



**EUROPEAN HYDROGEN ENERGY
CONFERENCE 2014**

Conference Program

Organizer

A \tilde{e} H₂

Spanish Hydrogen Association
www.aeh2.org

Under the auspices of

EHA
EUROPEAN HYDROGEN ASSOCIATION

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Chairman Welcome Letter

Dear friends and colleagues from the hydrogen and fuel cell sector, as Chairman of the Organizing Committee of EHEC 2014, and of the Spanish Hydrogen Association, it is my pleasure to invite you to this edition of the event, held from 12th to 14th of March 2014 in our beautiful city of Seville.

The European Hydrogen Energy Conference is, without doubt, the European reference framework for updates on hydrogen and fuel cell related technologies, and the best setting to present the advances in research, products and projects we are all developing in the sector.

With the more traditional economic activities in a crisis situation, there can be no doubt that our technologies are going to contribute to the creation of markets, prosperity and opportunities and, unquestionably, new jobs in our home countries and regions. We must demonstrate that we have viable projects, mature technologies and products that provide solutions. It is the great opportunity we have been waiting for and we want to share it with you at EHEC 2014!

Led by the Scientific Committee, we have selected the fields and subjects we believe will be of most interest to our community. In this respect, the plenary sessions are sure to arouse the expectations of all, for their topicality and relevance.

As a native of Seville, I would also like to inform you that March is one of the nicest months to visit the city, when orange blossom and jasmine are in bloom; I would encourage some sightseeing in this ancient city whenever this exciting conference is not occupying all your time here.



Very truly yours...

Javier Brey Sánchez

Chairman of the Spanish Hydrogen Association

Organizing Committee

Entity		Name
Abengoa Hidrógeno		Mr José Javier Brey Sánchez (Chairman)
Fundación para el Desarrollo de Nuevas Tecnologías del Hidrógeno en Aragón (FHa)		Ms María Alamán Herbera
Universidad Pablo de Olavide		Mr Raúl Brey Sánchez
Abengoa Hidrógeno		Ms África Castro Rosende
Fundación para el Desarrollo de Nuevas Tecnologías del Hidrógeno en Aragón (FHa)		Mr Luis Correas Usón
Centro Nacional de Experimentación de Tecnologías de Hidrógeno y Pilas de Combustible (CNH2)		Mr Daniel Esteban Bechtold
Instituto Nacional de Técnica Aeroespacial (INTA)		Mr Antonio González García-Conde
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)		Mr Tomás González Ayuso
Junta de Andalucía. Secretaría General de Innovación Industria y Energía		Ms María de Leyva
ARIEMA Energía y Medioambiente		Mr Rafael Luque Berruezo
Asociación Española del Hidrógeno (AeH2)		Ms Sagrari Miguel Montalvá
Consejo Superior de Investigaciones Científicas (CSIC)		Mr Miguel Antonio Peña Jiménez

The Spanish Hydrogen Association

The Spanish Hydrogen Association (AeH₂) is a non-profit organization that has as main aim the promotion of hydrogen technology development as an energy carrier, and its use in industrial and commercial applications.



AeH₂ members are the most active Spanish companies, public and private institutions and researchers in hydrogen technology, with a common interest: opening markets and social and environmental benefits of introducing hydrogen and fuel cells in the energy systems.

AeH₂ members have developed strong capabilities in hydrogen and fuel cell technologies. The AeH₂ has shown itself as an important and visible actor in the hydrogen community in Spain and abroad and will play an important role in this emerging industry.

The Spanish Hydrogen Association supports research, development, demonstration and market introduction of hydrogen energy. To reach its aims the AeH₂ carries out different activities:

- Information and dissemination.
- Expertise and promotion.
- Organization and participation in conferences, seminars and meetings.
- Promotion and education.
- Lobby work for hydrogen and fuel cells.
- Facilitates contacts to companies from Spain and abroad.
- Provides networking forums for the exchange of ideas.

The AeH₂ has promoted the creation of the AEN/CTN 181 of “Hydrogen Technologies” and participates in the International Committee ISO/TC 197 “Hydrogen Technologies”. AeH₂ cooperate with other Associations from Europe and abroad. AeH₂ is a member of:

- European Hydrogen Association – EHA
- International Association for the Hydrogen Energy – IAHE
- Partnership for Advancing the Transition to Hydrogen - PATH
- AeH₂ collaborate with the Canadian Hydrogen and Fuel Cell Association.

The Association plays an important role promoting activities for the hydrogen community and its relations with organizations or authorities, either international or Spanish, and in strategic, legislative and regulatory issues.

The AeH₂ has promoted the Spanish Technological Platform for Hydrogen and Fuel Cells, active since May 2005. The Platform works on the national strategic policy in technological fields for hydrogen and fuel cells. For more info www.aeh2.org / www.ptehpc.org

EHEC sponsors

Platinum Sponsor: Abengoa Hidrógeno

ABENGOA HIDROGENO

Abengoa Hidrógeno, S. A. is a company headquartered in Seville (Spain), a city it has been linked with since its very establishment. The objective of Abengoa Hidrógeno, an Abengoa company, is the organization and operation of businesses and activities related with the production of electric energy utilizing different technology fuel cells, as well as the production of hydrogen from renewable sources, and its clean and efficient use.

Abengoa (MCE: ABG.B/P SM /NASDAQ: ABGB) applies innovative technology solutions for sustainability in the energy and environment sectors, generating electricity from renewable resources, converting biomass into biofuels and producing drinking water from sea water. Abengoa's business is structured around three activities: Engineering and construction, Concession-type infrastructures, and Industrial production.

The synergy that arises between Abengoa Hidrógeno and the technologies it deals with, and other activities of the different business units, such as solar energy, the production of electric energy, or biofuels, is clearly evident.

Abengoa Hidrógeno was established in 2003, incorporating personnel from different Abengoa companies who, since 1999, had been working with hydrogen and fuel cells. Over the years, the company has established relationships and contacts with the sector's main players, and has achieved quantifiable leadership in projects, patents, publications and R&D&I investment.

Gold Sponsor: Carbueros Metálicos (Air Products)



Carbueros Metálicos, Air Products Spanish subsidiary, produces and delivers industrial, high purity and medical gases, and develops new technologies and equipment for multiple applications.

Air Products is the world's largest third-party hydrogen producer, with over 50% market share. The company safely operates over 60 hydrogen production plants, located in Spain, Europe, America and Asia, producing over 5 million kg of hydrogen per day. Air Products has over 55 years experience in hydrogen applications. The Group supplies hydrogen, hydrogen purification equipment and associated equipment to a variety of industries, including petroleum refining; chemical, fat and oils production; metals and electronics processing. Carbueros Metálicos / Air Products deliver hydrogen in all its forms: gaseous, liquid and on site production. As turnkey systems integrator, we have at our disposal hydrogen production technologies, ranging from methane conversion, gas clean-up, waste gasification, water electrolysis from renewable sources, carbon dioxide capture, etc.

The Air Products Group has built more than 150 hydrogen fuelling stations in 19 countries, providing more than 850,000 refuelings per year, at 350bar and 700bar. We have more than 50 patents in the field of hydrogen fuelling technology, including a protocol for 700bar safe refuelling.

Silver Sponsor: ELCOGAS

ELCOGAS is a public limited company, who exploits the 335 MWeISO Puertollano IGCC Plant. This plant is the second largest in the world, and began into commercial operation in March 1998. In 2010 ELCOGAS commissioned the first in the world pilot plant for CO₂ capture and H₂ production integrated in an existing IGCC plant. The process consists of a shifting unit to convert CO into CO₂ using steam; a CO₂/H₂ separation unit by chemical absorption, and a PSA H₂ purification unit that produces 2 t/d of hydrogen of 99.99% while capturing 100 t/d of CO₂. Currently the pilot operates intermittently in relation with internal research projects and it is also open to collaboration with companies and research centres.



Conference's general schedule

Time	Wednesday March 12th	Thursday March 13th	Friday March 14th
8.30 - 10.00	Registration (09:00-10:00)	Plenary Session 3: H2&FC opportunities in the Mediterranean area	Plenary Session 4: Generation&Storage Energy.
10.00 - 10.30	Coffee-break		
10.30 - 12.00	Conference opening Plenary Session 1: Transport applications- Hydrogen Infrastructure deployment in Europe	Parallel Session 3	Parallel Session 6
12.00 - 12.40	Plenary Session 2: Programmatic situation- from Joint Undertaking to Horizon 2020.		
12.40 - 14.00	Lunch		Lunch
14.10 - 16.20	Parallel Session 1	Parallel Session 4	Parallel Session 7
16.20 - 16.50	Coffee-break		
16.50 - 18.20	Parallel Session 2	Parallel Session 5	
18:20 - 19:20	Poster Session 1	Poster Session 2	
21.00 - 23.00	Gala dinner. Sponsored by Abengoa Hidrogeno		

*K: keynote lecture

WORKSHOP: "Rolling out hydrogen infrastructure for transportation: from scratch to reality"

Session 1

Session 2

Session 3

Venue

The European Hydrogen Energy Conference takes place at the Hotel Meliá Sevilla. The Room A, located in the floor -2, will host the conference opening, plenary sessions, and will be also one of the rooms for oral presentations (parallel sessions). The other 3 rooms for oral presentations (parallel sessions) are room B, C and D, all of them located at the floor -1.



Room E will host on Thursday 13th March the “Workshop Rolling out hydrogen infrastructure for transportation: from scratch to reality”.

Poster sessions, Commercial Exhibition and coffee breaks will take place at the floor -2. Lunch will be offered at the cafeteria located in floor -1.

Hotel Meliá Sevilla is located in the heart of Seville opposite the Parque de Maria Luisa and Plaza España and very close to the University (Old Tobacco Factory), the Alcazar, the Barrio de Santa Cruz district, the Cathedral and the Archive of the Indies, the new Meliá Sevilla is the perfect choice for your business and leisure trips, thanks to its excellent location in the city centre, its fully equipped and comfortable facilities and the quality of its services.

Registration is open on Wednesday 12th March from 09.00 to 10.00 hrs at Hotel Meliá Sevilla. On Wednesday the registration desk will be continuously open at the main entrance of the Hotel. From Thursday to Friday the registration desk will be continuously open at the floor -1.

Tickets for lunch and coffees (from 12th to 14th March) for accompanying persons or exhibitors will be available at the registration/information desk at a cost 150 € (VAT not included).

Lanyards

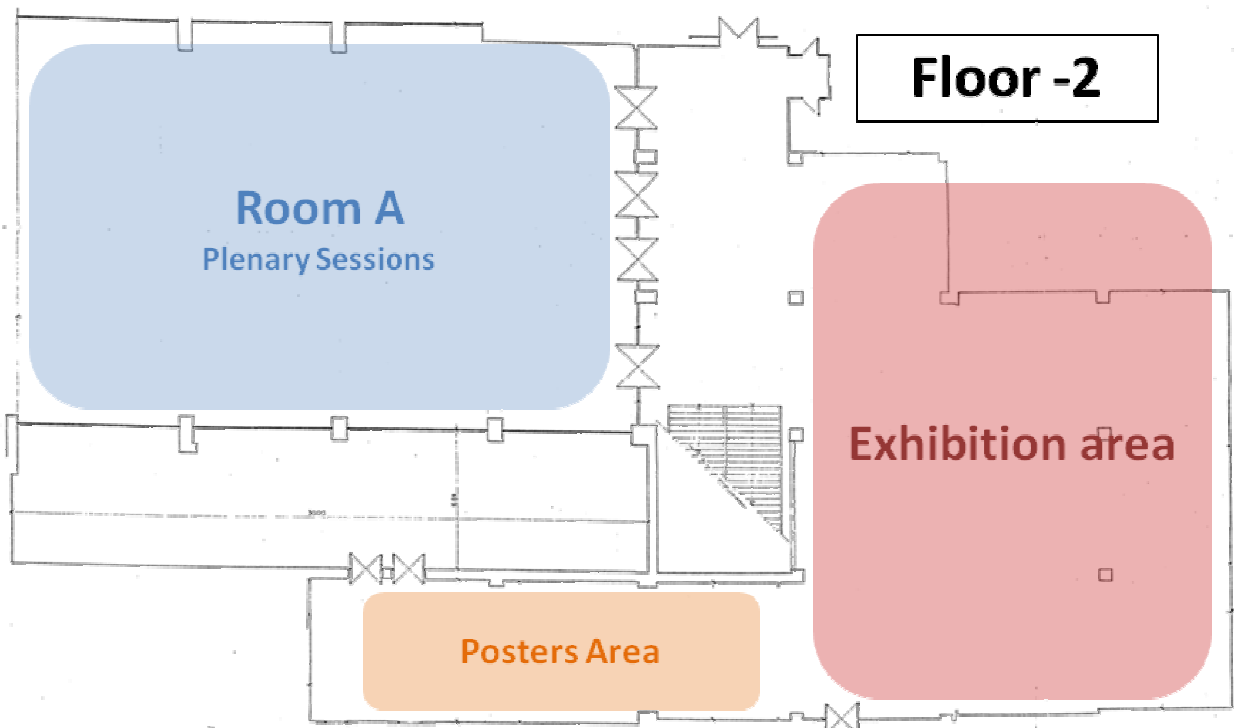
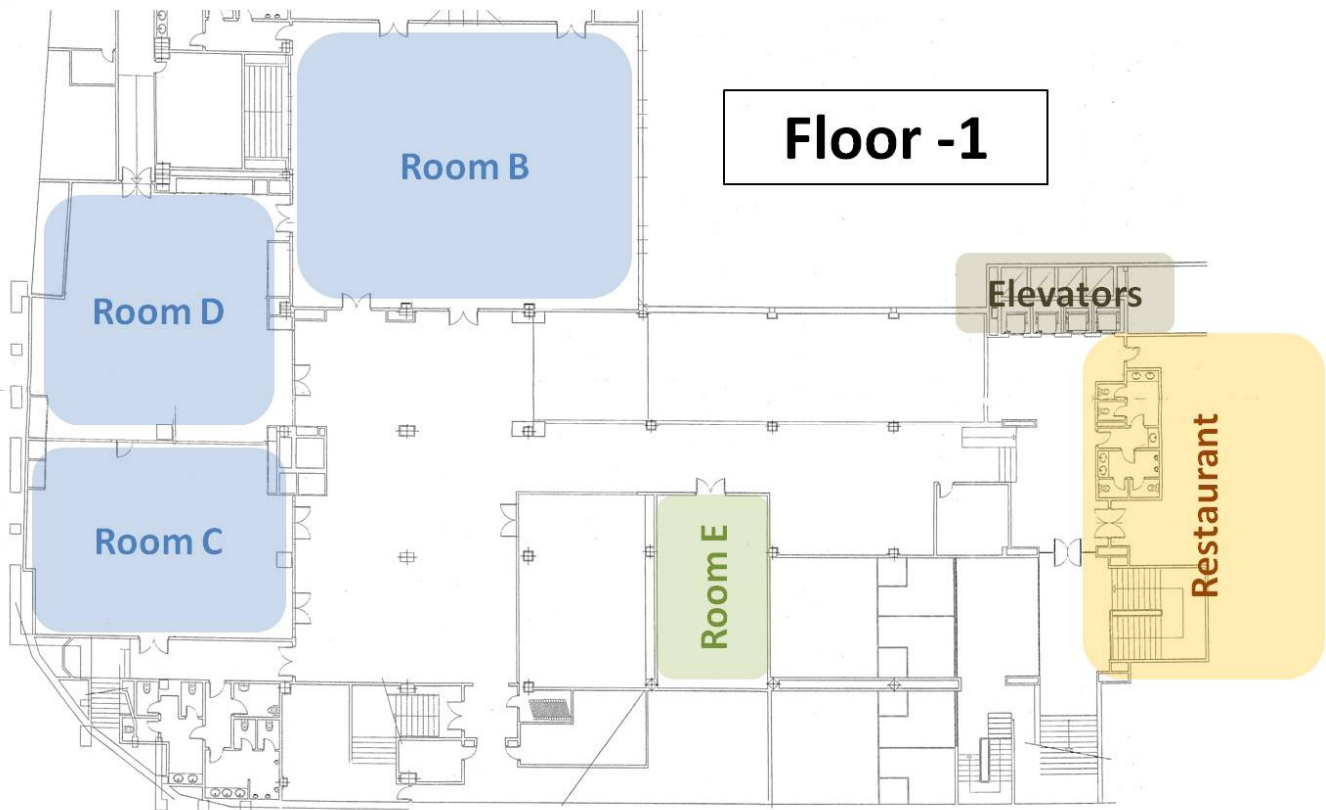
Please ensure that you wear your Conference lanyard and badge. The color coding for lanyards is as follow:

