. Bertarione, **D. Scarano**, F. Cesano, A. Zecchina (Università di Torino, Italy)
- 15:40 "Development and test of a conformable (flat) shape liquid hydrogen storage for mobile applications" **L. Allidieres**, F. Janin (Air Liquide – DTA, France)
- 16:00 "A path to a production passenger car-integrated LH₂ storage system" **T. Brunner**, J. Lutz (BMW Group, Fuel Systems, München, Germany)

3b. Fuel Cells R&D 1 Mariano de Gracia Hall. Chair: Pilar Ramirez de la Piscina (Univ. Barcelona, Spain)

- 14:10 **Keynote:** "Recent progress in high temperature PEMFC and the possible utilization of the excess heat for fuel processing" **J.O. Jensen**, Q. Li, C. Pan, N.J. Bjerrum (Technical University of Denmark, Denmark)
- 14:40 "Multiplicity of steady working regimes and stability analysis of non-isothermal fuel cells" **P.L. García-Ybarra**, J.L. Castillo (UNED, Spain)
- 15:00 "Development of a PEMFC under low temperature and low humidification" T. Ramos (FCT, Portugal), V. Silva, J. Campos Rodrigues (SRE, Portugal), **C.M. Rangel** and R.A. Silva (INETI, Portugal)
- 15:20 "Sterion ® membranes in Direct Methanol Fuel cells" **J.J. Linares**, J. Lobato, P. Cañizares, M. A. Rodrigo, A. Fernández (University of Castilla La Mancha, Spain)
- 15:40 "Electric modelling and image analysis of channel flow in bipolar plates" **D. Guinea**, D. Martín, A.G^a Hombrados, L. Gonzalez (IAI/CSIC, Spain), D.M. Guinea, E. Chinarro (ICV/CSIC, Spain)
- 16:00 "Methanol electrooxidation on PtRu nanoparticles supported on functionalized carbon black" J.L. Gómez de la Fuente, M.V. Martínez-Huerta, S. Rojas, **P. Terreros**, J.L.G. Fierro and M.A. Peña (ICP/CSIC, Spain)

3c. Policies and social acceptance Room 11. Chair: Marieke Reijalt (H2IT, Italy)

- 14:10 **Keynote:** "Presentation of a methodology for measuring social acceptance of three hydrogen storage technologies and preliminary results" I. Noirot, **C.N. Bigay** (CEA, France)
- 14:40 "Feasibility analysis of fuel cell for combined heat and power systems in the tertiary sector" **I. Zabalza**, A. Aranda (CIRCE, Spain), M.D. de Gracia (Polytechnic University of Valencia, Spain)
- 15:00 "A structured and qualitative systems approach to analysing hydrogen transitions: Key Changes and Actor Mapping" **M. Hugh**, M. Yetano Roche (Instituto Superior Técnico, Portugal)
- 15:20 "HY-CO, Co-ordination of European Trans-national Joint RD&D Activities in the Field H&FC" **E. Seitz**, H.J. Neef (Forschungszentrum Jülich GmbH, Germany)
- 15:40 "Research on hydrogen and fuel cell technologies in the EU 6th Framework Programme (2002-2006): representative projects" **J. Martín-Bermejo** (European Commission, Spain)
- 16:00 "The role of Hydrogen within an integrated alternative fuel strategy for Germany" **S. Ramesohl**, M. Fishedick (Wuppertal Institute, Germany), J. Nitsch, P. Viebahn, S. Schmid (DLR, Germany), M. Pehnt, W. Knoerr (IFEU, Germany)



PARALLEL SESSION 4 (Wednesday 23-NOV 16:50 – 19:00)

4a. Hydrogen production 3 Mozart Hall. Chair: Victoria Laura Barrio (EHU, Spain)

- 16:50 **Keynote:** "Specificities of micro-reactors for hydrogen production and purification" **C. Mirodatos**, N. Dupont, G. Germani, A.C. van Veen, Y. Schuurman (Institut de Recherche sur la Catalyse – CNRS, France)
- 17:20 "Hydrogen production by low-temperature reforming of bioethanol over ZnO-supported Co-Ni and Co-Cu catalysts" **J. Llorca**, N. Homs, P. Ramirez de la Piscina (Universitat de Barcelona, Spain)
- 17:40 "Hydrogen formation in the ethanol water reaction on different supported noble metal catalysts" **A. Erdöhelyi**, J. Rasko, M. Toth, M. Dömök, T. Kecskés (University of Szeged, Hungary)
- 18:00 "Biological production of hydrogen by dark fermentation of OFMSW and co-fermentation with slaughterhouse wastes" A. Morán, **X. Gómez**, M.J. Cuestos (University of León, Spain)
- 18:20 "Hydrogen production by catalytic conversion of biomass using coprecipitated Ni-Al catalysts" **L. García**, M.L. Salvador, J. Arauzo, R. Bilbao (University of Zaragoza, Spain)
- 18:40 "Structure and reactivity of Au/CeO₂ catalysts in the total and selective oxidation of CO" **F. Arena** (Università di Messina, Italy)

4b. Service stations Mariano de Gracia Hall. Chair: Laurent Allidieres (Air Liquide, Francia)

- 16:50 **Keynote:** "Deployment of innovative fuel cell vehicle fleets to initiate an early market for hydrogen as an alternative fuel in Europe" **P. Paulmier** (AIR LIQUIDE-AXANE, France), J. De Blas, G. López (BESEL, Spain)
- 17:20 "Experimental method for permeability measurements of pure hydrogen and hydrogen-methane mixtures through Polyethylene" M.H. Klopffer, **B. Flaconèche**, K. Esterlé, M. Lafontaine (Institut Français du Pétrole, France)
- 17:40 "A new hydrogen refuelling station from TOTAL – Bringing Berlin into a leading position for hydrogen infrastructure in Europe" **P. Schnell**, U. Wäser (TOTAL Deutschland GmbH, Germany), **P. Mulard** (TOTAL France, France)
- 18:00 "Materials suitable for hydrogen storage vessels and associated accessories" **H. Barthélémy** (Air Liquide, France)
- 18:20 "The hydrogen refuelling plant in Madrid" **E. Girón** (Repsol YPF, S.A., Spain), A. Sáez (Air Liquide España, S.A., Spain), A. Julià (Gas Natural SDG, S.A., Spain)
- 18:40 "The development of the hydrogen delivery infrastructure in the European Union in the medium to long term" **E. Tzimas**, P. Castello, S.D. Peteves (EC - JRC Institute for Energy, The Netherlands), A. Soria (EC - JRC, Institute for Perspective Technological Studies, Spain)

4c. Simulations Room 11. Chair: Stéphane Dechelotte (ProSim, Francia)

- 16:50 **Keynote:** "Towards multi-source multi-product energy systems" **K. Hemmes**, J. L. Zachariah (Delft University of Technology, The Netherlands), M. Geidl, G. Andersson (Swiss Federal Institute of Technology ETH, Switzerland)
- 17:20 "Evaluation of the high temperature electrolysis of steam to produce hydrogen" **Y.J. Shin**, W.S. Park, J.H. Chang, J.K. Park (Korea Atomic Energy Research Institute, Korea)
- 17:40 "On the road performance simulation of hydrogen and hybrid cars" **B. Sørensen** (Roskilde University, Denmark)
- 18:00 "Analysis on hydrogen energy networks and fuel cells in urban homes with a mathematical model" **H. Aki**, J. Kondoh, T. Maeda, H. Yamaguchi, A. Murata (AIST, Japan), S. Yamamoto (KRI, Inc., Japan), I. Ishii (Oita Industrial Research Institute, Japan)
- 18:20 "Market penetration analysis of fuel cell vehicles in Japan by using energy system model MARKAL" **E. Endo** (Nat. Inst. of Advanced Industrial Science and Technology, Japan)
- 18:40 "A Norwegian case study on the production of hydrogen from wind power" **C.J. Greiner**, **M. Korpaas**, A.T. Holen (NTNU, Norway)



