PROGRAMME

European Technical School on Hydrogen and Fuel Cells 2015

Crete, Greece, 22-26 June 2015

H2FC European Infrastructure Project

Sunday, 21 June 2015

After 15:00	Arrival of participants (check-in is strictly after 15:00)
19:00-20:00	Registration and welcome reception
20:00-22:00	Dinner and get together evening

Monday, 22 June 2015

Topical Lectures

Chair: Vladimir Molkov (09:30-13:00), Anthony Kucernak (14:30-18:00)

08:50-09:20	Registration
09:20-09:30	**Opening of the Technical School 2015** Vladimir Molkov, Olaf Jedicke
09:30-10:15	**European Hydrogen and Fuel Cell Joint Undertaking: Overview of industry-driven research projects** Mirela Atanasiu, The Fuel Cells and Hydrogen Joint Undertaking, European Commission (Belgium)
10:15-11:00	**US Department of Energy: Research and related activities in hydrogen and fuel cell technologies** Nick Barilo, Pacific Northwest National Laboratory (USA)
11:00-11:30	Coffee and networking around posters*
11:30-12:15	**Hydrogen South Africa (HySA): Progress and bottlenecks in hydrogen and fuel cells** Dmitri Bessarabov, HySA (RSA)
12:15-13:00	**Japanese research and regulations on safety of hydrogen-powered vehicles** Ritsu Dobashi, The University of Tokyo (Japan)
13:00-14:30	Lunch
14:30-15:15	**Chinese studies in safety of hydrogen and fuel cell systems and infrastructure** Jinyang Zheng, Zhejiang University (China)
15:15-16:00	**From research to regulations: research on hydrogen and fuel cells at JRC** Pietro Moretto, JRC (Netherlands)
16:00-16:30	Coffee and networking around posters
16:30-17:15	**International breakthroughs and technological bottlenecks in fuel cell research** Kevin Kendall, University of Birmingham (UK)
17:15-18:00	**Panel discussion, Q&A session**

Tuesday, 23 June 2015

Topical Lectures

Chair: Nick Barilo (09:30-13:00), Kevin Kendall (14:30-18:00)

09:30-10:15	**ISO TC/197 "Hydrogen technologies": The state-of-the-art and future activities** Andrei Tchouvelev, Chairman ISO TC/197 "Hydrogen technologies" (Canada)
10:15-11:00	**Biomass as source of fuels for Fuel Cells** Robert Steinberger- Wilckens, University of Birmingham (UK)
11:00-11:30	Coffee and networking around posters*
11:30-12:15	**Hydrogen refuelling stations – safety strategies and permitting** Guy Dang-Nhu, Air Liquide (France)
12:15-13:00	**New methods to characterise and recover fuel cells** Anthony Kucernak, Imperial College London (UK)
13:00-14:30	Lunch
14:30-15:15	**Storage of hydrogen in solids: recent progress and future research** Andreas Züttel, EMPA (Switzerland)
15:15-16:00	**Solid oxide fuel cells and electrolyzers: state-of-the-art and perspectives** John Irvine, University of St Andrews (UK)
16:00-16:30	Coffee and networking around posters*
16:30-17:15	**Recent HT-MEA Breakthroughs at HySA Systems Competence Centre** Bruno G. Pollet, University of Western Cape (South Africa)
17:15-18:00	**Panel discussion, Q&A session**

Wednesday, 24 June 2015

Outcomes of H2FC Transnational Access (TA) Projects

Chair: Olaf Jedicke (09:30-13:00), Pietro Moretto (14:30-18:00)