GREEN: for attendants to the Conference. Includes free access to all sessions and areas, complete coffee break service, three days lunch and gala dinner at Royal Alcazar of Seville, guided tour included.

RED: for commercial exhibitors.

ORANGE: for local Organization.

Building map and rooms disposition



Gala dinner

The gala dinner will take place on Thursday 13 th March starting at 21:00 hrs. and concluding at 23:00 hrs., at Royal Alcázar of Seville, guide tour included.

It is mandatory to present the gala dinner invitation at the entrance of the Royal Alcázar of Seville.

Social event & Gala Dinner (sponsored by Abengoa Hidrógeno)

- **Meeting point: Puerta del León at 20.45 hrs. Access: Puerta del León.**
- **Acces to the Royal Alcazar will not be allowed after 21:15 hrs.**

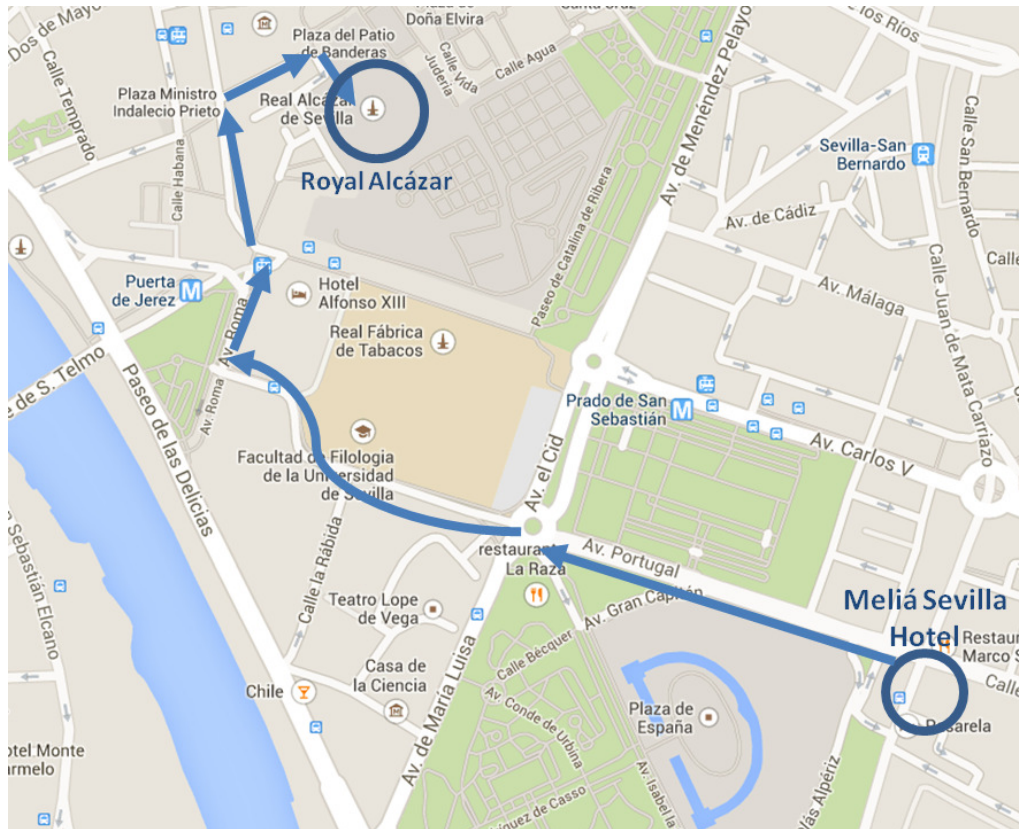
Tickets for accompanying persons or exhibitors will be available at the registration/information desk at a cost 70€ (VAT not included).

The Alcázar of Seville is one of the most representative monumental compounds in the city, the country and the Mediterranean culture as a whole. The historical evolution of the city in the last millennium is held within its walls and gardens, amalgamating influences starting from the Arabic period, late Middle Ages Mudéjar right through to the Renaissance, Baroque and the XIX century. The declaration of World Heritage Site by UNESCO in 1987 acknowledged the survival of cultures and civilizations as a harmonic whole where all of the elements are balanced. The visitor will get to know these unique surroundings either through the legendary al-Mutamid, the XI century monarch and poet from Seville, or through some of the characters that illuminated modern-day Spain around 1812.

You are about to enter one of the most visited complexes in the world, a space in which you will recognize yourself as part of Humanity as a whole, and where cultural and educational activities of which you may partake are organized by the Royal Alcázar Board of Patronage and the Town Hall. These include lectures, Spring Theatre or the Alcázar Gardens Evenings. Welcome: please feel at home, you are in one of the oldest European Royal Palaces that are still in use.



15 minutes walk from Conference to Royal Alcazar:



“Pedro Sánchez” Awards

It has been organized a special event in memoriam of Mr. Pedro Sánchez Diaz. He was one of the pioneers, and played a very important role within the Spanish hydrogen community. We all remember Pedro as a great person and a good friend. The Spanish Hydrogen Association (AeH2), the Spanish Fuel Cells Association (APPICE) and the Spanish Technology Platform for Hydrogen and Fuel Cells (PTE HPC) promoted an special award for the best PhD thesis related with Hydrogen and Fuel Cells technologies. After receiving 31 applications, all of great quality, the Organization decided to award "ex aequo" the two best candidates. They will present their work at this conference . The winners were:

Ms. María Escribano Escudero. Thesis topic: Electrocatalysis and surface nanostructuring: atomic ensemble effects and non - covalent interactions (November 2011).

Mr. Vicente B. Vert Belenguer. Thesis topic: Advanced electrodes for fuel cell solid oxide (SOFC) (September 2011).

Our best wishes to the family of our friend Pedro Sanchez.

Information for speakers

In order to load speakers presentations in the computer of the room, please contact the organization (at the information desk point or at least during the morning coffee break for the morning sessions and during the lunch time for the afternoon sessions).

It is not possible to connect your laptop to the beam projector. Please, bring your presentation in a USB drive. Formats accepted are .pdf , .ppt or .pptx.

Keynote presentations will last for 30 minutes; all other oral presentations will last for 20 minutes, including 5 minutes for discussion/Q&A. It is important to adjust to the precise timing. The chairperson will notify you when there remains 5 and 1 minute left. To fit the timing, please make sure you have maximum of 13 slides, including the title and thank you ones.

Information for chairpersons

- Please, stick to the time schedule to allow people to follow the program and move between sessions.
- Please make sure all presentations are uploaded before the session starts. There will always be somebody from the organizing team to help with any technical problem.
- Let the speaker know he/she is approaching the last 5 and 1 minute of talk.
- After the presentation facilitate the discussion.
- If the audience is too passive, maintain the discussion alive for 5 allocated minutes.

Information for poster sessions

Posters will be showcased in common areas during the whole event, and authors are asked to stay along their works for explanation during the two Poster Sessions: Wednesday and Thursday from about 18:00 to 19:30 hrs.

We strongly encourage presenters to mount their posters as soon as they register. The boards will have the same poster codes supplied to the authors by the EHEC organization. If you need any help, please contact members of the organization or local staff that will be always present at the room.

Authors are responsible for bringing their printed posters to the event.

Maximum poster size: width 90cm × height 150cm (portrait layout).

Poster area will be equipped with laminated boards. Authors can put their poster with the following materials: velcro, double-sided tape, adhesive tape. Please note that no drawing pins can be used.

All posters should be removed after the end of the event on Friday 14th March.

Exhibitors list

• Spanish Hydrogen Association and AeH2 stand participant's:

- Clan Tecnológica
- Abengoa Hidrógeno
- Fundación Hidrógeno de Aragón
- Tecnalía
- Centro Nacional del Hidrógeno
- Ariema Energía y Medioambiente
- CIEMAT.

• Iberfluid.

• Hidrogena Desarrollos Energéticos.

• Sener Ingeniería y Sistemas.

• Tecnología de vacío.

• H2scan.

• Knowledge valley.

• Ventus ciencia experimental.

• Afc energy plc.

• Hygear

• European Hydrogen Association

Plenary Sessions

All Plenary Sessions will take place in the Main Hall (Room A).

Plenary Session 1: Transport applications – H₂ infrastructure deployment in Europe

Wednesday March 12th, 10:30-12:00h

Chairperson Plenary 1: Mr Bert De Colvenaer (FCH JU Executive Director)

- **Dr Joan M. Ogden (Univ. California-Davis): Analysis of the hydrogen infrastructure deployment in USA**

Dr Joan Ogden is Professor of Environmental Science and Policy at the University of California, Davis and Director of the Sustainable Transportation Energy Pathways Program at the campus's Institute of Transportation Studies. Her primary research interest is technical and economic assessment of new energy technologies, especially in the areas of alternative fuels, fuel cells, renewable energy and energy conservation. Her recent work centers on the use of hydrogen as an energy carrier, hydrogen infrastructure strategies, and applications of fuel cell technology in transportation and stationary power production. She has served on California state committees on hydrogen and greenhouse gas issues, the USDOE Hydrogen Technical Advisory Committee, the IPCC panel on Renewable Energy, and on National Academies committees assessing hydrogen fuel cell and plug-in hybrid vehicles. She holds a BS in mathematics from the University of Illinois, and a Ph.D. in theoretical physics from the University of Maryland.



- **Dr Steffen Møller-Holst (Sintef): Hydrogen infrastructure deployment in Europe-towards full coverage in 2050?**

Dr Steffen Møller-Holst earned his PhD on PEM Fuel Cells (1996), was engaged at Los Alamos National Laboratory, NM, USA 1997-99, and has since 2001 been employed at SINTEF with responsibility for a significant project portfolio within H₂ & Fuel Cell. Currently, Møller-Holst is (N.ERGHY)-Chair for the Transport Pillar (FCH2 JU) and Chairman for the Hydrogen Council and thereby advisor to the Norwegian Government.



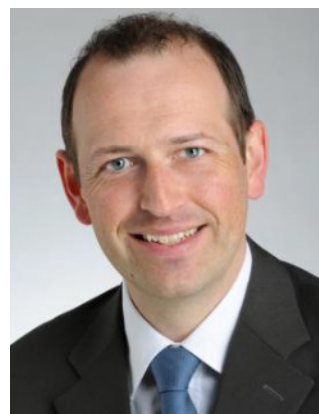
- **Dr Jörg Wind (Daimler AG EU-Projects and Energy Systems Analyses): “Progress on FCEV development and conditions for FCEV market introduction”**

Dr Jörg Wind has studied physics at the Technical University of Munich (TUM). After doing his Ph.D. in the field of semiconductor physics and sensor technology at the TUM in 1992, he started working in the field of fuel cells and hydrogen. As a project manager, he was responsible for material development for high temperature fuel cells and exhaust aftertreatment at DASA and DaimlerChrysler from 1992 until 1998. From 1998 until 2002, he was responsible for PEM stack development at DaimlerChrysler. Since 2002, he is responsible for strategic energy projects and EC funded projects, comprising projects in the field of fuel cell vehicles and battery electric vehicles (including energy systems analyses and WTW-analyses). He has been involved in the setup of the FCH JU from the beginning on and is currently vice chair of the NEW-IG transportation committee.