PARALLEL SESSION 5 (Thursday 24-NOV 10:30 – 12:40)

5a. Hydrogen storage 2 Mozart Hall. Chair: Bent Sorensen (Roskilde University, Denmark)

- 10:30 **Keynote:** "Metal ammine complexes for high-density storage of hydrogen – bridging the hydrogen and ammonia economy" **T. Johannessen**, R.Z. Sørensen (Ammiex A/S, Denmark), C.H. Christensen, U. Quaade, J.K. Nørskov (Technical University of Denmark, Denmark)
- 11:00 "Hydrogen isotherms in palladium loaded carbon nanotubes and activated carbons" **M.T. Martínez**, A. Ansón, E. Lafuente (ICB/CSIC, Spain), E. Urriolabeitia, R. Navarro (Universidad de Zaragoza, Spain), A.M. Benito, W.K. Maser (ICB/CSIC, Spain)
- 11:20 "Quantitative TEM- investigations of nanostructured graphite as possible hydrogen storage material" **M. Hentsche**, H. Hermann, T. Gemming, H. Wendrock, K. Wetzig (IFW Dresden, Germany)
- 11:40 "Hydrogen storage by adsorption on activated carbon: experimental and numerical study" **G. Hermosilla-Lara**, G. Momen, P. Marty, B. Leneindre, K. Hassouni (CNRS, France)
- 12:00 "H₂ storage in microporous materials: a comparison between zeolites and MOFs" **G. Ricchiardi**, L. Regli, J.G. Vitillo, D. Cocina, S. Bordiga, C. Lamberti, G. Spoto, A. Zecchina (Università di Torino, Italy), M. Bjørgen, K.P. Lillerud (University of Oslo, Norway)
- 12:20 "Kinetic study of the Redox process for storing hydrogen" **J.A Peña**, E. Lorente, E. Romero, J. Herguido (University of Zaragoza, Spain)

5b. Fuel Cells R&D 2 Mariano de Gracia Hall. Chair: Víctor Orera (Univ. Zaragoza – CSIC, Spain)

- 10:30 **Keynote:** "The development of fuel cells for mobile and stationary applications" **F. de Bruijn**, R. Mallant, P. van den Oosterkamp, B. Rietveld (ECN, The Netherlands)
- 11:00 "Development of metal supported Solid Oxide Fuel Cells" **L.M. Rodríguez-Martínez**, I. Alava, I. Antepará, U. Castro, E. Díez-Linaza, N. Lecanda, X. Montero, M. Rivas, I. Villarreal, A. Laresgoiti (IKERLAN, Spain)
- 11:20 "Optimization of Co-YSZ cermet by laser melting for its use as a SOFC anode" **M.A. Laguna-Bercero**, R.I. Merino, A. Larrea, J.I. Peña, V.M. Orera (Universidad de Zaragoza-CSIC, Spain)
- 11:40 "Power generation using fuel cell with syngas from the Puertollano IGCC power plant" **P. Coca** (ELCOGAS, Spain), J. I. Sánchez (Navantia, Spain), M. Manrique (IDAE, Spain), A. Vegas (ARIEMA, Spain)
- 12:00 "Development of a new reversible Fuel Cell stack: Revcell" J. Brey, C. Rodríguez-Bordallo (Hynergreen Technologies, S.A., Spain), **R. Makkus**, S. Grootjes (ECN, The Netherlands), E. Middelma (NedStack fuel cell technology BV, The Netherlands)
- 12:20 "Materials for CO tolerant hydrogen oxidation in fuel cells" **C.M. Rangel**, M.H. Romero (INETI, Portugal)

5c. Hydrogen transport and distribution Room 11. Chair: Helen Brit Mostad (Norsk Hydro, Norway)

- 10:30 **Keynote:** "The NATURALHY-project: The potential of the existing natural gas system for hydrogen" **O. Florisson**, R. Huizing (N.V. Nederlandse Gasunie, The Netherlands)
- 11:00 "Integration of a hydrogen economy into the energy system of Germany: an optimising modelling approach" **M. Ball**, O. Rentz (DFIU, Germany), M. Wietschel (FhG ISI, Germany)
- 11:20 "Hydrogen logistics: Assessment of production, conditioning, distribution, storage and refuelling" **B. Höhle** (Research Centre Jülich, Germany), J. Reijerkerk (Linde AG, Germany)
- 11:40 "Polystock project : Development and studies on new Type IV tanks for hydrogen" **K. Barral** (Air Liquide, France), C. Hembert (Ullit, France), J.F. Gérard (INSA, France), P. Mazabraud (CEA, France)
- 12:00 "The liberalisation of the energy markets as a stumbling block for the use of the natural-gas pipeline infrastructure for hydrogen transport" **D. Haeseldonckx**, W. D'haeseleer (University of Leuven, Belgium)
- 12:20 "Modeling hydrogen infrastructure developments in the Netherlands" **R. Smit**, A. de Groot (ECN, The Netherlands)



PARALLEL SESSION 6 (Thursday 24-NOV 14:10 – 16:20)

6a. Hydrogen production 4 Mozart Hall. Chair: Rafael Moliner (ICB – CSIC, Spain)

- 14:10 **Keynote:** "Critical factors in the design, operation and economics in coal gasification plants: the case of co-producing hydrogen and electricity" **E. Tzimas**, F. Starr, S.D. Peteves (European Commission, DG JRC, Institute for Energy, The Netherlands)
- 14:40 "HYTHEC : Aims and first assessments on massive hydrogen production thermochemical S-I and hybrid-sulfur cycles" **A. Le Duigou**, J.M. Borgard, B. Larousse, O. Hercher, D. Doizi, C. Eysseric (CEA, France), R. Allen, B.C. Ewan, G.H. Priestman, R. Elder (University of Sheffield, UK), G. Cerri, G. de Maria, C. Salvini, A. Giovannelli (Università degli studi – Roma tre, Italy), M. Roeb, N. Monnerie, M. Schmitz, C. Sattler (DLR, Germany), A. Buenaventura (Empresarios Agrupados, Spain), S. Dechelotte, O. Baudouin (PROSIM, France)
- 15:00 "HYTHEC : Development of a dedicated solar receiver-reactor for the decomposition of sulphuric acid" **M. Roeb**, A. Noglik, P.M. Rietbrock, S. Mohr, L. de Oliveira, C. Sattler (DLR, Germany), G. Cerri, G. de Maria, A. Giovannelli (Università Degli Studi – Roma Tre, Italy), A. Buenaventura, D. de Lorenzo (Empresarios Agrupados, Spain)
- 15:20 "Modular IGCC concepts for in-refinery energy and hydrogen supply" M. Obladen, I. Romey, A. Schulz (University Duisburg-Essen, Germany), **U. Schiffers**, W. Günster (Siemens AG, Germany), W. Nobel, F. van Laerhoven (Continental Engineers, The Netherlands), S. Herman (ECN, The Netherlands)
- 15:40 "Hydrogen production via steam-gasification of petroleum coke using concentrated solar power" **M. Romero** (CIEMAT, Spain), J.C. de Jesús (PDVSA INTEVEP, Venezuela), A. Steinfeld (ETH/ Paul Scherrer Institute, Switzerland)
- 16:00 "Utility scale wind-hydrogen system development" **E. Guelbenzu** (EHN, Spain), **C. Machens** (HYDROGENICS, Canada), S. Castedo (STATKRAFT, Norway)