- **Dr Lars Peter Thiesen (General Motors): " Electric Mobility with Hydrogen – Five Years of Experience in Field Operation"**

Dr Lars Peter Thiesen began his career at Opel in 1998 at the Fuel Cell Activities department (FCA). Since then, he held various positions and responsibilities, including GM/Opel’s hydrogen and fuel cell deployment strategy for Europe. Currently, he is responsible for future mobility, technology strategy and regulations within General Motors’ European public policy department. Prior to his career at Opel, Lars Peter Thiesen worked as a scientist at the University of Kiel, Germany specialized in renewable energies. He holds a PhD in Natural Sciences (Physics).



Plenary Session 2: Programmatic situation - from Joint Undertaking to Horizon 2020

Wednesday March 12th, 12:00-12.40h

Chairperson Plenary 2: Mr Guillermo Álvarez Jiménez (Centre for Industrial Technological Development, Ministry of Economy and Competitiveness).

- **Mr Bert de Colvenaer (FCH JU Executive Director): The Fuel Cells and Hydrogen Joint Undertaking : Towards the Deployment of Fuel Cells and Hydrogen Technologies.**

Bert De Colvenaer was appointed as the Executive Director of the Fuel Cells and Hydrogen Joint Undertaking as from 1 September 2010. As Executive Director, he is the legal representative of the FCH JU and the chief executive responsible for the day-to-day management of the FCH JU, in accordance with the decisions of the Governing Board. Supported by the staff of the Programme Office, this includes : manage the launch of the calls for project proposals and the evaluation and selection of projects; monitor and update the Multi-Annual Implementation Plan of the FCH JU; coordinate with other relevant programmes at national and regional levels; and communicate information on FCH JU activities.

Bert De Colvenaer has been involved for more than 20 years in the automotive industry in the field of power-train production engineering and advanced research. He has been working on fuel cell research from the early 90's and was involved in high level group activities and major EU research projects. In 2002 he established and led the Advanced Technology Division of Toyota Europe, focusing on breakthrough research in the field of robotics, fuel cell and hydrogen and new automotive production technologies.

Bert De Colvenaer's academic background is in mechanical engineering and industrial management.



NOTE: at the end of this session a discussion of Plenary session 1 and Plenary session 2 will take place (15 minutes aprox.).

Plenary Session 3: H₂&FC opportunities in the Mediterranean area

Thursday March 13th, 08:30-10:00h

Chairperson Plenary 3: Ms Marieke Reijalt (EHA Executive Director)

- **Mr Vicente Fernandez Guerrero, Secretary General of Industry (JUNTA DE ANDALUCÍA): Andalucía towards innovation and energy efficiency**

Vicente Fernández Guerrero was born in Malaga in 1973. He has a degree in law from the University of Seville and entered by public examination in the Lawyers Team of the Andalusian Government in 1999. Currently he is the General Secretary of Innovation, Industry and Energy of the regional ministry of Economy, Innovation, Science and Employment. He has been at the forefront of law offices of the regional ministries of Tourism and Sport; Education and Science; Economy and Finance; and Economics, Innovation, Science and Employment. He has also worked at the Tax Agency of Andalusia and at the Advisory Area of the Andalusian Government. Vicente Fernandez is also the president of the Andalusian Energy Agency.



- **Dr Athanasios Konstandopoulos (APT Laboratory, CPERI/CERTH): Carbon Neutral Solar Fuel Technology**

Dr Konstandopoulos is a specialist in aerosol technology and structured reactors for energy, environmental and biotech applications. He has coordinated and managed numerous research projects, funded by the European Commission and leading international industries. He is the recipient of the 2006 European Descartes Prize, the 2010 European Research Council Advanced Grant, a Fellow of the Society of Automotive Engineers, author of numerous widely cited publications and member of the Board of Governors of the European Commission's Joint Research Center.



- **Mr Khalid Benhamou (Sahara Wind Inc.): The role of Hydrogen from the trade winds in North Africa's broader renewable energy transition**

As Engineer from California Polytechnic (1992), Khalid Benhamou installed in 1994 Morocco's first hybrid wind/diesel system on the Sahara trade windblown coastline. With co-funding from NATO in support of the large Sahara Wind 5 GW-HVDC transmission Project, he conducted regional wind measurements and deployed Africa's first wind-hydrogen systems in Morocco and Mauritania's universities.



Plenary Session 4: Generation & Storage Energy

Friday March 14th, 08:30-10:00h

Chairperson Plenary 4: TBC.

- **Dr Ulrich Bünger (Ludwig-Bölkow-Systemtechnik GmbH): Large –scale storage of hydrogen. Problem of energy storage. Analysis of the European situation**

Dr Ulrich Bünger M.Sc., Dr.-Ing., is with LBST since 1990. His fields of experience are: project management of techno-economic feasibility studies on hydrogen energy and fuel cell systems, well-to-wheel studies on alternative vehicle fuels and co-ordination of international strategy projects for industry and politics. Coordinator of the WtW analysis for the German Transport Energy Strategy (TES), analysis of hydrogen vehicle storage systems and market potential of small residential fuel cell systems for Germany. Coordination of the European projects Thematic Network on Hydrogen Energy (HyNet), the European Hydrogen Energy Roadmap project (HyWays) and the planning activity for future European Transport Demonstration Projects (HyLights). Degrees in mechanical engineering from Hannover University (Germany), Georgia Institute of Technology (USA) with sabbaticals at Purdue University (USA) and Technical University of Norway. From 2002 until 2012 Associate Professor for hydrogen energy systems at the Technical University of Norway in Trondheim.



- **Mr Anthony Leo: (Vice President -Applications Engineering and Advanced Technology Development. Fuel Cell Energy): Stationary Power Generation with Fuel Cells**

Anthony (Tony) Leo has played key leadership roles in development and commercialization of electrochemical systems for more than 30 years. He is currently responsible for Application Engineering and Advanced Technology Development at FuelCell Energy, Inc., an integrated fuel cell company which manufactures, installs, and services fuel cell powerplants around the world.



- **Dr Michael Hirscher (Max Planck Institute for Intelligent Systems): State of the art and trends in material development for hydrogen storage**

Michael Hirscher is group leader “Hydrogen storage” at the Max Planck Institute for Intelligent Systems, Stuttgart, Germany. He studied physics at University of Stuttgart, Germany and Oregon State University, USA, and was awarded the Otto Hahn Medal of the Max Planck Society in 1988. Recently, he edited the “Handbook of Hydrogen Storage” and is operating agent of IEA-HIA Task 32 “Hydrogen-based energy storage” since 2013.



Wednesday, 12th March. Parallel Session 1 (14:10 – 16:20)

Room A. FC components and stacks 1

Keynote ("Pedro Sánchez" award)

14:10 **Enabling low temperature fuel cells via improved Pt-alloy cathode catalysts (FCC1-1)**

M. Escudero-Escribano, P. Malacrida, U. Grønbjerg, A. Verdaguer-Casadevall, J. Rossmeisl, I.E.L. Stephens, I. Chorkendorff
Department of Physics, Technical University of Denmark. Denmark

14:40 **Array of Self-Supported Platinum Nanotubes as PEM fuel cell electrode (FCC1-2)**

Arnaud Morin, Samuele Galbiati, Nicolas Pauc
CEA/Liten/LCPEM - CEA/DSM/INAC. Francia

15:00 **Scaling-up and characterization of ultralow-loading MEAs made-up by electrospray (FCC1-3)**

B. Martinez-Vazquez, D.G. Sanchez, J.L. Castillo, K.A. Friedrich, P.L. Garcia-Ybarra
UNED. Spain - DLR. Germany

15:20 **Impact of PTFE content in GDLs on PEFC performance evaluated by neutron radiography combined with pulsed HELOX analysis (FCC1-4)**

Johannes Biesdorf, Pierre Oberholzer, Thomas J. Schmidt, Pierre Boillat
Paul Scherrer Institut. Switzerland

15:40 **A Dissipative Particle Dynamics Approach to Evaluate Structures and Transport Phenomena in Nafion Membranes with Different Equivalent Weights (FCC1-5)**

Erik O. Johansson, Bengt Sundén, Jinliang Yuan
Department of Energy Sciences, Lund University. Sweden

16:00 **Electrically induced thermal evolution of graphene-based vanadium oxide semiconducting films for self-thawing of fuel cell engines (FCC1-6)**

Hye-Mi Jung, Sukkee Um
School of Mechanical Engineering, Hanyang University. Republic of Korea

Room B. Hydrogen production: Others 1

Keynote

14:10 **Polymer Electrolyte Membrane Water Electrolysis: status, perspectives and technological developments (HPO1-1)**

Pierre Millet, Fabien Auprêtre
Université Paris Sud. France - CETH Co. France

14:40 **Characterization of IrO₂ and IrRuO₂ Electrocatalysts for the O₂ Evolution Reaction in SPE Water Electrolyzers (HPO1-2)**

S. Siracusano, V. Baglio, C. Alegre, A. S. Aricò
Institute for Advanced Energy Technologies (ITAE), CNR. Italy

15:00 **High pressure PEM electrolyzers and their application for renewable energy systems (HPO1-3)**

V. Fateev, P. Blach, S. Grigoriev, A. Kalinnikov, V. Porembskiy
National Research Center "Kurchatov Institute". Russia - TINA Systems S.L. Spain

15:20 **Electrodeposited catalysts and anion exchange membranes for alkaline water electrolysis (HPO1-4)**

Liliana Diaz, Graciela Abuina, Mariano Brunob, Federico Vivab, Horacio Cortib, Jaromír Hnátc, Martin Paidarc, Karel Bouzekc
Centro de Procesos Superficiales, INTI. Argentina - Centro Atómico Constituyentes, CNEA. Argentina - Institute of Chemical Technology Prague. Czech Republic

15:40 **Improvements to Integrate High Pressure Alkaline electrolyzers for Electricity/H₂ production from Renewable Energies to Balance the GRID – ELYGRID Project (HPO1-5)**

P. Marcuello Fernández, D. Embid Gómez, E. Albertín Marco, G. García Jiménez, L. Correas Usón
Aragon Hydrogen Foundation. Spain

16:00 **Ti based-Supports for Unitized Regenerative Fuel Cells (HPO1-6)**

M.V. Martínez-Huerta, M. Roca-Ayats, E. Herreros, G. García, J.L. Galante, M.A. Peña
Institute of Catalysis and Petrochemistry, CSIC. Spain - Universidad de La Laguna. Spain

Room C. H2 distribution and filling stations 1

Keynote

14:10 **Infrastructure readiness for hydrogen fleet deployments (DFS1-1)**

María del Mar Arxer

Carburros Metálicos – Air Products. Spain

14:40 **Hydrogen Infrastructure for Transport – Hitting the road together (DFS1-2)**

Floris Mulder, Marieke Reijalt, Henry Wasung

HyER. Belgium

15:00 **The next phase of Hydrogen infrastructure in Norway (DFS1-3)**

Ulf Hafselid

HYOP as. Norway

15:20 **Hydrogen-compressed natural gas refueling infrastructure in India (DFS1-4)**

Sauhard Singh, Reji Mathai, Ved Singh, A K Sehgal, B Basu, R K Malhotra

Indian Oil Corporation Ltd., Research & Development Centre. India

15:40 **An optimization approach for evaluating subsidies in the initial location of hydrogen refueling stations (DFS1-5)**

Carlos Fúnez, Doroteo Verastegui, Ricardo García, Eusebio Ángulo

National Center of Hydrogen. Spain - Universidad de Castilla-La Mancha. Spain

16:00 **Location of hydrogen fueling stations in urban areas (DFS1-6)**

J. Javier Brey, Ana F. Carazo, Macarena Tejada, Raúl Brey

Abengoa Hidrógeno, S.A. Spain - Pablo de Olavide University. Spain

Room D. Hydrogen storage 1

Keynote

14:10 **Hydrogen storage by sodium borohydride: Development of versatile and fast responding reactors for the release of Hydrogen in mobile applications (HS1-1)**

D. Hufschmidt, G. Arzac, G. Adame, M.A. Jiménez, A. Fernández

Institute of Material Science of Sevilla, CSIC-Univ. Sevilla. Spain - Abengoa Hidrógeno. Spain

14:40 **Understanding the role of additives/catalysts in H₂ storage processes based on borohydride materials (HS1-2)**

A. Fernández, E. Deprez, G. Arzac, D. Hufschmidt

Institute of Material Science of Sevilla, CSIC-Univ. Sevilla. Spain

15:00 **Electrochemical hydrogen compressor performance based on speek and nafion membranes (HS1-3)**

S. Rivas, J. L. Pineda, A. Carbone, A. Saccà, E. Passalacqua, Bamdad Bahar, J. Ledesma-García, A. U. Chávez-Ramírez, L.G. Arriaga

Universidad Autónoma de Querétaro. México - Centro de Investigación y Desarrollo Tecnológico en Electroquímica. México - Institute for Advanced Energy Technologies (ITAE), CNR. Italy - Xergy Incorporated. USA

15:20 **BMW Hydrogen Storage Technology – Current Status and Future Trends (HS1-4)**

Klaas Kunze, Oliver Kircher

BMW. Germany

15:40 **Hydrogen as a solution for storing intermittent renewable energy (HS1-5)**

Jean-Christophe Lanoix

Hinicio. Belgium

16:00 **Energy evaluation of a solar hydrogen storage facility (HS1-6)**

Eduardo López González, Fernando Isorna Llerena, Manuel Silva Pérez, Felipe Rosa Iglesias

Instituto Nacional de Técnica Aeroespacial (INTA). Spain - Universidad de Sevilla. Spain

Wednesday, 12th March. Parallel Session 2 (16:50-18:10)

Room A. FC components and stacks 2

16:50 **Order Reduction of a Distributed Parameter PEM Fuel Cell Anode Gas Channel Model (FCC2-1)**

M.L. Sarmiento-Carnevali, C. Batlle, I. Massana, M. Serra

Universitat Politècnica de Catalunya. Spain - Institut de Robòtica i Informàtica Industrial, CSIC-UPC. Spain

17:10 **Investigation of the liquid water distribution in a 50 cm² PEM Fuel Cell: effects of reactants relative humidity, oxygen/air feed, and current density (FCC2-2)**

Alfredo Iranzo, Pierre Boillat, Johannes Biesdorf, Antonio Salva, Felipe Rosa

AICIA, School of Engineering. Spain - Paul Scherrer Institut. Switzerland - University of Sevilla. Spain

17:30 **Fuel cell current density distribution analysis: comparison between a 3D model and experimental data (FCC2-3)**

F. Mariana, M. Lakrouf, A. Picot, O. Rallières, H. Vergnes, C. Turpin

Université de Toulouse, France – LAPLACE, CNRS. France - Université Paul Sabatier. France

17:50 **Ageing studies of PEM Fuel Cells developed for reformat fuel operation in μ CHP units (FCC2-4)**

Sylvie Escribano, Laure Guétaz, Pierre-André Jacques, Fabrice Micoud

CEA/LITEN/DEHT - CEA/Grenoble. France

Room B. Commercialization & Strategies

16:50 **Pre-investigation of Water Electrolysis for Flexible Energy Storage at Large Scales: The Case of the Spanish Power System (CS-1)**

F. Gutiérrez-Martín

Universidad Politécnica de Madrid. Spain

17:10 **Water electrolysis as key enabler for power to gas accelerating renewable energy integration (CS-2)**

Jan Vaes

Hydrogenics. Belgium

17:30 **Homologation of Fuel Cell Electric Vehicle (CS-3)**

Lorenzo Nasarre Cortés, Joaquin Mora Larramona, Marcos Rupérez Cerqueda, Luis Carlos Correas Usón, Lucia Alberdi

Aragon Hydrogen Foundation. Spain

17:50 **The International Energy Agency Hydrogen Implementing Agreement (IEA HIA): Collaborative R,D&D to 2015 and Beyond (CS-4)**

Mary-Rose de Valladares, Jan K. Jensen, Antonio G. García-Conde

International Energy Agency, Hydrogen Implementing Agreement. Spain

Room C. H2 distribution and filling stations 2

16:50 **Assessment of a hydrogen refueling station (DFS2-1)**

C. Wulf, M. Kaltschmitt

Hamburg University of Technology. Germany

17:10 **Rollout of hydrogen refuelling stations employing a strategy of fixed nodes and maximum flows (DFS2-2)**

J. Javier Brey, Ana F. Carazo, Raúl Brey

Abengoa Hidrógeno, S.A. Spain - Pablo de Olavide University. Spain

17:30 **Electrochemical hydrogen compression and purification (DFS2-3)**

Wiebrand Kout, Peter Bouwman

HyET. The Netherlands

17:50 **Effect of precooled inlet gas on temperature evolution during refueling (DFS2-4)**

Rafael Ortiz Cebolla, Nerea de Miguel Echevarria, Beatriz Acosta Iborra, Pietro Moretto, Christian Bonato, Frederik Harskamp

Institute for Energy and Transport, JRC. The Netherlands

Room D. Hydrogen production: Reforming 1

16:50 **Glycerol reforming for hydrogen production: structured nanocomposite perovskite-like materials** (HPR1-1)

Ksenia Parkhomenko, Sadio Cisse, Anne-Cécile Roger, Natalia Mezentseva, Ekaterina Smal, Vladislav Sadykov
University of Strasbourg. France - Boreskov Institute of Catalysis. Russia - Novosibirsk State University. Russia

17:10 **Ethanol and glycerol steam reforming using Co/SBA-15 catalysts: Effect of the incorporation of Ce, La and Zr** (HPR1-2)

A.J. Vizcaíno, L. García-Moreno, J.A. Calles, A. Carrero
Rey Juan Carlos University. Spain

17:30 **Exergetic Study of Catalytic Steam Reforming of Bio-ethanol over Pd-Rh/CeO₂ with Hydrogen Purification in a Membrane Reactor** (HPR1-3)

Ali Hedayati, Olivier Le Corre, Bruno Lacarriere, Jordi Llorca
Universitat Politècnica de Catalunya. Spain - DSEE, Ecole des Mines de Nantes. France

17:50 **Hydrogen production from biogas reforming process: study of catalyst deactivation in the presence of H₂S** (HPR1-4)

U. Izquierdo, V.L. Barrio, J. Requies, M.B. Güemez, J.F. Cambra, P.L. Arias
School of Engineering, University of the Basque Country UPV/EHU. Spain

Thursday, 13th March. Parallel Session 3 (10:30-12:40)

Room A. FC components and stacks 3

Keynote

10:30 **Lanthanide nickelates: advanced oxygen electrode materials for solid oxide cells (SOFC/HTSE) (FCC3-1)**

J.C. Grenier, J-M. Bassat, A. Brevet, F. Mauvy, J. Mougin, A. Rougier

CNRS-ICMCB-CNRS, Univ. Bordeaux. France - CEA-Grenoble, DRT/LITEN/DTBH/SCSH/. France

11:00 **Advanced solid oxide cells for fuel-to-power and power-to-fuel conversion (FCC3-2)**

Byung-Kook Kim

Korea Institute of Science and Technology. Republic of Korea

11:20 **Development and performance analysis of a metallic passive Micro Direct Methanol Fuel Cell for portable applications (FCC3-3)**

D.S. Falcão, J.P. Pereira, C.M. Rangel, A.M.F.R. Pinto

Universidade do Porto. Portugal – LNEG. Portugal

11:40 **Noble metal oxide and valve metal oxide promoters of Pt for methanol oxidation (FCC3-4)**

V. Baglio, R.S. Amin, K.M. El-Khatib, S. Siracusano, A. Stassi, D. Sebastián, A.S. Aricò

Institute for Advanced Energy Technologies (ITAE), CNR. Italy - National Research Center. Egypt

12:00 **Catalytic electro-activation of the Pt-Ti interphase for CO and methanol oxidation (FCC3-5)**

M. Roca-Ayats, G. García, J.L. Galante, Miguel A. Peña, M.V. Martínez-Huerta

Institute of Catalysis and Petrochemistry, CSIC. Spain - Universidad de La Laguna. Spain

12:20 **Vibrating wire method with semi-circle wire for measuring hydrogen viscosity (FCC3-6)**

Tatsuya Hisatsugu, Temujin Uehara, Kan'ei Shinzato, Naoya Sakoda, Masamichi Kohno, Yasuyuki Takata

Kyushu University. Japan

Room B. Hydrogen production: Others 2

Keynote

10:30 **Fabrication and characterization of microtubular SOEC in coelectrolysis mode (HPO2-1)**

H. Monzón, M.A. Laguna-Bercero, V. M. Orera

Instituto de Ciencia de Materiales de Aragón, CSIC-Universidad de Zaragoza. Spain

11:00 **Development and Characterisation of Solid Oxide Electrolyser Cells (SOEC) (HPO2-2)**

G. Schiller, M. Hörlein, F. Tietz

Deutsches Zentrum für Luft- und Raumfahrt (DLR). Germany - Forschungszentrum Jülich. Germany

11:20 **Peak hydrogen power plant based on SOEC/SOFC - the system configuration (HPO2-3)**

Jaroslav Milewski, Marcin Wolowicz, Janusz Lewandowski

Institute of Heat Engineering at Warsaw University of Technology. Poland

11:40 **Dual atmosphere study of the K41X stainless steel for interconnect application in high temperature water vapour electrolysis (HPO2-4)**

M. R. Ardigo, L. Combemale, I. Popa, S. Chevalier, P. Girardon

ICB, UMR 6303 CNRS-Université de Bourgogne. France - APERAM, Centre de Recherche. France

12:00 **Optimization of SO₂ crossover and water transport in SO₂-depolarized electrolyser for hydrogen production (HPO2-5)**

Annuikka Santasalo-Aarnio, Michael M. Gasik

School of Chemical Technology, Aalto University. Finland

12:20 **Design and Manufacturing of Catalytic Membrane Reactors by developing new nano-architected catalytic and selective membrane materials (HPO2-6)**

José Luis Viviente

Fundación Tecnalia Research & Innovation. Spain

Room C. H2 & FC systems and applications 1

Keynote

10:30 **HYLIFT: projects on hydrogen powered fuel cell materials handling vehicles in Europe (FCA1-1)**

Hubert Landinger

Ludwig-Bölkow-Systemtechnik GmbH. Germany

11:00 **Cost-efficient fuel cell hybrid systems for inner-city transport (FCA1-2)**

Manfred Limbrunner

Proton Motor Fuel Cell GmbH. Germany

11:20 **A Compelling Value Proposition For Fuel Cell Buses (FCA1-3)**

Daljit Bawa

Ballard Power Systems Inc. Canada

11:40 **CHIC – Clean Hydrogen In European Cities: demonstration of 55 FC hydrogen buses (FCA1-4)**

María del Mar Arxer

Carburos Metálicos - Air Products. Spain

12:00 **Fuel Cell Control Unit – employ automotive reliability for fuel cell systems (FCA1-5)**

Nils Kaiser

Bosch Engineering GmbH. Germany

12:20 **Aeronautical Auxiliary Power Unit (APU) based on Fuel Cell (FCA1-6)**

Daniel Martínez Bastida, Antonio Ayuso Barea, Jorgen Lundsgaard, Flemming Helsted Pedersen

SENER Ingeniería y Sistemas S.A. Spain - IRD (Denmark) - Flemming Electronic Company. Spain

Room D. Hydrogen storage 2

Keynote

10:30 **Experimental and simulated results for the desorption process in a complex hydride hydrogen storage reactor with addition of metal hydride (HS2-1)**

Inga Bürger, Christian Brack, Marc Linder

German Aerospace Center. Germany

11:00 **Modified hydrogen storage performance of $Mg(NH_2)_2/LiH$ composite (HS2-2)**

Hujun Cao, Yao Zhang, Han Wang, Teng He, Zhitao Xiong, Guotao Wu, Ping Chen

Dalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics. P. R. China

11:20 **Long-Term Atomistic Simulation of Hydrogen Diffusion in Metals (HS2-3)**

K. G. Wang, M. P. Ariza, M. Ortiz

California Institute of Technology. USA - Universidad de Sevilla. Spain

11:40 **Thermal decomposition of ammonia borane impregnated in the pores of activated bentonite (HS2-4)**

Binayak Roy, Joydev Manna, Pratibha Sharma

Indian Institute of Technology Bombay. India

12:00 **Synthesis of trimetallic core-shell catalysts composed of transition metals for the hydrolysis of ammonia borane (HS2-5)**

Fangyuan Qiu, Li Li, Ying Wang, Changchang Xu, Chengcheng Chen, Yijing Wang, Yongmei Wang, Huatang Yuan

Institute of New Energy Material Chemistry, Nankai University. P.R. China

12:20 **Type approval of composite gas cylinders – probabilistic analysis of RC&S concerning minimum burst pressure (HS2-6)**

Georg W. Mair, Martin Hoffmann, Florian Scherer

BAM Federal Institute for Materials Research and Testing. Germany

Thursday, 13th March. Parallel Session 4 (14:10-16:20)

Room A. FC components and stacks 4

Keynote ("Pedro Sánchez" award)

14:10 **Advanced Electrodes for SOFCs – a PhD approach (FCC4-1)**

Vicente B. Vert, José M. Serra

Instituto de Tecnología Química, CSIC. Spain

14:40 **High performance microtubular Solid Oxide Fuel Cells for portable applications (FCC4-2)**

M. Torrell, A. Meadowcroft, R. Campana, A. Morata, D. Pla, K. Kendall, M. Kendall, A. Tarancón

Catalonia Institute for Energy Research. Spain - Centro Nacional del Hidrógeno. Spain - University of Birmingham. UK – Adelan. UK

15:00 **Infiltrated cathode materials for microtubular solid oxide fuel cells (FCC4-3)**

M. A. Laguna-Bercero, V. M. Orera, H. Monzón, A. R. Hanifi, J. Cunningham, T. H. Etsell and P. Sarkar

Instituto de Ciencia de Materiales de Aragón, CSIC-Universidad de Zaragoza. Spain - University of Alberta. Canada - Alberta Innovates, Technology Futures. Canada

15:20 **Preparation and characterisation of sulphonated composite PBI-TiO₂ membranes for high temperature PEMFCs (FCC4-4)**

Justo Lobato, Manuel A. Rodrigo, Sara Mateo, Sonia Molina, Hector Zamora, Hector Rodrigo, Thomas Steenberg, and Hans A. Hjuler

University of Castilla-La Mancha. Spain - Danish Power System. Denmark

15:40 **Influence of ammonia as contaminant on high temperature proton exchange membrane fuel cell performance (FCC4-5)**

Fernando Isorna Llerena, Eduardo López González, Jaime Luis Sáenz Cuesta, Felipe Rosa Iglesias, Juan Pedro Bolívar Raya

Instituto Nacional de Técnica Aeroespacial. Spain - Universidad de Sevilla. Spain - Universidad de Huelva. Spain

16:00 **Oxidation behavior of ashless coal in a direct carbon fuel cell (FCC4-6)**

C.-G. Lee, W.-K. Kim, D.-L. Vu

Hanbat National University. Republic of Korea

Room B. Hydrogen production: Others 3

Keynote

14:10 **Cartridges for Controlled Hydrogen Generation based on Galvanic Zn Water Reaction (HPO3-1)**