6b. Stationary 2 and portable applications Mariano de Gracia Hall. Chair: Robert Makkus (ECN, The Netherlands)

- 14:10 **Keynote:** "The Utsira wind-hydrogen system - lessons learned" **T. Nakken**, U. Hafsel, E. Fjermestad Hagen, K. Schøffel, I. Hexeberg (Norsk Hydro ASA, Norway)
- 14:40 "Operating methods of a cascaded fuel cell system" **A. Miege**, J. Lehmann, T. Lushtinetz, C. Sponholz (University of Applied Sciences Stralsund, Germany)
- 15:00 "Design and development of a standalone system based in renewable energy and fuel cells including hydrogen production through electrolysis" **A. Delgado**, J.L. Fraile, J. Mielgo, J. De Blas (BESEL, Spain)
- 15:20 "Power Conditioning of Fuel Cell Systems in Portable Applications" **E. Moreno-Benítez**, J.J. Brey, C. Rodríguez-Bordallo (Hynergreen Technologies, S.A., Spain), J.M. Carrasco, E. Galván (University of Seville, Spain)
- 15:40 "Hydrogen production technologies for space and terrestrial applications" **T. Pipoli**, L. Summerer (ESA, The Netherlands), F. Ongaro (ESA, France)
- 16:00 "Development and testing of a low cost PV-WIND/H2 system for small-size applications" **A. Moschetto**, M. Ferraro, V. Antonucci (CNR-ITAE, Italy), G.M. Tina (UNICT-DIEES, Italy)

6c. Environment and standards Room 11. Chair: Carmen Rangel (INETI, Portugal)

- 14:10 **Keynote:** "Towards a sustainable hydrogen economy: hydrogen pathways and infrastructure" **G. Mulder** (VITO, Belgium), J. Hetland (SINTEF, Norway)
- 14:40 "Life-cycle analysis of bio-hydrogen production" **M. Holmqvist**, P. Lindblad (Uppsala University, Sweden), B. Sørensen (Roskilde University, Denmark)
- 15:00 "Evaluation of hydrogen production from biomass" **S. Normand**, M. Papadopoulo, A. Dufour, T. Muller (Gaz de France, France)
- 15:20 "The recycling of automotive hydrogen storage systems" **S.J. Pickering** (The University of Nottingham, UK), M. Magnani (Ford Research and Advanced Engineering, Germany)
- 15:40 "Effectiveness of small barriers as means to reduce clearance distances" **A.V. Tchouvelev**, Z. Cheng (A.V.Tchouvelev & Associates, Canada), V. Agranat (Hydrogenics, Canada), S.V. Zhubrin (Flowsolve, UK)
- 16:00 "Safe production and application of hydrogen at Munich airport" **R. Szamer** (TUEV SUED, Germany)



POSTER SESSION 1a: HYDROGEN PRODUCTION:

- P1a-01** "Integrated gasification in combined cycle technology for the production of hydrogen from coal" **P. Casero**, F. García-Peña, M.B. García García (ELCOGAS, Spain)
- P1a-02** "Catalysts for hydrogen generation by hydrolysis reaction of sodium borohydride" **V.I. Simagina**, O.V. Netzkina, I.V. Stoyanova, A.G. Gentsler, S.A. Veniaminov, O.V. Komova (Boreskov Institute of Catalysis, Russia)
- P1a-03** "Technological and chemical assessment of various thermochemical cycles: from the UT3-cycle up to the two steps iron oxide cycle" **F. Lemort**, C. Lafon, C. Girold (CEA, France)
- P1a-04** "Steam reforming of methanol in microreactors with stacked microstructured plates" **L.L. Makarshin**, D.V. Andreev, V.N. Parmon (Boreskov Institute of Catalysis, Russian Federation)
- P1a-05** "Experimental study of the sulfur-iodine thermochemical cycle for massive hydrogen production" **S. Colette**, N. Brijou, D. Mas, M. Tabarant, D. Doizi, V. Dauvois, B. Larousse, V. Delanne, C. Maillault, J.-L. Roujou, P. Fauvet, J.-L. Flèche (CEA, France)
- P1a-06** "Improvement of activity and stability of Ni-Mg-Al catalysts by Cu addition during hydrogen production by catalytic decomposition of methane" **A. Monzón**, N. Latorre, T. Ubieto, C. Royo, E. Romeo (University of Zaragoza, Spain); L. Dussault, J.C. Dupin, C. Guimon (UMR/CNRS, France); E. Dumitriu (Technical University of Iasi, Romania)
- P1a-07** "MgO supported non-noble metal catalysts for autothermal reforming of n-butane" **K. Nagaoka**, K. Sato, H. Nishiguchi, Y. Takita (Oita University, Japan)
- P1a-08** "Sulphuric acid decomposition using solar energy: a preliminarily experimental study" **V. Barbarossa**, M. Diamanti, S. Sau (ENEA, Italy), B. Brunetti, S. Brutti, G. De Maria (Università "La Sapienza", Italy)
- P1a-09** "Hydrogen production by natural gas decarbonization: carbonaceous catalysts" **R. Moliner**, M.J. Lazaro, I. Suelves, H. Cubero (ICB/CSIC, Spain)
- P1a-10** "Preparation and characterization of LSM electrode materials for high temperature steam electrolysis" **K.S. Sim**, C.H. Kim, K.B. Park, J.S. Ji (Korea Institute of Energy Research, Korea)
- P1a-11** "Comparative analysis of thermochemical hydrogen production methods for solar applications" **M.J. Montes**, A. Abánades, J.M. Martínez-Val (ETSI Industriales – UPM, Spain)
- P1a-12** "Effect of promoters on hydrogen production by dry reforming reaction" **A.H. Fakeeha**, M.A. Soliman, A.S. Al-Fatish (King Saud University, Saudi Arabia)
- P1a-13** "Development of a thermochemical process for solar water splitting" **M. Roeb**, R. Klüser, N. Monnerie, L. de Oliveira, M. Schmitz, P.M. Rietbrock, C. Sattler (DLR, Germany), A.G. Konstandopoulos, C. Agrafiotis, V. T. Zaspalis, L. Nalbandian (CERTH-CPERI, Greece), A. Steele (Johnson Matthey Fuel Cells, UK), P. Stobbe (Stobbe Tech A/S, Denmark)
- P1a-14** "Water-gas shift reaction over sulfided molybdenum catalysts supported on TiO₂-ZrO₂ mixed oxides" **M. Laniecki**, M. Ignacik (Mickiewicz University, Poland)
- P1a-15** "Rhodobacter sphaeroides in hydrogen generation from brewery waste waters" M. Waligórska, K. Seifert, **M. Laniecki** (Mickiewicz University, Poland)
- P1a-16** "Fluidized-bed bioreactor for hydrogen production through fermentation of glucose" **P.E.P. Koskinen**, A.H. Kaksonen, J.A. Puhakka (Tampere University of Technology, Finland)
- P1a-17** "Photoproduction of hydrogen using Rhodobacter sphaeroides O.U.001, Rhodobacter capsulatus DSM 152 and Rhodospirillum rubrum NRRL B280" D. Das (Indian Institute of Technology, India), **N. Basak** (N.I.T Jalandhar, India), K. Nath (G H Patel College of Engineering & Technology, India)
- P1a-18** "Hydrogen production from the pyrolysis-gasification of wet sewage sludge at high temperatures" **J.A. Menéndez**, A. Domínguez, J.J. Pis (INCAR/CSIC, Spain)
- P1a-19** "Hydrogen production from water-splitting with thermochemical cycles using concentrated solar energy: A screening of high potential cycles" **P. Charvin**, S. Abanades, G. Flamant, P. Neveu (PROMES/CNRS, France), F. Lemort (CEA, France)
- P1a-20** "New aspects of the hydrogen production by steam reforming of phenol over supported-Rh catalysts" A.M. Efstathiou, **K. Polychronopoulou** (University of Cyprus, Cyprus)
- P1a-21** "Estimation of hydrogen production from biomass gasification using equilibrium reaction models" **M.D. de Gracia** (Institute for Energy Engineering – UPV, Spain), I. Zabalza, J. Pascual (CIRCE, Spain)
- P1a-22** "Hydrogen production by Ethanol Steam Reforming over Ni-Cu Supported Catalysts" **A.J. Vizcaíno**, J.A. Calles, A. Carrero (Rey Juan Carlos University, Spain)
- P1a-23** "Thermocatalytic decomposition of methane over activated carbons. 2. Regeneration of the catalyst" **M.J. Lázaro**, I. Suelves, J.I. Martínez, J.L. Pinilla, M.E. Gálvez, R. Moliner (ICB/CSIC, Spain)
- P1a-24** "Nanosized catalysts for the production of hydrogen by methanol steam reforming" **T. Valdés-Solís**, G. Marbán, A.B. Fuertes (INCAR/CSIC, Spain)
- P1a-25** "A cheap approach in the preparation of nanocatalysts for hydrogen production processes" **G. Marbán**, T. Valdés-Solís, A.B. Fuertes (INCAR/CSIC, Spain)
- P1a-26** "Solar hybrid water-splitting cycles with photon component" **N. Muradov**, A. T-Raissi, O. Adebisi (Florida Solar Energy Center, USA), R. Taylor, R. Davenport (SAIC, USA)
- P1a-27** "A water-splitting route for hydrogen generation by sulfur-iodine thermochemical cycle powered by combined solar/biomass energy sources" A. Giaconia, **G. Caputo**, R. Grena, M. Lanchi, R. Liberatore, P. Tarquini (ENEA, Italy)
- P1a-28** "First approach for water electrolysis at high temperature: Spectroscopic investigations on potential H⁺ conducting electrolyte" **B. Sala**, O. Lacroix, S. Willemin, J.P. Py (Framatome-ANP, France), P. Colomban (CNRS-UPMC, France), A. Julbe (Institut Européen des membranes, France)
- P1a-29** "Catalysts for autothermal reforming of i-Octane in a microstructured system" **H. Ehrich**, U. Kürschner, H. Ehwald (Institut für Angewandte Chemie Berlin-Adlershof, Germany), P. Alphonse (CIRIMAT - Université Paul Sabatier, France), G. Kolb (Institut für Mikrotechnik Mainz GmbH, Germany)