Robert Hahn, Andreas Gabler, Axel Thoma, Fabian Glaw, Martin Krebs, Michael Schmalz, Petra Gehrke, Joachim Helmke, Matthias Arnold, K.-D. Lang

Fraunhofer IZM. Germany - Varta microbattery, Germany - Grillo-Werke AG. Germany - gaskatel GmbH. Germany - Flexiva GmbH. Germany

14:40 **Scale-up experiences of microbial electrolysis cells (MECs) for hydrogen production and wastewater treatment (HPO3-2)**

A. Escapa, L. Gil-Carrera, A. Morán

Natural Resources Institute (IRENA), University of Leon. Spain

15:00 **Production of Biohydrogen through the Combination of Two Stage Fermentation Processes Using Salt-Rich Substrates (HPO3-3)**

Dayana Muzziotti, Alessandra Adessi, Andrea Sanchini, Laura Dipasquale, Giuliana d'Ippolito, Angelo Fontana, Roberto De Philippis

University of Florence. Italy - Institute of Chemistry of Organometallic Compounds (ICCOM), CNR. Italy - Institute of Biomolecular Chemistry (ICB), CNR. Italy

15:20 **Promotion effect of precious metals on Ni/ γ -Al₂O₃ catalyst in selective CO methanation (HPO3-4)**

Woohyun Kim, Heung-ju Lee, Kee Young Koo, Wang Lai Yoon

Korea Institute of Energy Research (KIER). Republic of Korea - Yonsei University. Republic of Korea

15:40 **Micoreactors technology for Hydrogen Production and Purification (HPO3-5)**

S. Palma, O.H. Laguna, A. Perez, S. Ivanova, F. Romero-Sarria, M.A. Centeno, J.A. Odriozola

Department of Inorganic Chemistry - Institute of Materials Science of Seville, University of Sevilla-CSIC. Spain

16:00 **CO preferential oxidation over Co₃O₄-CeO₂ catalysts synthesized by freeze-drying method (HPO3-6)**

A. Arango-Díaz, J.A. Cecilia, J. Marreno-Jerez, P. Nuñez, J. Jiménez-Jiménez, A. Jiménez-López, E. Rodríguez-Castellón

Universidad de Málaga. Spain - Universidad de la Laguna. Spain

Room C. H2 & FC systems and applications 2

Keynote

14:10 **Experimental results of a gasoline engine converted to run on hydrogen-rich synthetic gases (FCA2-1)**

Jorge Arroyo, Francisco Moreno, Mariano Muñoz, Carlos Monné

University of Zaragoza. Spain

14:40 **Methanol Reformer - The next milestone for Fuel Cell powered submarines (FCA2-2)**

Stefan Krummrich, Javier Llabres

ThyssenKrupp Marine Systems GmbH. Germany - SENER Ingeniería y Sistemas, S.A. Spain

15:00 **Developments in the context of the hydrogen and fuel cell-based AIP system of the Spanish S-80 submarine (FCA2-3)**

África Castro

Abengoa Hidrógeno, S.A. Spain

15:20 **DMFC and PEMFC/H2 performance under unmanned aerial vehicles environmental flight conditions (FCA2-4)**

Oscar Gonzalez-Espasandin, Teresa J. Leo, Miguel A. Raso, Emilio Navarro

Universidad Politécnica de Madrid. Spain - Universidad Complutense de Madrid. Spain

15:40 **Fuel Cells for UAV (Unmanned Aerial Vehicle) applications (FCA2-5)**

María P. Argumosa, Guillermo Gomez, Jesús Maellas

INTA. Spain – ISDEFE. Spain

16:00 **A Polymer Fuel cell stack breadboard development for lunar manned exploration mission (FCA2-6)**

Giacoppo Giosue', Matera Fabio, Passalacqua Enza, Mailland Filippo, Hovland Scott, Barbera Orazio

Institute for Advanced Energy Technologies (ITAE), CNR. Italy - Compagnia Generale per lo Spazio. Italy - European Space Agency. The Netherlands

Room D. Hydrogen production: Reforming 2

Keynote

14:10 **Environmental and economic assessment of technologies for the production of biohydrogen and its distribution (HPR2-1)**

Konstantin Zech, Stefan Rönsch, Elias Grasemann, Katja Oehmichen, Julia Michaelis, Simon Funke

Deutsches Biomasseforschungszentrum. Germany - Fraunhofer Institute for Systems and Innovation Research. Germany

14:40 **Hydrogen Production from Biomass via Steam Reforming of Bio-Oil Components (Furfural). Effect of Support Materials and Method of Incorporation of Active Metal (Ni) (HPR2-2)**

S. Sayas, A. Chica

Instituto de Tecnología Química, CSIC. Spain

15:00 **Hydrogen production from a bio-oil model compound over alumina and modified alumina nickel catalysts (HPR2-3)**

K. Bizkarra, V.L. Barrio, J. Requies, A. Yartu, P.L. Arias, J.F. Cambra

School of Engineering, University of the Basque Country UPV/EHU. Spain

15:20 **Hydrogen production from coal and biomass co-gasification. ELCOGAS experience on the field (HPR2-4)**

Pedro Casero, Francisco García Peña, Pilar Coca

ELCOGAS S.A. R&D Department. Spain

15:40 **Effect of biodiesel derived impurities on the catalytic steam reforming of glycerol in a fluidized bed reactor (HPR2-5)**

Javier Remón, Víctor Mercado, Lucía García, Jesús Arauzo

Aragon Institute for Engineering Research (I3A), Universidad de Zaragoza. Spain

16:00 **Hydrogen production from supercritical water reforming of glycerol (HPR2-6)**

F.J. Gutiérrez Ortiz, P. Ollero, A. Serrera, P. G. Aguilera

Departamento de Ingeniería Química y Ambiental, Universidad de Sevilla. Spain

Thursday, 13th March. Parallel Session 5 (16:50-18:20)

Room A. FC components and stacks 5

Keynote

16:50 **Supercritical synthesis of fuel cell catalysts on high surface area carbon substrates (FCC5-1)**
Patricia Hernández-Fernández, Peter Brilner Lund, Christian Kallesøe, Henrik Fanø Clausen, Leif Højslet Christensen
Danish Technological Institute. Denmark

17:20 **On the relationship between the amount of N and ORR performance of N/Carbon nanotube electrodes (FCC5-2)**
Carlota Domínguez, Francisco J. Pérez-Alonso, Mohammed A. Salam, Shaeel Ahmed, Al-Thabaiti, Abdullah Yousif Obaid, José L. Gómez, J.L.G. Fierro, M.A. Peña, Sergio Rojas
Institute of Catalysis and Petrochemistry, CSIC. Spain - King Abdulaziz University. Kingdom of Saudi Arabia.

17:40 **Cation and anion binding effect on the oxygen reduction activity of Fe/N/C based catalysts (FCC5-3)**
Francisco J. Pérez-Alonso, Carlota Domínguez, Mohammed Abdel Salam, Abdulrahman O. Al-Youbi, Sulaiman N. Basahel, José L. Gómez, J.L.G. Fierro, M. A. Peña, Sergio Rojas
Institute of Catalysis and Petrochemistry, CSIC. Spain - King Abdulaziz University. Kingdom of Saudi Arabia.

18:00 **Effect of reformat H₂ fuel and Air bleed mitigation on the durability of low temperature PEFCs for μ -CHP applications (FCC5-4)**
G. Papakonstantinou, A. Pilenga, T. Malkow, G. Tsotridis
Institute for Energy and Transport, JRC. The Netherlands

Room B. Markets strategies

Keynote

16:50 **Analysis of the general public and stakeholder awareness and acceptance on hydrogen technologies (MS-1)**
Carolina García, Guillermo López, Laura Vega, Daniel Esteban Bechtold
Centro Nacional de Hidrógeno. Spain - IPLUSF. Spain

17:20 **Hydrogen Transport in European Cities (HyTEC) (MS-2)**
Marieke Reijalt, Emma Guthrie
HyER. Belgium - Air Products. Belgium

17:40 **H₂FC European Infrastructure; Support Opportunities to Hydrogen and Fuel Cell Research (MS-3)**
Olaf Jedicke
Karlsruher Institute of Technology. Germany

18:00 **European Electro-mobility Observatory - compiling and presenting EV data (MS-4)**
Jos Streng, Marieke Reijalt, Tariq Van Rooijen, Hilke Rosler, Thierry Coosemans, Henry Wasung
HyER. Belgium

Room C. H₂ & FC systems and applications 3

Keynote

16:50 **Challenges in PEMFC stack development for mobile and stationary applications (FCA3-1)**
Mathias Reum
Proton Motor Fuel Cell GmbH. Germany

17:20 **Variable configuration converter in stacked microbial fuel cells (MFC) for optimised energy harvesting and cell reversal prevention (FCA3-2)**
G. Papaharalabos, A. Stinchcombe, J. Greenman, C. Melhuish, I. Ieropoulos
University of the West of England. UK - University of Bristol. UK

17:40 **Electrolyser real-time control using the techno-economic optimization software Odyssey (FCA3-3)**
C. Bourasseau, B. Guinot, A. Chatroux, P. Mayoussier, M. Lopez
CEA-LITEN/DTBH/L2ED. France

18:00 **Investigations on a solid oxide cell after 6100 h operation in electrolysis mode (FCA3-4)**
F. Tietz, M. Al Daroukh, J. Schefold, A. Brisse, D-N. The, M. Schröder
Institute of Energy and Climate Research. Germany - European Institute for Energy Research. Germany
Institute of Physical Chemistry, Aachen University. Germany

Room D. Hydrogen production: Reforming 3

Keynote

16:50 **Steam reforming of sulfur-containing liquid fuels: dodecane/diesel on a Rh-Pt bimetallic catalyst for H₂ production (HPR3-1)**

Qinghe Zheng, Christiane Janke, Robert Farrauto
Columbia University. USA - BASF SE. Germany

17:20 **Production of H₂ generated from hydrocarbons in-situ with CO₂ disposal (HPR3-2)**

Leonid Surguchev, Roman Berenblyum
UKOIL Overseas North Shelf AS. Norway - International Research Institute of Stavanger. Norway

17:40 **Thermocatalytic Decomposition of LPG as Hydrogen Source for Fuel Cells (HPR3-3)**

Stefan Neuberg, Helmut Pennemann, Athanassios Zogas, Gunther Kolb
Institut für Mikrotechnik Mainz GmbH. Germany

18:00 **Behaviour of nickel-alumina spinel (NiAl₂O₄) catalysts for isooctane steam reforming (HPR3-4)**

C. Jiménez-González, Z. Boukha, B. de Rivas, J.I. Gutiérrez-Ortiz, J.R. González-Velasco, R. López-Fonseca
Department of Chemical Engineering, University of the Basque Country UPV/EHU. Spain

Friday, 14th March. Parallel Session 6 (10:30-12:40)

Room A. Countries & Assessments

Keynote

10:30 **Hydrogen as a Fuel and Energy Storage: Success Factors for the German Energiewende (CA-1)**

Oliver Ehret, Klaus Bonhoff

National Organization Hydrogen and Fuel Cell Technology. Germany

11:00 **The Fuel Cell and Hydrogen Network North Rhine-Westphalia (CA-2)**

Thomas Kattenstein, Frank Koch, Michael Weber

Fuel Cell and Hydrogen Network NRW. Germany

11:20 **Aragon bet on Hydrogen and Fuel Cells (CA-3)**

Arturo Aliaga López, Javier Navarro Espada, María Alaman Herbera, Fernando Palacín Arizón

Government of Aragon. Spain - Aragon Hydrogen Foundation. Spain

11:40 **Numerical analysis of hydrogen safety issues (CA-4)**

Daniele Melideo, Daniele Baraldi, Rafael Ortiz-Cebolla

Institute for Energy and Transport, JRC. The Netherlands

12:00 **Application of Accident Modeling and Prediction Methodology to a Hydrogen Fuelling Station (CA-5)**

Al-shanini A., Ahmad Ahmad, Khan F.