- P1a-30** "Sorption-enhanced reaction process for hydrogen production" **H.Th.J. Reijers**, G.D. Elzinga, P.D. Cobden, R.W. van den Brink (ECN, The Netherlands)
- P1a-31** "State of the art of biological hydrogen production processes" **N. Loubette**, M. Junker (ALPHEA, France)
- P1a-32** "Preliminary results in the hydrogen production from alcoholic hydrocarbons using a surface wave discharge (SWD) at atmospheric pressure" **M.D. Calzada**, M. Pineda, I. Santiago (Universidad de Córdoba, Spain), J. Feugeas (Instituto de Física Rosario, Argentina)
- P1a-33** "Noble metal supported catalysts for partial oxidation of methane" C. Cellier, M. Lerens, C. Mateos-Pedrero, **P. Ruiz** (Université catholique de Louvain, Belgium)
- P1a-34** "Foam based catalysts for small-scale hydrogen production by methane steam reforming: A kinetic study" A. Wörner, **R. Tamme**, H. Müller-Steinhagen (DLR, Germany)
- P1a-35** "Membrane distillation of H₂O/HI mixtures for the Sulfur-Iodine thermochemical process" **G. Caputo**, C. Felici (ENEA, Italy)
- P1a-36** "Removal of tetrahydrothiophene (THT) by an adsorption method" E.-Y. Ko, E.D. Park (Ajou University, Republic of Korea), **H.C. Lee**, D. Lee, S. Kim (Samsung Advanced Institute of Technology, Republic of Korea)
- P1a-37** "The preferential oxidation of carbon monoxide in hydrogen stream" E.Y. Ko, E.D. Park (Ajou University, Republic of Korea), **H.C. Lee**, O.Y. Lim, S. Kim (Samsung Advanced Institute of Technology, Republic of Korea)
- P1a-38** "Ethanol steam reforming over Ni/ M_xO_y-Al₂O₃ (M= Ce, La, Zr and Mg) catalysts: Influence of support on the hydrogen production" R.M. Navarro, **M.C. Sánchez-Sánchez**, J.L.G. Fierro (ICP/CSIC, Spain)
- P1a-39** "A comparative study of water-gas shift reaction over platinum deposited on ceria, titania and ceria-titania supports" **R.M. Navarro**, I.D. González, M.C. Alvarez-Galván (ICP/CSIC, Spain), F. Rosa (INTA, Spain), J.L.G. Fierro (ICP/CSIC, Spain)
- P1a-40** "Solar thermochemical production of syngas from petroleum coke: feasibility study for injection of coke slurries" **A. Vidal**, M. Romero (CIEMAT-PSA, Spain), F. Ritter, A. Steinfeld (ETH, Switzerland)
- P1a-41** "The oxygen-assisted transformation of light alkanes to CO_x/H₂ through combined oxidation and WGS reactions catalyzed by vanadium oxide catalyst" F. Cavani, A. Battisti, **A. Cericola** (Dipartimento di Chimica Industriale e dei Materiali, Italy), P. Arpentini (Air Liquide, France)
- P1a-42** "Hydrogen membrane reactor for industrial hydrogen production and power generation" Y.C van Delft, L.A. Correia, J.P. Overbeek, D.F. Meyer, P.P.A.C. Pex, J.W. Dijkstra, D. Jansen (ECN, The Netherlands)
- P1a-43** "Novel metal-ceramic catalysts for methane steam reforming" Y. Potapova, **H.C. Lee**, D. Lee, S. Kim (Samsung Advanced Institute of Technology, Republic of Korea)
- P1a-44** "A basic assessment of the reactivity of Ni catalysts in the decomposition of methane for the production of "CO_x-free" hydrogen for fuel cells applications" **G. Bonura**, O. Di Blasi, L. Spadaro (CNR-ITAE, Italy), F. Arena, F. Frusteri (Università di Messina, Italy)
- P1a-45** "Study of the steam-reforming of ethanol over Pd/ZnO. Effect of alloy formation" A. Casanovas, J. Llorca, N. Homs, **P. Ramírez de la Piscina** (Universitat de Barcelona, Spain)
- P1a-46** "Bio-solar hydrogen production process" **J. Gebicki**, M. Modigell (Aachen University, Germany)
- P1a-47** "Diesel evaporation as the first step of hydrogen production" **A. Sarioglan**, H. Olgun, A. Ersoz, M. Baranak, H. Atakul, S. Ozdogan (TUBITAK Marmara Research Center, Turkey)
- P1a-48** "On the technical feasibility of separating hydrogen by means of redox processes in an ICFB Reactor" J. Herguido, E. Carazo, **J.A. Peña** (University of Zaragoza, Spain)
- P1a-49** "Thermal analysis of the reduction process in manganese ferrite thermochemical hydrogen production cycle" A. La Barbera, **C. Annunziatini**, M. Bellusci, C. Alvani, F. Padella, F. Varsano (ENEA, Italy)
- P1a-50** "Temperature profile modeling to simulate catalytic partial oxidation and steam reforming of methane" V.L. Barrio (UPV/EHU, Spain), G. Schaub, M. Rohde (Universität Karlsruhe, Germany), S. Rabe, F. Vogel (Paul Scherrer Institut, Switzerland), P.L. Arias, B. Güemez, **J.F. Cambra** (UPV/EHU, Spain)
- P1a-51** "Hydrogen production from propane, LPG and ethanol over bimetallic catalysts" **A.E. Aksoylu**, B. Selen Çağlayan, F. Gökallıer, E. Örucü, Z.I. Önsan (Bogaziçi University, Turkey)
- P1a-52** "A new and performing catalyst for hydrogen production by partial oxidation of methane: Rh supported on Ti-MgO support" **C. Mateos-Pedrero**, C. Cellier, P. Ruiz (Université catholique de Louvain, Belgium)
- P1a-53** "Production of CO_x-free hydrogen without CO₂ emission via direct catalytic decomposition of methane" **Y. Li**, S. Liu, J. Chen (Tianjin University, China)
- P1a-54** "Study of dynamic processes in the partial oxidation of methane over Ni/Al₂O₃ and Rh/Al₂O₃ by adding CO in the reaction feed" C. Cellier, D. Le Clef, C. Mateos-Pedrero, **P. Ruiz** (Université catholique de Louvain, Belgium)
- P1a-55** "Co-gasification of coal, biomass and wastes for hydrogen production" **F. Rubiera**, J. Feroso, A. Arenillas, J.J. Pis (INCAR/CSIC, Spain)
- P1a-56** "Hydrodynamics and heat transfer study of a novel adsorption enhanced Steam Methane Reforming (SMR) system" **D. Wen**, Y. Ding (University of Leeds, UK)
- P1a-57** "Selective CO oxidation over Ce_xZr_{1-x}O₂-supported Pt catalysts" **J.L. Ayastuy**, M.P. González-Marcos, A. Gil-Rodríguez, J.R. González-Velasco, M.A. Gutiérrez-Ortiz (UPV/EHU, Spain)
- P1a-58** "Biological hydrogen production using biomass and wastes" J.M. Valero, A. Egizabal, **M. Belsue** (Fundación INASMET, Spain)
- P1a-59** "Process development for hydrogen purification: from lab to pilot scale" **C. Mirodatos**, S.P. Teh, Y. Schuurman (CNRS, France), G.J. Kraaij (ECN, The Netherlands)



POSTER SESSION 1b: HYDROGEN AND FUEL CELLS SYSTEMS AND APPLICATIONS:

- P1b-01** "Installation, operation and evaluation of a diesel reformer coupled to a PEMFC" **F. Rosa**, E. López, F. Isorna, R. Ortiz (INTA, Spain), Y. Briceño, D. Sopeña (CIDAUT, Spain), C. Bordons (Universidad de Sevilla, Spain), C. Álvarez, R. Navarro, J.L.G. Fierro (ICP/CSIC, Spain)
- P1b-02** "Use of hydrogen produced by wind-electrolysis: RES₂H₂ Project" **F. Rosa** (INTA, Spain), A. Gomez Gotor (University of Las Palmas de Gran Canaria, Spain)
- P1b-03** "Simulation of energetic scenarios based on hydrogen and renewable energies" J.C. Múgica, I. Azkárata (INASMET, Spain), A. Gil de Muro, J.A. Abad (LABEIN, Spain), I. Marino, **J.A. Alzola** (ROBOTIKER, Spain)
- P1b-04** "Zero Regio – Development and demonstration of hydrogen for individual road traffic in Lombardia, Italy and Rhein-Main, Germany" **D. Lorbach**, H. Lienkamp (Infraserv Hoechst GmbH, Germany)
- P1b-05** "Power conditioning system for maritime fuel cell applications using a 10 kW PEMFC as auxiliary energy" M.Á. Martín-Prats, M.C. Arco (GreenPower, Spain), **C.J. García** (AICIA-GTE, Spain), J.M. Carrasco, E. Galván, J.A. Sánchez (Universidad de Sevilla, Spain), E. Moreno (Hynergreen, Spain)
- P1b-06** "Potential for hydrogen production from wind energy in Andalusia" F.J. Pino, **F. Rosa** (Universidad de Sevilla, Spain)
- P1b-07** "2kW fuel cell power conditioning designs stack for isolated system" M.C. Arco, M.Á. Martín-Prats (GreenPower, Spain), **C.J. García** (AICIA-GTE, Spain), J.M. Carrasco, E. Galván, J.A. Sánchez (Universidad de Sevilla, Spain), E. Moreno (Hynergreen, Spain)
- P1b-08** "Electrolyser modelling" **R. Garde, R. Lesaca** (CENER, Spain), M. Aguado (Public University of Navarra, Spain)
- P1b-09** "Performance of an alkaline water electrolyzer for low-temperature renewable hydrogen production from wind energy" **L.M. Gandía**, R. Rojo, A. Ursúa, P. Sanchis, P.M. Diéguez (Universidad Pública de Navarra, Spain)
- P1b-10** "Experience gained in the field-trial of hydrogen energy storage integrated with a renewable energy system" **R.J.L. Gammon**, D.G. Infield, A. Roy (CREST - Loughborough University, UK)
- P1b-11** "A methodology to determine the hydrogen flow from a photosynthetic bioreactor" **A. Juantorena U.**, P.J. Sebastian, S.A. Gamboa, O. Lastres D., A. Bustos G. (UNAM, México)
- P1b-12** "Compatibility of pressurised and atmospheric electrolyzers with stand-alone renewable- hydrogen energy systems" **A. Roy**, S. Watson, D. Infield, R. Gammon (CREST - Loughborough University, UK)
- P1b-13** "Technical and economic study of the replacement feasibility of diesel generators or batteries with a hydrogen subsystem in autonomous renewable energy systems" **G. Kyriakarakos**, G. Papadakis (Agricultural University of Athens, Greece)
- P1b-14** "LPG fuel processors for stationary fuel cells: state of the art" B. Bello, L. Bedel, M. Junker, F. Lapique, B. Davat (ALPHEA, France)
- P1b-15** "Testing of PEM fuel cells for auxiliary power units (APU) in maritime applications" **F. Isorna**, E. López, F. Rosa (INTA, Spain)
- P1b-16** "Scooter powered by a fuel cell" **J. Mielgo**, O. Frechilla, A. Delgado, J. De Blas (BESEL, Spain)
- P1b-17** "Fuel cell Energy systems standardized for large transport, BUSses and Stationary applications: FEBUSS – European project" **C. García**, G. Martínez (INTA, Spain)
- P1b-18** "Laboratory fuel cell integrated control system" J.J. Brey, C. García-Gómez, C. Rodríguez-Bordallo, B. Sarmiento-Marrón (Hynergreen Technologies, S.A., Spain), **A. Pérez-Vega-Leal**, R. Palomo-Pinto (University of Seville, Spain)
- P1b-19** "Hydrogen: an alternative product for wind park developers" N. LyMBERopoulos, **E. Varkaraki**, M. Zoulias (CRES, Greece), E. Kalyvas (Rokas SA, Greece), C. Christodoulou, G. Karagiorgis (FIT, Cyprus), K. Stolzenburg (PLANET GbR, Germany), A. Poullikkas (Electricity Authority of Cyprus, Cyprus)
- P1b-20** "Fuel cell system development for frigates" **E.R. van Selow**, G.J. Kraaij (ECN, The Netherlands)
- P1b-21** "A power system for remote application based on PEM fuel cell" **M.P. Argumosa**, E. Chacón, J. Maellas (INTA, Spain)
- P1b-22** "Using a common methodology for the assessment of hydrogen vehicle demonstrations" L. Pelkmans, M. van Poppel, **G. Mulder** (VITO, Belgium), J. Laurikko (VTT, Finland), L. Lonza (JRC-IPTS, Spain), A. Papageorgiou (CERTH/HIT, Greece)
- P1b-23** "Unmanned aerial vehicle driven by fuel cell technology. Feasibility study" **G. Martínez**, R. Ben, P. Argumosa, J. Maellas (INTA, Spain)
- P1b-24** "Development of a domestic CHP fuel cell generator" O. Miguel (CIDETEC, Spain), J. Manzanedo, L. M. Rodriguez (IKERLAN-Energía, Spain), I. Cantero (CEGASA, Spain), R. Aizpurua, I. Cendoya, J. Rodriguez (CIDETEC, Spain)
- P1b-25** "A miniaturised complete methanol fuel processor / fuel cell system for low power applications" **Y. Men**, G. Kolb, D. Tiemann, R. Zapf, M. Wichert, V. Hessel, H. Löwe (Institut für Mikrotechnik Mainz GmbH, Germany)
- P1b-26** "Development of a CHP system based on a NG fuel processor and PEM fuel cell for residential use" Y. Briceño, D. Sopeña, A. Melgar (CIDAUT, Spain), **C. Parrado** (PYGSUR CONSTRUCCIONES, Spain)
- P1b-27** "A highly efficient power generation process from natural gas: An exergy analysis" **Y. Li**, R. Zhang, J. Chen, X. Li (Tianjin University, China)
- P1b-28** "Hydrogen Link – a transport connection between Scandinavia and the Continent" **B. Christensen** (HIRC, Denmark)