Universiti Teknologi Malaysia. Malaysia - Memorial University of Newfoundland. Canada

12:20 **Life-cycle performance of hydrogen production via biofuel reforming (CA-6)**

Ana Susmozas, Diego Iribarren, Javier Dufour

IMDEA Energy Institute. Spain - Rey Juan Carlos University. Spain

Room B. Hydrogen production: Others 4

Keynote

10:30 **Effects of preparation method, carriers and promoters on the reactivity of cadmium and zinc sulfide systems in the water splitting reaction under visible light irradiation (HPO4-1)**

Francesco Arena, Elena Balentseva, Gloria Berlier, Enrico Boccaleri, Giorgio Gatti, Lorenzo Spadaro, Giuseppe Trunfio

University of Messina. Italy - Institute for Advanced Energy Technologies (ITAE), CNR. Italy - University of Torino. Italy - University of the Eastern Piedmont. Italy

11:00 **Effect of temperature used in the solvothermal synthesis on the structure and photoactivity of CdS for hydrogen production under visible light (HPO4-2)**

F. Vaquero, R.M. Navarro, J.L.G. Fierro

Institute of Catalysis and Petrochemistry, CSIC. Spain

11:20 **Solar Hydrogen Production from Cellulose Biomass with Enzymatic and Artificial Photosynthesis System (HPO4-3)**

Yutaka Amao, Yuka Sakai, Satomi Takahara

Osaka City University. Japan

11:40 **Photocatalytic water splitting using CNT-inorganic hybrid materials (HPO4-4)**

A. Moya, A. Cheveran, S. Marchesan, M. Prato, D. Eder, J.J. Vilatela

IMDEA Materials Institute. Spain - University of Münster. Germany - INSTM. Italy

12:00 **Dynamic Model of a Solar Water Splitting Process based on a Two Step Thermochemical Cycle (HPO4-5)**

M. Lange, M. Roeb, C. Sattler, R. Pitz-Paal

Deutsches Zentrum für Luft- und Raumfahrt (DLR). Germany

12:20 **Water-gas shift activity over catalysts based on ceria-copper inverse configurations and influence of the presence of O₂ in the reactant mixture (HPO4-6)**

A. López Cámara, L. Barrio, G. Zhou, R. Si, J.C. Hanson, J.A. Rodríguez, V. Cortés Corberán, A. Martínez-Arias

Institute of Catalysis and Petrochemistry, CSIC. Spain - Brookhaven National Laboratory. USA

Room C. H2 & FC systems and applications 4

Keynote

10:30 **Hydrogen Thermophysical Properties Database Compiling a New Equation of State and Correlations Based on the Latest Experimental Data at High Temperatures and High Pressures (FCA4-1)**

Naoya Sakoda, Ryo Akasaka, Satoru Momoki, Tomohiko Yamaguchi, Kan'ei Shinzato, Masamichi Kohno, Yasuyuki Takata
Kyushu University. Japan - Kyushu Sangyo University. Japan - Nagasaki University. Japan

11:00 **Back-up systems for telecommunications installations using fuel cells (FCA4-2)**

Enrique García García, Luis Muñoz Sebastián
Iberdrola. Spain

11:20 **Autonomous solar-hydrogen-battery power supply for remote emergency telecommunication stations (FCA4-3)**

Bahman Shabani, John Andrews
School of Aerospace, Mechanical, and Manufacturing Engineering, RMIT University. Australia

11:40 **Hydrogen storage in the geological underground - a first analysis of options for erection and operation (FCA4-4)**

Maurice Schlichtenmayer, Sebastian Bohnes
ESK GmbH. Germany - RWE Power AG. Germany

12:00 **Simulation and experimental evaluation of operating modes in a hydrogen-based microgrid (FCA4-5)**

L. Valverde-Isorna, F. Rosa, F.J. Pino, J. Guerra
Universidad de Sevilla. Spain

12:20 **Assessment of Sustainability of the Direct Peroxide/Peroxide Fuel Cell (FCA4-6)**

Ayşe Elif Sanli, Aylin Aytaç
Turgut Ozal University. Turkey - Gazi University. Turkey

Room D. Hydrogen production: Reforming 4

Keynote

10:30 **Improvement of Steam Reforming of Toluene by CO₂ Capture using Fe/CaO-Ca₁₂Al₁₄O₃₃ Bi-functional Materials (HPR4-1)**

I. Zamboni, Y. Zimmermann, A. Kiennemann, C. Courson
ICPEES – UMR CNRS 7515 – ECPM. France

11:00 **Using 2-D TDLAS to Improve Efficiency and Reliability in Steam Methane Reforming (HPR4-2)**

David M. Giltner, Andrew Sappey, Jim Howell, Pat Masterson, Mike Estes, Xavier Dubert
Zolo Technologies, Inc. USA

11:20 **Modeling of methane steam reforming in membrane catalytic reactor (HPR4-3)**

Shashi Kumar, Jay Agrawal, Sandeep Kumar, Surendra Kumar
Department of Chemical Engineering, Indian Institute of Technology Roorkee. India

11:40 **CO₂-free hydrogen production by methane catalytic decomposition over pure silica materials (HPR4-4)**

J.A. Botas, D.P. Serrano, P. Pizarro, G. Gómez
Rey Juan Carlos University. Spain - IMDEA Energy Institute. Spain

12:00 **Selection of the acid function for a bifunctional catalyst based on CuFe₂O₄ spinel for dimethyl ether steam reforming (HPR4-5)**

L. Oar-Arteta, C. Montero, A.T. Aguayo, J. Bilbao, A.G. Gayubo
Department of Chemical Engineering, University of the Basque Country UPV/EHU. Spain

12:20 **Influence of Ni environment of supported catalysts on its reactivity in the acetone steam reforming reaction for hydrogen production from Bio-Oil (HPR4-6)**

R.M. Navarro, R. Guil-Lopez, A.A. Ismail, S.A. Al-Sayari, J.L.G. Fierro
Institute of Catalysis and Petrochemistry, CSIC. Spain - Centre for Advanced Materials and Nanoengineering. Saudi Arabia - Central Metallurgical R&D Institute. Egypt

Friday, 14th March. Parallel Session 7 (14:10-16:20)

Room A. FC components and stacks 6

Keynote

14:10 **Polimerization of protic ionic liquid for HTPEMFCs: study of ionic moieties and crosslinking effects** (FCC6-1)

F.J. Lemus, [A. Eguizábal](#), M.P. Pina
Nanoscience Institute of Aragón. Spain

14:40 **Development of anodic materials for HT-PEMFCs with higher tolerance to H₂S** (FCC6-2)

[María S. Rau](#), Carsten Cremers, Jens Tübke.
Fraunhofer ICT. Germany

15:00 **Performance of a High-Temperature PEM Fuel Cell Operated with Oxygen Enriched Cathode Air and Hydrogen from Synthetic Reformate** (FCC6-3)

F. Javier Pinar, Nadine Bruns, Maren Rastedt, Peter Wagner
Research Centre for Energy Technology at the University of Oldenburg. Germany

15:20 **Electrochemical performance of a HT-PEM fuel cell with bi-functional electro/reforming anode** (FCC6-4)

[George Avgouropoulos](#), Alexandra Paxinou, Stylianos Neophytides
Institute of Chemical Engineering Sciences, FORTH. Greece - University of Patras. Greece

15:40 **Multi-scale modeling to boost fuel cell performance: From pore-scale simulations to better efficiency and durability** (FCC6-5)

[U. Salomov](#), P. Asinari
Politecnico di Torino. Italy

16:00 **Optimization of HT-PEM fuel cells** (FCC6-6)

Hans Aage Hjuler, [Héctor García](#), Thomas Steenberg, Qingfeng Li, Jens Oluf Jensen, Lars N. Cleemann
Danish Power Systems. Denmark - Technical University of Denmark. Denmark

Room B. Hydrogen production: Others 5

Keynote

14:10 **Experimental assessment of the cyclability of the Mn₂O₃/MnO thermochemical cycle for solar hydrogen production** (HPO5-1)

Javier Marugan, Juan Angel Botas, [Raúl Molina](#), Carolina Herradón
Universidad Rey Juan Carlos. Spain

14:40 **Hydrogen from synthetic biogas via sip using NiAl₂O₄ catalyst: reduction stage** (HPO5-2)

M. Herrero, J. Plou, P. Durán, J. Herguido, [J.A. Peña](#)
Aragón Institute of Engineering Research (I3A), Universidad Zaragoza. Spain

15:00 **Acceleration of Redox Reaction of Metal Oxide with Oxide Ion Conducting Support Materials and Application to Hydrogen Production** (HPO5-3)

[Junichiro Otomo](#), Syunsuke Isogai, Fumihiko Kosaka, Hiroyuki Hatano
The University of Tokyo. Japan - Chuo University. Japan

15:20 **Techno-environmental evaluation of Steam-Iron as an alternative process for hydrogen storage or purification** (HPO5-4)

Abel Sanz, Diego Iribarren, [Javier Dufour](#)
IMDEA Energy Institute. Spain - Rey Juan Carlos University. Spain

15:40 **High Temperature water gas shift reaction over catalysts containing one activity promoter** (HPO5-5)

Carmen Martos, Javier Dufour, Aida Ruiz, Alfredo Lameiro
Rey Juan Carlos University. Spain - IMDEA Energy Institute. Spain

16:00 **Enhancement of CO conversion in a novel Electroless Pore-Plated Pd membrane reactor for H₂ production via Water Gas Shift** (HPO5-6)

[D. Alique](#), J. A. Calles, R. Sanz, L. Furones
Rey Juan Carlos University. Spain

Room C. H2 & FC systems and applications 5

Keynote

14:10 **Recuperation of Exhaust Energy via Hydrogen Production Using a Steam Reforming Process – Fuel Saving Strategies for Natural Gas Combustion Engines (FCA5-1)**

Ulrich Dehof, Sven Wenzel, Joerg vom Schloss, Dominik Pennings, Kurt Imren Yapici
Oel-Waerme-Institut. Germany - ECC Automotive. Germany

14:40 **Exergy analyses of hydrogen-based energy storage systems comparing utilization of pure and methanated hydrogen in combined cycle power plants and fuel cell μ -CHP units (FCA5-2)**

Mario Ludwig, Christoph Haberstroh, Ullrich Hesse, Antonio Hurtado
TU Dresden. Germany

15:00 **A multi-fuel processor test bench based on reforming coupled to a fuel cell as a previous stage to industrial scale-up (FCA5-3)**

A.J. Martin, T. González-Ayuso, C. Montoro, J.L. Serrano, J.A. Daza, A. Balbín, L. Daza
CIEMAT. Spain - Olea Madrid S.L. Spain - Comberla Ingeniería, S.L. Spain - Institute of Catalysis and Petrochemistry, CSIC. Spain

15:20 **How to Put in Work a Fuel Cell System. Design, Implementation, Control and Cost Analysis of the Balance of Plant (FCA5.4)**

Francisca Segura Manzano, José Manuel Andújar Márquez
University of Huelva. Spain

15:40 **Residual heat use generated by a 12kW fuel cell in an electric vehicle heating system (FCA5-5)**

Lucía Alberdi-Jiménez, Lorenzo Nasarre Cortés, Joaquín Mora Larramona, Luis Carlos Correas Usón
Aragon Hydrogen Foundation. Spain

16:00 **Development of a Combined Heat and Power Plant Based on Molten Carbonate Fuel Cell Technology (FCA5-6)**

Marianela Martín Betancourt, Rocío Palomino Marín, Juan Fernández García, Noelia Ibáñez Lirio
Abengoa Hidrógeno A.A. Spain

Room D. Hydrogen production: Reforming 5

Keynote

14:10 **H₂-production from CO₂-assisted ethanol steam reforming; the regeneration of Ni-based catalysts (HPR5-1)**

Lukasz Bednarczuk, Pilar Ramírez de la Piscina, Narcís Homs
Universitat de Barcelona. Spain - Catalonia Institute for Energy Research. Spain

14:40 **Reforming of ethanol on Co/Al₂O₃ catalysts reduced at different temperatures (HPR5-2)**

Zsuzsa Ferencz, Kornélia Baán, Erika Varga, Albert Oszkó, András Erdőhelyi
Department of Physical Chemistry and Materials Science, University of Szeged. Hungary

15:00 **The Chemical-loop Reforming of Ethanol on Spinel Ferrites (HPR5-3)**

Cristian Trevisanut, Juliana Velasquez, Massimiliano Mari, Sigrid Yurena Arenas Urrea, Jean-Marc M. Millet, Fabrizio Cavani
Università di Bologna. Italy - CNRS-Université Claude-Bernard Lyon 1. France - Universidad de Las Palmas de Gran Canaria. Spain

15:20 **Micro-reformer for hydrogen-rich gas generation from ethanol for a portable micro-SOFC system (HPR5-4)**

D. Pla, M. Salleras, I. Garbayo, A. Morata, N. Sabaté, N. J. Divins, M. Torrell, J. Llorca, A. Tarancón
Catalonia Institute for Energy Research. Spain - IMB-CNM, CSIC. Spain - Polytechnic University of Barcelona. Spain

15:40 **Doped copper-manganese oxide catalysts for the production of hydrogen via steam reforming of methanol (HPR5-5)**

Joan Papavasiliou, George Avgouropoulos, Theophilos Ioannides
Institute of Chemical Engineering Sciences, FORTH. Greece - University of Patras. Greece

16:00 **Mechanistic studies of methanol reforming on Co-MnO catalysts (HPR5-6)**

E. Papadopoulou, Theophilos Ioannides
Institute of Chemical Engineering Sciences, FORTH. Greece - University of Patras. Greece

POSTERS SESSIONS

Hydrogen production: Reforming

P-4 SMR Integration and Increase of CO₂ Production

Marcelo Tagliabue

Air Liquide Argentina S.A. Argentina

P-48 Hydrogen production system by steam reforming integrated in a solar parabolic disc

Marta T. Escudero, Belén Sarmiento, María Maynar, Rocío Domínguez

Abengoa Hidrógeno, S.A. Spain

P-56 Hydrogen from biomass derived oxygenates: Thermodynamic comparison between bio-oil and ethanol steam reforming

C. Montero, L. Oar-Arteta, B. Aramburu, A. Remiro, J. Bilbao, A.G. Gayubo.

University of the Basque Country UPV/EHU. Spain

P-71 Evaluations of Hydrogen Permeability on SCZY/SHP/Ni Composites Membrane

Young-Sang Lee, Hyun-chul Ju, Dong-Min Kim, Whan-Gi Kim, Tae-Whan Hong

Korea National University of Transportation. Republic of Korea - Inha University. Republic of Korea - Hongik University. Republic of Korea - Konkuk University. Republic of Korea

P-83 Hydrogen production from methane steam reforming in combustion heat assisted novel micro-channel reactor with catalytic stacking: A CFD simulation study

Chun-Boo Lee, Min-Ho Jin, Sung-Wook Lee, Dong-Wook Lee, Shin-Kun Ryi, Jong-Soo Park, Sung-Hyun Kim, Kyung-Ran Hwang

Korea Institute of Energy Research. South Korea - Korea University. South Korea

P-166 Photocatalytic hydrogen production from methanol over Cu-TiO₂ catalysts

P.P.C. Udani, Eirik Djuve, Magnus Rønning

Norwegian University of Science and Technology. Norway

P-214 Preparation and characterization of Pd-Ag-Au alloy membranes for hydrogen separation

Jon Meléndez, Ekain Fernandez, Pedro L. Arias, D. A. Pacheco Tanaka

TECNALIA Research & Innovation. Spain - University of the Basque Country UPV/EHU. Spain

P-217 Comparison between electroless plating and pvd-magnetron sputtering techniques for preparation of Pd-Ag membranes for hydrogen separation

Ekain Fernandez, José Angel Sanchez-García, Jon Meléndez, Alba Arratibel, D. A. Pacheco Tanaka

TECNALIA Research & Innovation. Spain - University of the Basque Country UPV/EHU. Spain

P-225 Preparation of Pd-Ag pore filled membranes for hydrogen separation

Alba Arratibel, Ekain Fernandez, Jon Meléndez, M. A. Llosa Tanco, Fausto Gallucci, D.A. Pacheco Tanaka

TECNALIA Research & Innovation. Spain - Eindhoven University of Technology. The Netherlands

P-250 Hydrogen production from biogas through dry and steam reforming

A. Serrano-Lotina, A. Balbín, J.A. Daza, C. Montoro, L. Daza

Institute of Catalysis and Petrochemistry, CSIC. Spain - Comberla Ingeniería S.L. Spain

P-255 New catalysts based on chalcophanite promoted with Ni applied to steam reforming of bioethanol

C. Fdez-Caballero, J.F. Da Costa-Serra, A. Chica

Instituto de Tecnología Química, CSIC. Spain

P-266 Oxidative steam reforming of methane over nickel catalysts supported on La₂O₃-CeO₂-Al₂O₃

Miletić N., Izquierdo U., Barrio V.L., Arias P.L.

University of the Basque Country UPV/EHU. Spain

P-269 Advances in Hydrogen Production by Sorption Enhanced Reforming. Process and materials development

Asunción Aranda, Saima Sultana Kazi, Cristina Sanz Pinilla, Johann Mastin Julien Meyer, Ramón Murillo

Institute For Energy Technology. Norway - Instituto de Carboquímica, CSIC. Spain

P-292 Evaluation of sepiolite-supported catalysts for biogas reforming to hydrogen production

A. Serrano-Lotina, J.A. Daza, A. Dieng, A. Balbín, L. Daza

Institute of Catalysis and Petrochemistry, CSIC. Spain

P-327 The Unique Role of CaO in Stabilizing the Pt/Al₂O₃ Catalyst for the Dehydrogenation of Cyclohexane

Jiafeng Yu, Qingjie Ge, Jian Zhang, Hengyong Xu, Dang Sheng Su

Dalian Institute of Chemical Physics. P.R. China - Institute of Metal Research. P.R. China

P-340 Renewable hydrogen production from steam reforming of glycerol using Ni-Cu-Mg-Al mixed oxides obtained from hydrotalcite-like compounds

Robinson L. Manfro, Mariana M.V.M. Souza

Federal University of Rio de Janeiro. Brazil

P-342 Hydrogen production by bio oil reforming over nickel aluminates

Lucas G. Carreira, Mariana M. V. M. Souza, Nielson F. P. Ribeiro

Federal University of Rio de Janeiro. Brazil - Núcleo Multidisciplinar de Pesquisa. Brazil

Hydrogen production: Others

P-22 Hydrogen production technologies - Operational challenges of a pressurized alkaline electrolyzer-prototype

Tannert D., Ziems C., Krüger P., Fischer U., Krautz H.J.
Brandenburg University of Technology Cottbus-Senftenberg. Germany

P-26 Advanced alkaline electrolyzer for hydrogen production; design and manufacturing

Agustín Merlos, Rubén Beneito, Lorena Rey, Joaquín Vilaplana, Julián Fortes, Juan Carratalá
AIJU. Spain

P-50 Eliminating hydrogen inventories for green energy storage using liquid metal technology

Amalio Garrido-Escudero
Drage&Mate International, SL

P-78 A review of electrocatalysts for PEM water electrolysis applications

P. Millet
ICMMO, Université Paris-Sud 11. France

P-117 Combined XPS and DRIFTS study of the reduction under CO of Cu/CeO₂ CO-PROX catalysts

Manuel Monte, Guillermo Munuera, José C. Conesa, Arturo Martínez-Arias
Institute of Catalysis and Petrochemistry, CSIC. Spain - Universidad de Sevilla. Spain

P-112 Study of Hydrogen production from wind power in Adrar

Lilia Aiche-Hamane, Mustapha Hamane, Boumedienne Benyoucef
University Saad Dahlab Blida. Algeria - Centre for Development of Renewable Energies. Algeria - University Aboubakr Belkaid Tlemcen. Algeria

P-123 Synthesis of CuO/Al₂O₃ films onto stainless steel microgrids for CO preferential oxidation

Zouhair Boukha, José L. Ayastuy, Ainara Iglesias-González, Beñat Pereda-Ayo, Miguel A. Gutiérrez-Ortiz, Juan R. González-Velasco
University of the Basque Country UPV/EHU. Spain

P-125 Optimizing the synthesis method of ZrO₂-supported NiFe₂O₄ for solar hydrogen production by thermochemical water splitting

R.M. Navarro, L. Ruiz-Matas, J. Andrade, M.C. Alvarez-Galván, J.L.G. Fierro
Institute of Catalysis and Petrochemistry, CSIC. Spain

P-149 High-purity hydrogen from acidic fractions of bio-oil by "steam-iron"

J. Lachén, J. Plou, P. Durán, J. Herguido, J.A. Peña
Aragón Institute of Engineering Research (I3A), Universidad Zaragoza. Spain

P-199 Mo₂C electrocatalysts for hydrogen evolution: effect of carbon-support

B. Šljukić, D.M.F. Santos, L. Amaral, R.P. Rocha, C.A.C. Sequeira, J.L. Figueiredo
Universidade de Lisboa. Portugal - Universidade do Porto. Portugal

P-247 Study on the Sulfur adsorption properties of Mesoporous Material for Fuel Cell

Jaedong Kim, Kihoon An, Dalryung Park, Bongyu Kim, Jinwook Kim, Wankeun Bang, Jiman Kim
Korea Gas Corporation. Republic of Korea - Sungkyunkwan University. Republic of Korea - Coseal Co.Ltd. Research Center. Republic of Korea

P-293 Bio-hydrogen production in the green algae Chlamydomonas: effect of H₂ partial pressure, acetate and oxygen

David Gonzalez-Ballester, Jose Luis Jurado-Oller, Aurora Galvan, Emilio Fernández
Universidad de Córdoba. Spain

P-329 Photoinduced Hydrogen Production with Photosensitization of Zn Chlorophyll Analog Dimer as a Photosynthetic Special pair Model

Masaharu Kondo, Shuichi Ishigure, Yuko Maki, Takehisa Dewa, Mamoru Nango, Yutaka Amao
Nagoya Institute of Technology. Japan - Oita University. Japan - OCARINA. Japan

P-338 Temperature and Pressure effects on hydrogen separation from unconverted shift gas mixture using a Palladium Membrane Reactor

M. M. Barreiro, M. Maroño, J. M. Sánchez
CIEMAT. Spain

Hydrogen storage

P-21 Alkali and Alkaline-Earth Metal Borohydride Hydrazinates: Synthesis, Structures and Dehydrogenation

Teng He, Hui Wu,, Guotao Wu, Zhitao Xiong, Ping Chen
Dalian Institute of Chemical Physics. P.R. China - National Institute of Standards and Technology. USA

P-23 Improvement of the desorption kinetics and thermodynamics from CaH₂+AlB₂ system by NbF₅ doping

Pasquale Rispoli, Benedetto Schiavo, Onofrio Scialdone, Alessandro Galia
Istituto per le Tecnologie Avanzate (ITA). Italy - Università degli Studi di Palermo. Italy

- P-70 **Hydrogenation Behaviors of MgH_x-Graphene Composites by Reactive Mechanical Grinding**
Young-Sang Lee, Tae-Whan Hong
Korea National University of Transportation. Republic of Korea
- P-101 **Excellent catalytic effects of Ni- and graphene-based catalysts on hydrogenation/dehydrogenation of magnesium hydride**
Guang Liu, Li Li, Fangyuan Qiu, Ying Wang, Yijing Wang, Yongmei Wang, Huatang Yuan
Nankai University. P.R. China
- P-106 **Hydrogen adsorption on Co/Ni mixed-metal MOF-74-type materials**
Guillermo Calleja, Carmen Martos, Juan Ángel Botas, Gisela Orcajo, José Antonio Villajos
Universidad Rey Juan Carlos. Spain
- P-175 **Hydrogen generation by hydrolysis of sodium borohydride with bentonite supported Co-B catalyst**
Joydev Manna, Binayak Roy, Devendra Pareek, Pratibha Sharma
Indian Institute of Technology Bombay. India
- P-177 **The grain size effects on stress assist hydrogen transport in polycrystalline nickel**
Sathiskumar Jothi, T.N.Croft, S. G. R. Brown, E. de Souza Neto
Swansea University. UK
- P-209 **H₂ Uptake Capacities on Materials Incorporating Cyanometalate Building Blocks**
Ferdı Karadas
Bilkent University. Turkey
- P-234 **Dehydrogenation kinetics of magnesium hydride under different experimental conditions**
Antonio Perejón, Pedro E. Sánchez-Jiménez, Luis A. Pérez-Maqueda, José M. Criado
Institute of Material Science of Sevilla, CSIC-Univ. Seville. Spain
- P-291 **Hydrogen production through sodium borohydride ethanolysis**
G.M. Arzac, A. Fernández
Institute of Material Science of Sevilla, CSIC-Univ. Seville. Spain
- P-301 **Development of simple method for measuring quantity of hydrogen permeation through thick metals using sensor gas chromatograph**
Ryosuke Kumagai, Ryusei Ishida, Kan'ei Shinzato, Naoya Sakoda, Masamichi Kohno, Yasuyuki Takata
Kyushu University. Japan
- P-354 **Theoretical Study on the Effects of the Magnesium Hydride Doping with Cobalt and Nickel on the Hydrogen Release**
Hasan S. AlMatrouk, Viorel Chihai
Kuwait Institute for Scientific Research. Kuwait - Institute of Physical Chemistry "Ilie Murgulescu". Romania
- P-357 **Specific technical requirements for hydrogen storage systems on underwater vehicles intended for exploration of the world ocean**
Ivanov R., Denisova M.
Krylov State Research Centre. Russia

FC components and stacks

- P-28 **Water management studies in a PEM fuel cell; Fuel Cell stack design**
Agustín Merlos, Rubén Beneito, Lorena Rey, Joaquín Vilaplana, Julián Fortes, Juan Carratalá
AIJU. Spain
- P-47 **Investigation on water distribution patterns featuring back-diffusion transport in a Polymer Electrolyte Membrane Fuel Cell with Neutron Imaging**
Alfredo Iranzo, Pierre Boillat, Johannes Biesdorf, Antonio Salva, Felipe Rosa
AICIA, School of Engineering. Spain - Paul Scherrer Institut. Switzerland - University of Sevilla. Spain
- P-63 **Preparation and Characterization of Sulfonated Poly(phenylene)s Containing Cis/Trans Mixture of Bis(4-chlorophenyl)-1,2-diphenylethylene for Proton Exchange Membrane**
Hohyoun Jang, Youngdon Lim, Soonho Lee, Md. Awlad Hossain, Seongyoung Choi, Hyunho Joo, Fei Dan, Whangi Kim
Konkuk University. Republic of Korea
- P-64 **Synthesis and properties of sulfonated grafting copolymer via superacid-catalyzed polyhydroxyalkylation reaction**
Soonho Lee, Youngdon Lim, Hohyoun Jang, Youngtae Jeon, Jinseong Lim, Lei Jin And Whangi Kim
Konkuk University. Republic of Korea
- P-75 **Non-Platinum Electrocatalysts for Hydrogen Oxidation in Alkaline Media**
F. Tzorbatzoglou, A. Brouzgou, P. Tsiakaras
University of Thessaly. Greece.
- P-76 **Low Temperature Hydrogen Oxidation over Platinum Free Electrocatalysts: PEMFC vs AEMFC**
F. Tzorbatzoglou, A. Brouzgou, P. Tsiakaras
University of Thessaly. Greece.