POSTER SESSION 2a: HYDROGEN STORAGE, TRANSPORT AND DISTRIBUTION AND REFUELLING STATIONS:

- P2a-01** "Titanosilicate umbite membranes for the separation of H₂" V. Sebastián, C. Téllez, J. Santamaría, **J. Coronas** (University of Zaragoza, Spain), Z. Lin, J. Rocha (University of Aveiro, Portugal)
- P2a-02** "Estimation of kinetic parameters of the hydrogen insertion reaction on AB₅ and AB₂ alloys by electrochemical impedance spectroscopy" **T. Tzvetkoff**, I. Kanazirski, I. Betova, M. Bojinov (University of Chemical Technology and Metallurgy, Bulgaria)
- P2a-03** "Controlled ball- milling process of various hydrogen storage materials" **F. Legendre**, S. Poissonnet, L. Boulanger and P. Bonnaille (CEA, France)
- P2a-04** "Hydrogen storage in carbon nanomaterials" D. Eyler, M. Junker, E. Breyse-Carrabeuf (ALPHEA, France), L. Allidieres (AIR LIQUIDE, France), D. Guichardot, I. Verdier, F. Roy (CREED, France), E. Mc Rae (LCSM, France), G. Flammand, D. Luxembourg, D. Laplaze (IMP-GDPC, France), P. Achard, S. Berthon, D. Langhor, L. Fulcheri (ARMINES, France)
- P2a-05** "Natural gas pipelines for hydrogen transportation" L. Bedel, M. Junker (ALPHEA, France)
- P2a-06** "Effect of operating conditions on the production of CNT's by CCVD of acetylene" **A. Monzón**, N. Latorre, T. Ubieta, A. Valera, E. Romeo, C. Royo U. (Universidad de Zaragoza, Spain), M.L. Sanjuan (ICMA/CSIC - Universidad de Zaragoza, Spain)
- P2a-07** "Crystal structure and thermal decomposition of magnesium alanate" H.W. Brinks, A. Fossdal, B. C. Hauback, **J. Muller** (Institute for Energy Technology, Norway), M. Fichtner (Forschungszentrum Karlsruhe GmbH, Germany)
- P2a-08** "Hydrogen adsorption in microporous materials based on alumina-pillared clays" **A. Gil**, S.A. Korili (Universidad Pública de Navarra, Spain), T.A. Centeno (INCAR/CSIC, Spain), R. Trujillano, M.A. Vicente (Universidad de Salamanca, Spain)
- P2a-09** "Fast filling processes evaluation for hydrogen refuelling stations" **S. Pregassame**, L. Allidieres, Y. Lacombe, T. Vinard, K. Barral (AIR LIQUIDE, France)
- P2a-10** "Development and test of a 700 bar discharge pressure liquid hydrogen pump" **L. Allidieres**, P. Bourgeois (Air Liquide – DTA, France), P. Drouvot (CRYOMEC AG, Switzerland)
- P2a-11** "Optimising carbon gel properties for hydrogen storage" L. Zubizarreta, **A. Arenillas**, F. Rubiera, J.J. Pis (INCAR/CSIC, Spain)
- P2a-12** "Methods to determine the liquid level in containers that contain liquid hydrogen" **M.C. Gracia Larraga** (Technische Universität Dresden, Germany. Universidad de Zaragoza, Spain)
- P2a-13** "Project ALT-HY-TUDE : the 2 first hydrogen/ Hythane® refuelling stations in France" **I. Alliat**, E. Dejean, T. Muller (Gaz de France, France)
- P2a-14** "Impact of Large-scale Hydrogen use in the Netherlands" **R. Smit**, A. de Groot, M. Weeda (ECN, The Netherlands)
- P2a-15** "An ab-initio quantum mechanical study of the Al-substituted acidic chabazite as a candidate for hydrogen storage" **J. Torres**, B. Civalieri, R. Dovesi, C. Pisani (Università di Torino, Italy)
- P2a-16** "Hydrogen storage and purification in zeolites: a spectroscopic and computational study of the involved interactions" **G. Ricchiardi**, J.G. Vitillo, D. Cocina, G. Spoto, S. Bordita, A. Zecchina (Università di Torino, Italy)
- P2a-17** "Hydrogen separation and storage by Redox processes in fixed bed reactor" J.A Peña, **P. Durán**, E. Romero, J. Herguido (University of Zaragoza, Spain)
- P2a-18** "Study of hydrogen durability of polyethylene" **M.P. Foulc**, P. Mazabraud, M. Le Digabel, G. Beaudoin (CEA, France)
- P2a-19** "Modelling of hydrogen storage under high pressure in porous fixed bed: Thermal effect" G. Momen, **G. Hermosilla**, A. Michau, M. Pons, M. Firdaous, B. Leneindre, L. Madec, K. Hassouni (University of Paris, France)
- P2a-20** "Energy storage on ordered nano-porous and non-optimised materials" F. Darkrim-Lamari, B. Weinberger, S.B. Kayiran (LIMHP-CNRS, France)
- P2a-21** "Case study for the production and use of green hydrogen from waste" **E. Guthrie**, I. Williamson (Air Products plc, UK), M.M. Arxer (Carburos Metálicos, Spain)
- P2a-22** "A model of hydrogen storage in spherical particles" **T.O. Saetre** (Agder University College, Norway)
- P2a-23** "Assessing the durability and integrity of natural gas infrastructures for transporting and distributing mixtures of hydrogen and natural gas" **J. Heerings** (TNO Science & Industry, The Netherlands), I. Alliat (Gaz de France, France)
- P2a-24** "Hydrogen storage among the organic-inorganic layers of zirconium phosphate/phosphonate/hypophosphite" **E. Brunet**, C. Cerro (UAM, Spain)
- P2a-25** "Study and development of activated carbons for hydrogen storage" **T. Piquero**, N. Texier-Mandoki, P. David (CEA, France), I. Alix (PICA society, France), P. Pre (Ecole des Mines de Nantes, France)