P-82 Enhancing Sulfur Tolerance of Ni-YSZ Anode through BZCYYb Infiltration

Sivaprakash Sengodana, Mingfei Liuc, Jeeyoung Shinb, Meilin Liuc, Guntae Kima
Ulsan National Institute of Science and Technology. Republic of Korea - Dong-Eui University. Republic of Korea - Georgia Institute of Technology. USA

P-85 Effects of Electrode/Electrolyte Thickness on the Performance of Micro-tubular Solid Oxide Fuel Cells Made by Sequential Aqueous Electrophoretic Deposition

J.S. Cherng, F.A. Yu, C.C. Wu, T.H. Yeh
Ming Chi University of Technology. Taiwan

P-88 Effects of the filler compositions of micro porous layer for anode on the performance of direct highly concentrated methanol fuel cell

Yeong-Soo Kim, Dong-Hyun Peck, Sang-Kyung Kim, Seongyop Lim, Doo-Hwan Jung
Korea Institute of Energy Research. Republic of Korea - University of Science and Technology. Republic of Korea

P-107 Synthesis and characterization of new nano-composites membranes based in polysulfone/Zn,Al-heptamolibdate LDH

M. Herrero, A.M. Martos, F. Yepes, A. Varez, B. Levenfeld
Universidad Carlos III de Madrid. Spain

P-108 Synthesis and characterization of quaternary ammonia polysulfone nanocomposite membranes for H₂/O₂ alkaline fuel cell applications: An electrochemical study

M. T. Pérez-Prior, T. García-García, A. Várez, B. Levenfeld
Universidad Carlos III de Madrid. Spain

P-116 Electrochemical analysis of WNi-CeO₂ cermet as sulphur tolerant SOFC anode

M.J. Escudero, I. Gómez de Parada, A. Fuerte
CIEMAT. Spain – UAM. Spain

P-151 Hydrogen sensing properties of anodically synthesized porous TiO₂ film coated with Pd thin film and its mechanical enhancement by the bottom electrode configuration

Jongyun Moona, Hannu-Pekka Hedmana, Marianna Kemellb, Ermei Makilac, Jarno Salonenc, Aulis Tuominend, Risto Punkkinena
University of Turku. Finland - University of Helsinki. Finland - University of Vaasa. Finland

P-161 The Catalytic Activity of Carbon Nanotube Loaded Carbon Paper towards Oxygen Reduction Reaction in PEMFC

Ki-Seong Lee, MinKu Lee, Tae-Whan Hong, Whan-Gi Kim, Hyun-Chul Ju, Dong Min Kim
Hongik University. Republic of Korea - Korea Atomic Energy Research Institute. Republic of Korea - Korea National University of Transportation. Republic of Korea – Konkuk University. Republic of Korea - Inha University. Republic of Korea

P-162 RF-Sputtered Gd-doped ceria (GDC) Thin Film as electrolyte for micro-SOFC

Young-Ku Jin, Ki-Seong Lee, Subrata Sarker, Dong Min Kim
Hongik University. Republic of Korea

P-164 Ag-Modified Cu-Ceria Anode for SOFC directly fuelled with simulated biogas mixtures

Araceli Fuerte, Rita Ximena Valenzuela, María José Escudero
CIEMAT. Spain

P-174 Reinforced Polymeric Ionic Liquid Membranes for HT PEMFCs

F.J. Lemus, A. Eguizábal, M.P. Pina
Nanoscience Institute of Aragón. Spain

P-184 Palladium-based electrocatalysts for direct borohydride fuel cells

Biljana Šljukić, Jadranka Milikić, Diogo M. F. Santos, César A. Q. Sequeira
University of Lisbon. Portugal - University of Belgrade. Serbia

P-186 Porous Ni-YSZ and Ni-GDC anode buffer layers prepared by magnetron sputtering for Solid Oxide Fuel Cells

Francisco J. Garcia-Garcia, Francisco Yubero, Agustín R. González-Elipe, Richard M. Lambert
Institute of Material Science of Sevilla, CSIC-Univ. Seville. Spain - Cambridge University. UK

P-187 A numerical investigation of effects of methanol concentration fluctuation in active-type direct methanol fuel cell (DMFC) systems

Geonhui Gwak, Johan Ko, Hyunchul Ju
Inha University. Republic of Korea

P-188 Effect of gas channels flow patterns on cold-start behaviors of polymer electrolyte fuel cells (PEFCs)

Ahrae Jo, Johan Ko, Hyunchul Ju
Inha University. Republic of Korea

P-189 Development of ultralight and thin bipolar plate based on epoxy-carbon fiber prepregs-graphite composite

Ahrae Jo, Sunghyun Park, Geonhui Gwak, Kyungmun Kang, Hyunchul Ju
Inha University. Republic of Korea

- P-196 Numerical simulations of the two-phase flow in the anode channel of a PEMFC using the VOF method**
Rui B. Ferreira, D.S. Falcão, V.B. Oliveiraa, A.M.F.R. Pinto
Universidade do Porto. Portugal
-
- P-201 Phosphoric Acid Doped Cross-linked Porous Polybenzimidazole Membranes for Proton Exchange Membrane Fuel Cells**
Steve Lien-chung Hsu, Cheng-Hsun Shen, Li-cheng Jheng, , Jacob Tse-Wei Wang
National Cheng-Kung University. Taiwan
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- P-205 Development of high performance membrane electrode assemblies using a non-platinum catalyst for alkaline membrane fuel cells**
Seok-Hee Park, Chang-Soo Kim, Tae-Hyun Yang
Korea Institute of Energy Research- Republic of Korea
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- P-222 Steam Reforming Process for manufacturing of Hydrogen in Solid Oxide Fuel Cell using Biogas**
Yu-Jin Han, Jin-Do Chung, Jang-Woo Kim, Eui-Woo Lee, Hae-Yeul Ryu, Byung-Uk Im, Kyu-Yeol Kim
Hoseo University. Republic of Korea
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- P-232 Structural and electrical characterization of the novel $\text{SrCo}_{1-x}\text{M}_x\text{O}_{3-\delta}$ perovskites (M= Ti, V, Nb): evaluation as SOFC cathode materials**
V. Cascos, R. Martínez-Coronado, J.A. Alonso
Instituto de Ciencia de Materiales de Madrid, CSIC. Spain - The University of Texas at Austin. USA
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- P-240 Effect of carbon dioxide on proton exchange membrane fuel cell performance: Influence of the operating temperature**
Manuel Antonio Díaz, Fernando Isorna, Alfredo Iranzo, Eduardo López, Felipe Rosa, Juan Pedro Bolivar
National Institute for Aerospace Technology. Spain - University of Seville. Spain - Universidad Huelva. Spain
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- P-270 Effect of exposure time to organometallic precursors for the preparation of Pt nanocatalysts on a nafion-coated carbon black**
Woo-Kum Lee, Hyung-Ryul Rim, Gyu-Bum Joung, Sehui Lee, Eunsoo Jin, Jae-Young Lee, Hong-Ki Lee
Woosuk University. Republic of Korea
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- P-271 Effect of graphite fiber on electrical conductivity of an epoxy/carbon composite used for a bipolar plate in a fuel cell**
Jae-Young Lee, Woo-Kum Lee, Hyung-Ryul Rim, Seung-Weon Yang, Gyu-Bum Joung, Sehui Lee, Eunsoo Jin, Hong-Ki Lee
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- P-272 Preparation of Pt nanopatterning for pemfc on a self assembled copolymer thin film using a drying process**
Jae-Young Lee, Woo-Kum Lee, Hyung-Ryul Rim, Gyu-Bum Joung, Hong-Ki Lee
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- P-281 A semi-analytical model for droplet dynamics on the GDL surface of a PEM fuel cell cathode**
Alex Jarauta, Jordi Pons-Prats, Marc Secanell, Pavel Ryzhakov, Sergio Idelsohn, Eugenio Oñate
Universitat Politècnica de Catalunya. Spain - University of Alberta. Canada
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- P-295 Experimental evaluation of cell components affecting the performance of an air-breathing PEM fuel cell**
Levent Akyalçın
Anadolu University. Turkey
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- P-300 Nanosized Fe-doped ceria samples synthesized by freeze-drying precursor method**
Mariano O. Mazan, Jassiel Marrero-Jerez, Pedro Núñez, Susana A. Larrondo
Universidad de Buenos Aires. Argentina - Universidad de La Laguna. Spain - CINSO-UNIDEF-CONICET. Argentina
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- P-308 A study on degradation of high-temperature PEMFC**
Gisu Jeong, MinJoong Kim, Sung Jong Yoo, Jong Hyun Jang, Hyoung-Juhn Kim, EunAe Cho
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- P-316 Poisoning intermediates on the ethanol electrooxidation reaction over Pt-based catalysts**
José L. Gómez de la Fuente, Carlota Cobos, Carlota Domínguez, Francisco J. Pérez-Alonso, M.A. Peña, Sergio Rojas
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- P-322 Numerical predictions and experimental validation of DEFC performance: AEM vs. PEM**
Andreas Podias, Panagiotis Tsiakaras
University of Thessaly. Greece
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- P-325 Hybrid Chitosan-Carbon as New Electrocatalyst Support for Direct Methanol Fuel Cells**
B. Aghabarari, G. García, M. Ghiaci, M.A. Peña, M.V. Martínez-Huerta
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- P-335 The performance of an ionic liquid funcionalized carbon suported Pt-Ru catalyst for PEM fuel cells**
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P-343 Novel materials for a HT-PEMFC stack for operation as automotive range extender

D.J. Jones, J. Rozière, N. Donzel, A. Kreisz, A. Morin, C. Nayoze, F. Alcaide Monterubio, M. Smit, P. Asinari, U. Salomov, A. Piu CNRS, Montpellier. France - Commissariat à l’Energie Atomique et aux Energies Alternatives. France – CIDETEC. Spain – Nedstack. Netherlands - Politecnico di Torino. Italy – CRF. Italy

P-345 Improvement of fuel cells’ cost and performance by application of nanotechnology: a review

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P-346 A multi dimension approach for fast analysis of Polymer Electrolyte Membrane Fuel Cells

J. Dujc, J.O. Schumacher
Zurich University of Applied Sciences. Switzerland

P-347 SPEEK/titania Nanocomposite Membranes for Direct Ethanol Fuel Cells Applications

Ailton de Souza Gomes, José Carlos Dutra Filho, Tamirys Rodrigues dos Santos
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H2 & FC systems and applications

P-90 DMFC for auxiliary power supply in a river buoy

Delia Muñoz Alé, Javier Brey Sánchez, María Duque López, Manuel Rodríguez Pérez, Rocío Domínguez Jiménez
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P-97 Development of degradation and optimization model for PBI based high temperature PEMFCs

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P-98 Durability analysis of high temperature PEM fuel cell for DSS test using EIS

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P-103 Valorization of biogas produced in WWTP by means of PEM fuel cells

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P-133 Control and Monitoring Tools Developed for Hydrogen Based Systems

José Manuel Andújar Márquez, Francisca Segura Manzano
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P-153 LIFE+ ZEROHYTECHPARK: “EXPERIENCIE ON LOW POWER PEM FUEL CELL UPS SYSTEMS FOR CENTRAL SERVERS”

A. Arnedo Moncayo, J. Simon Romeo, L. Alberdi Jimenez, L. Correas Usón
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P-154 Hydrogen fuel cell power pack design

Lorenzo Nasarre Cortés, Joaquin Mora Larramona, Alfonso Arnedo Moncayo, Lucia Alberdi Jimenez, Mariano Gomez, Luis Carlos Correas Usón
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P-194 Advanced Multi-Fuel Reformer for Fuel Cell CHP Systems

José Luis Viviente
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P-237 Thermal Integration possibilities with SOFC exhaust gases and heat transfer

Tamara Guerrero, Daniel Márquez, Marta T. Escudero, Rocío Domínguez
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P-242 Numerical modeling of the degradation rate for membrane electrode assembly in high temperature proton exchange membrane fuel cells and analyzing operational effects of the degradation

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P-249 Development of Steam Methane Reformer for 5kW PEMFC Stationary Fuel Cell System

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P-268 Open Source control in PEM Fuel Cells

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P-296 Integration of an electrolyzer into a minigrd

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P-298 PEM fuel cell performance analysis: static and dynamic behaviour and its integration with a supercapacitor

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P-305 Air-breathing PEM fuel cell system for golf cart

E.H.Majlan, R.E.Rosli, S.A.A.Hamid, Dedi Rohendi, W.R.W.Daud, J.Sahari
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Markets strategies

P-277 Multi factors influence analysis on the development and marketplace of hydrogen technologies. Students dissemination

Gema M. Rodado, Gema Alcalde
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Commercialization & Strategies

P-3 State of Regulatory Framework for Hydrogen Infrastructures

Gonzalo Manjavacas, Beatriz Nieto
Centro Nacional del Hidrógeno. Spain

P-168 High V.LO-City: speeding up fuel cell hybride bus deployment in European cities

Paul Jenné, Dalijt Bawa
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P-279 The use of waste hydrogen for energy purposes in Poland

Jerzy KALETA, Marek BRZEŻAŃSKI, Eugeniusz WOŹNIKOWSKI, Pawel GAŚSIOR, Tadeusz PAPUGA
Wroclaw University of Technology. Poland - Cracow University of Technology. Poland - Skotan S.A. Poland

Countries & Assessments

P-223 Global hydrogen systems analysis. IEA hydrogen annex 30

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P-348 An overview of H2FC SUPERGEN, the UK's inclusive Hydrogen & Fuel Cell research network and UK Hydrogen & Fuel Cell activities

Chloe Stockford, Nigel Brandon, John Irvine, Tim Mays, Ian Metcalfe, David Book, Paul Ekins, Anthony Kucernak, Vladimir Molkov, Robert Steinberger-Wilckens, Nilay Shah
Imperial College London. UK - University of St Andrews. UK - University of Bath. UK - Newcastle University. UK - University of Birmingham. UK - University College London. UK - University of Ulster. UK

P-356 Hydrogen in Mobile Applications – the Path of Latvia to Carbon Free Economy

J. Kleperis, B. Sloka, J. Dimants, I. Dimanta, A. Starikovs, M.Gudakovska, J.Fricsons
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WORKSHOP: Rolling out hydrogen infrastructure for transportation: from scratch to reality

Thursday, March 13th, 2014

Room E (floor -1)

Nowadays, car OEMs are announcing the immediate release of hydrogen vehicles into the market; the European Union is approving a proposal of a Directive that will include hydrogen as one of the alternative fuels considered; different countries, like the USA, Germany, the UK or Japan, are starting to locate their first hydrogen stations to kick-off the transition to the hydrogen economy.

The aim of this workshop is to bring together different experts, from academia and the private sector, to share experiences and perspectives on the framework for rollout of the necessary hydrogen infrastructure for road transportation.

The workshop will be organized in three different sessions.

Attending the workshop is free of charge for those registered for the EHEC 2014.

Session 1 (10:30-12:40 h): Methodologies and approaches to plan the rollout of hydrogen infrastructure for the transport sector.

- Prof Joan Ogden (UC Davis)
- Prof Michael Kuby (U Arizona)
- Prof Paolo Agnolucci (U College London)

Session 2 (14:10-16:20 h): Field experience in current infrastructure deployments; outcomes, difficulties, lessons learnt.

- Dr Ulrich Buenger (LBST)
- Dr Oliver Ehret (NOW)
- Alex Stewart (Element Energy)

Session 3 (16:50-18:10 h): Round table.

Organized by: Spanish Hydrogen Association, Pablo de Olavide University and Consejería de Economía, Innovación, Ciencia y Empleo de la Junta de Andalucía



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