POSTER SESSION 2b: FUEL CELLS R&D

- P2b-01** "New approach to prepare Pt-based hydrogen diffusion anodes for PEMFC" **F. Alcaide**, O. Miguel, H.J. Grande (CIDETEC, Spain)
- P2b-02** "The effect of the FeCr over the anode catalytic activity" **N. Lecanda**, I. Villarreal, L.M. Rodríguez-Martínez, I. Antepará, U. Castro, E. Díez-Linaza, M. Rivas, I. Antepará, X. Montero, A. Laresgoti (IKERLAN, Spain)
- P2b-03** "Sensitivity analysis of design parameters of bipolar plates in PEM fuel cells" J. Martínez-Sánchez, **F. Rosa**, F.J. Pino (Universidad de Sevilla, Spain)
- P2b-04** "Development and optimization of perovskite structure anodes for metal supported solid oxide fuel cells" **E. Díez-Linaza**, L.M. Rodríguez-Martínez, I. Villarreal, N. Lecanda, U. Castro, A. Laresgoti (IKERLAN, Spain), K. Vidal, M.I. Arriortua (UPV/EHU, Spain)
- P2b-05** "Synthesis and characterization of calcium stabilized zirconia nanopowder" **M.J. Benítez R.**, L. Lascano L. (Escuela Politécnica Nacional, Ecuador), J.E. Rodríguez P. (Universidad del Cauca, Colombia)
- P2b-06** "PVDF – graphite micro-composite for PEMFC bi-polar plates. Formulation and extrusion – compression process" **J.F. Salas**, P. Bébin (CEA, France), A. Bonnet (ARKEMA/CERDATO, France)
- P2b-07** "Structure and formation of films of zirconia-based solid electrolyte prepared by ion-plasma sputtering" **V.B. Malkov** (Institute of High-Temperature Electrochemistry, Russia), A.V. Malkov, O.V. Malkov ("ROSNA" Scientific and Production Center, Russia), V.G. Pushin (Institute of Metal Physics, Russia), B.V. Shulygin (Ural State Technical University, Russia)
- P2b-08** "Anode microstructure for metal supported solid oxide fuel cells" **U. Castro**, M. Rivas, I. Villarreal, L.M. Rodríguez, N. Lecanda, E. Díez, I. Antepará, X. Montero, A. Laresgoti (IKERLAN, Spain)
- P2b-09** "Flow distribution in bipolar plates" **C. Marín**, L. Valiño, F. Barreras, A. Lozano (LITEC/CSIC, Spain)
- P2b-10** "A_{1-x}A_xFeO₃ (A= La, Nd or/and Pr; A' = Sr or/and Ca) perovskites as new cathodes for oxide fuel cells" **K. Vidal** (UPV-EHU, Spain), L.M. Rodríguez-Martínez, E. Díez-Linaza (IKERLAN, Spain), M.L. Nó, T. Rojo (UPV-EHU, Spain), A. Laresgoti (IKERLAN, Spain), M.A. Arriortua (UPV-EHU, Spain)
- P2b-11** "Gas flow management in PEM Fuel Cells operation" W. Agila, M.A. Rubio, L. González, D. Martín, E. Villanueva, **D. Guinea** (IAI/CSIC, Spain)
- P2b-12** "Multivariable Fuzzy Control for PEM Fuel Cell using impedance spectroscopy" W. Agila (IAI/CSIC, Spain), D.M. Guinea (ICV/CSIC, Spain), García-Hombrados, M.A. Rubio, L. González, E. Villanueva, M.C. García-Alegre (IAI/CSIC, Spain), J.R. Jurado (ICV/CSIC, Spain), **D. Guinea** (IAI/CSIC, Spain)
- P2b-13** "Study of CO tolerance on monolithic Pt-Ru electrodes" E. Pastor, G.A. Planes, **G. García**, O. Guillén, J.L. Rodríguez (Universidad de La Laguna, Spain)
- P2b-14** "A preliminary evaluation of zeolite and related membranes as proton conducting electrolytes for DMFCs" **M.P. Pina**, R. Mallada, M.P. Aused, M.A. Urbiztondo, R. Merino, J. Soler (University of Zaragoza, Spain)
- P2b-15** "Modelling of CO poisoning in a PEM Fuel Cell Anode" **A. Martín-Peiró**, J. Herguido (University of Zaragoza, Spain), M.P. Nielsen (Aalborg University, Denmark)
- P2b-16** "Characterization of the electrochemical parameters of the PEMFC through genetic algorithms" M.A. Rubio, D. Martín, L. González, A. Ribeiro, E. Villanueva, **D. Guinea** (IAI/CSIC, Spain)
- P2b-17** "CO tolerant catalyst for PEM fuel cells. Spectroelectrochemical studies" E. Pastor, J.A. Silva-Chong, **G. García**, J.L. Rodríguez (Universidad de La Laguna, Spain), T. Iwasita, E.R. González (Universidad de Sao Paulo, Brazil)
- P2b-18** "Design and development of a fully automatic multipurpose test station for characterization and quality control of PEMFC stacks and power units" **A. Moschetto**, P. Creti, M. Ferraro, F. Matera, L. Andaloro, G. Dispenza, V. Antonucci (CNR/ITAE, Italy)
- P2b-19** "Dynamic behaviour of Unitized Regenerative PEMFC" **D. Guinea**, M.A. Rubio, L. González, E. Villanueva (IAI/CSIC, Spain), D.M. Guinea, J.R. Jurado (ICV/CSIC, Spain)
- P2b-20** "Evaluation of the Magnetron Sputtering Technique for the Deposition of Platinum Catalyst in PEMFC" **A. García-Luis**, D. González, M. Brizuela (INASMET-Tecnalia, Spain)
- P2b-21** "Cold-plasma modification of carbon black used as a catalyst for oxygen reduction in PEMFC's" **S. Borrós**, J. Herranz, **N. Tricás** (Institut Químic de Sarriá, Universitat Ramon Llull, Spain)
- P2b-22** "A comparative study of approaches to Direct Methanol Fuel Cells modeling" **A.M.F.R. Pinto**, V.B. Oliveira (Universidade do Porto, Portugal), C.M. Rangel (INETI, Portugal)
- P2b-23** "Performance evaluation of a low-pressure polymer electrolyte fuel cell" G. Monteleone, **S. Galli**, I. Lagana (ENEA, Italy)
- P2b-24** "Degradation of Lithium Aluminate under MCFC Operation Conditions" N.N. Batalov, K.A. Alexandrov, Z.R. Kozlova, V.I. Surikov (Russian Academy of Science, Russia), **A.R. Fidelman**, L.N. Smetanin (RFNC-All-Russia Research Institute of Experimental Physics, Russia) et.al.
- P2b-25** "Corrosion Stability of Steel Samples with Welded Seams and Protective Nickel Coatings under MCFC Anode Conditions" A.R. Fidelman, **L.N. Smetanin**, V.I. Malinov (RFNC-All-Russia Research Institute of Experimental Physics, Russia)
- P2b-26** "Ion Transfer in the LiAlO₂ + (Li₂CO₃-K₂CO₃) eutectics Electrolyte of a Carbonate Fuel Cell" K.A. Alexandrov, N.N. Batalov, V.A. Biriukov, V.T. Surikov (Russian Academy of Science, Russia), **A.R. Fidelman**, V.I. Malinov, E.P. Piskunov (RFNC-All-Russia Research Institute of Experimental Physics, Russia)



POSTER SESSION 2c: OTHER TOPICS: ENVIRONMENT, SAFETY, STANDARDS, ECONOMY, STRATEGIES, POLICIES AND SOCIAL ACCEPTANCE:

- P2c-01** "The role and importance of hydrogen sub-communities cooperation for the humankind transition to the era of Hydrogen Civilization" **L.F. Goltsova** (Donetsk National Technical University, Ukraine)
- P2c-02** "Hydrogen Civilization – a novel planetary IAHE conception: environmental aspect and future hydrogen policies" **V.A. Goltsov**, L.F. Goltsova (Donetsk National Technical University, Ukraine), T.N. Veziroglu (University of Miami, USA)
- P2c-03** "Biogas and H₂ production via anaerobic digestion as renewable energy for fuel cells: research, field trial results and market relevance" **S. Trogisch**, J. Bergmair, W. Schnitzhofer (PROFACTOR, Austria), W. E. Baaske (STUDIA, Austria)
- P2c-04** "Some keys for the competitiveness of the high temperature processes for the production of hydrogen" **F. Werkoff**, J.M. Borgard (CEA/SACLAY, France), M. Lewis (Argonne National Laboratory, USA)
- P2c-05** "Factors influencing market success of hydrogen powered vehicles" **M. Armbruster**, S. Horn, P. Kraus, U. Lossen, K. Schich (Bayerische EliteAkademie, Germany)
- P2c-06** "Investigation of hydrogen energy situ in Iran's energy development plan" **S.A Mousavifar**, B.B. Dashti (Renewable Energy organization, Iran)
- P2c-07** "Hydrogen Diffusion in Air: explosive atmospheres generation modelled with CFD software. Experimental validation" **P.M. Diéguez**, L. Aldave, C. Sopena, A. Ursúa, P. Sanchis, L.M. Gandía (Universidad Pública de Navarra, Spain)
- P2c-08** "Renewable hydrogen": Policies and legal trends for H₂ production" S. Scarpellini, **I. Zabalza**, A. Aranda (CIRCE, Spain)
- P2c-09** "Spanish Standardization Committee AEN/CTN 181 on Hydrogen Technologies" **R. Ben**, A. Vegas (AeH – ARIEMA, Spain), R. Chanes (AENOR, Spain), J.L.G. Fierro (ICP-CSIC, Spain)
- P2c-10** "Study of the effects of an explosion of H₂ in a lab." **J. Lobato**, P. Cañizares, M.A. Rodrigo, C. Sáez, J.J. Linares (University of Castilla-La Mancha., Spain)
- P2c-11** "Innovative high temperature routes for hydrogen production - State of art and strategy in Europe" **F. Le Naour** (CEA, France), C. Sattler (DLR, Germany), P. Tarquini (ENEA, Italy), B. Ewan (University of Sheffield, UK), A. Buenaventura (Empresarios Agrupados, Spain), M. Romero (CIEMAT, Spain), H. Wilkenning (JRC Petten, The Netherlands), W. Stein (CSIRO, Australia)
- P2c-12** "Providing hydrogen for transport in Norway: A social learning approach" **O. Andersen** (Western Norway Research Institute, Norway)
- P2c-13** "Analysing the influence of hydrogen bus trials on public knowledge, perception and acceptability: comparative evidence from four cities" T. O'Garra, S. Mourato, **D. Hart** (Imperial College London, UK), P. Schmidt (LBST, Germany), J. Zell (Universität des Saarlandes, Germany), L. Garrity (Murdoch University, Western Australia), T. Neves (Imperial College London, UK), C. Graesel (Universität des Saarlandes, Germany), M. Altmann (LBST, Germany), S. Whitehouse (Department of Planning and Infrastructure, Western Australia), A. Beerenwinkel (Universität des Saarlandes, Germany)
- P2c-14** "Renewable Hydrogen Supply Options for London" D. Joffe, O. Parissis, A. Bauen, **D. Hart** (Imperial College London, UK)
- P2c-15** "Fast and wide range hydrogen sensing with dual pressure gauges" **A. Suzuki**, A. Kurokawa, H. Nonaka, S. Ichimura (AIST, Japan)
- P2c-16** "HySociety: Strategy for industry and business leaders" **R. Ben**, P. Argumosa (INTA, Spain)
- P2c-17** "HySafe - The European Network of Expertise for Hydrogen Safety" **U. Schmidtchen** (BAM, Germany), T. Jordan (Research Center Karlsruhe, Germany)
- P2c-18** "Special aspects of stress analysis of 700 bar-hydrogen storage cylinders" **P. Novak** (BAM, Germany)
- P2c-19** "The use of hydrogen in a deregulated electricity market" **P. Reina**, E. Conde, A. Ramos (ETSI Minas - UPM, Spain), M.P. Revilla (ETSI Minas – UPM, Fundación Alfonso Martín Escudero, Spain)
- P2c-20** "Obtaining of low -cost adsorbents for hydrogen purification" **A. Arenillas**, M.G. Plaza, F. Rubiera, J.J. Pis (INCAR-CSIC, Spain)
- P2c-21** "Explosion characteristics of hydrogen-oxygen and hydrogen-air mixtures at elevated temperatures and pressures" **K. Holtappels**, V. Schröder (BAM, Germany)
- P2c-22** "Danish Hydrogen Association" **J.O. Jensen** (Technical University of Denmark, Denmark), J.H. Petersen (DHA, Denmark), P. Markussen (Elsam A/S, Denmark), J.S. Lundsgaard (IRD Fuel Cells A/S, Denmark), P.V. Mortensen (Dantherm A/S, Denmark), M. Sloth (H₂ Logic ApS, Denmark), H. Bjerregård (Hans Bjerregaard Raadgivning ApS), L. Yde (Herning Institute of Business Administration and Technology), S. Rathmann (APC Denmark)