09:30-09:50	**Overview of TA projects at JRC on hydrogen sensors and hydrogen storage materials** Pietro Moretto (JRC)
09:50-10:10	**TA project "Access to characterization of key components in High-Temperature Fuel Cell systems"** Stephen McPhail (ENEA)
10:10-10:30	**TA project "Study of electrosprayed deposited CCMs for PEMFC"** Edward Brightman (NPL)
10:30-10:50	**Evaluation of the Round Robin test for SOFC facilities** Izaak Vinke & Josef Mertens (Forschungszentrum Jülich)
10:50-11:20	Coffee and networking around posters*
11:20-11:40	**TA project "The Characterisation of High Pressure Hydrogen Release Flammability Profiles"** Jonathan Hall (HSE)
11:40-12:00	**TA project "R&D of high pressure hydrogen storage system with increased fire resistance rating"** Andreas Friedrich (Pro-Science)
12:00-12:20	**TA project "Operate SOFC with Bio-Syngas"** Giovanni Cinti (UP)
12:20-12:40	**TA project "Carbon-based nanostructures for hydrogen storage"** Anastasios Gotzias (NCSRD)
12:40-13:00	**TA project "Outcome of transnational access at PSI"** Johannes Biesdorf (PSI)
13:00-14:30	Lunch
14:30-14:50	**TA project "An overview of the methods to create hydrogen concentration gradients and combustion properties of nonuniform hydrogen-air mixtures"** Mike Kuznetsov (KIT)
14:50-15:10	**TA project "Optimising Scandia-stabilised Zirconia SOFC"** Robert Steinberger- Wilckens (University of Birmingham)
15:10-15:30	**TA project "Spectroscopic study of C-H vibrational modes in hydrogenated graphene"** Elsa Callini (EMPA)
15:30-16:00	Coffee and networking around posters*
16:00-16:20	**TA project "Hydrogen embrittlement of quenched and tempered steels"** Iñaki Azkarate (TECNALIA)
16:20-16:40	**TA project "Neutron scattering investigations of novel hydrogen storage materials"** Jiri Muller (IFE)
16:40-17:00	**TA project "Influence of MEA composition and operating conditions on membrane water content during operation"** Arnaud Morin (CEA)
17:00-18:00	**Round table discussion on TA and instrumentation**

Thursday: 25 June 2015

e-Infrastructure for hydrogen and fuel cell research: safety

Expert Panel on Hydrogen Safety Modelling and Simulations. Chair: Dmitriy Makarov (UU)

09:30-10:00	**Practical problems of hydrogen release simulations** Stella Giannissi (NCSRD)
10:00-10:30	**Blast wave and fireball from unconfined hydrogen explosion and high pressure hydrogen tank rupture** Wookyung Kim (UU)
10:30-11:00	**Modelling approaches to industrial scale detonations** Alexei Kotchourko (KIT)
11:00-11:30	Coffee and networking around posters
11:30-11:45	**Numerical experiments on fire resistance of CFRP tanks for hydrogen storage** Sergii Kashkarov (UU)
11:45-12:00	**Modelling and numerical simulation of DDT** Mohamed Sakr (UU)
12:00-12:30	**Europlexus code for hydrogen combustion modelling at large scale** Sergey Kudryakov (CEA)
12:30-13:00	**Round table discussion on Hydrogen Safety Modelling and Simulations**
13:00-14:30	Lunch

e-Infrastructure for hydrogen and fuel cell research: storage

Expert Panel on Hydrogen Storage Modelling and Simulations. Chair: Athanassios Stubos (NCSRD)

14:30-15:00	**Storage as an Enabling Technology for a Hydrogen Economy: Current Status** Andreas Zuettel (EMPA)
15:00-15:30	**Hydrides for Energy Storage Applications** Tejs Vegge (DTU)
15:30-16:00	**Simulations for Sorbent – Based Hydrogen Storage** Anastasios Gotzias (NCSRD)
16:00-16:30	Coffee and networking around posters
16:30-17:00	**Clathrate Hydrates for Gas Storage and Transport Applications** Ioannis Tsimpanogiannis & Athanassios Stubos (NCSRD)
17:00-17:30	**Thermal Coupling of Fuel Cell – Hydrogen Storage Systems** Andreas Yiotis & Athanassios Stubos (NCSRD)
17:30-18:00	**Round table discussion on Hydrogen Storage Modelling and Simulations**

Friday, 26 June 2015

e-Infrastructure for hydrogen and fuel cell research: fuel cells

Expert Panel on Fuel Cell Modelling and Simulations. Chair: Guillaume Serre (CEA)

09:30-10:00	**Physical modeling and experimental validation of low temperature fuel cell performance and degradation** Matteo Zago (POLIMI)
10:00-10:30	**Multi-scale coupling of PEMFC models: upscaling parameters of a cooling circuit coefficients from the real bipolar plate geometry to a global meshing model** Guillaume Serre (CEA)
10:30-11:00	**Full scale 3D multiphysics modelling and experimental validation of fuel cell systems** Murat Peksen (Forschungszentrum Jülich)
11:00-11:30	Coffee and networking around posters
11:30-12:00	**Modeling of degradation mechanisms in low temperature fuel cells** Thomas Jahnke (DLR)
12:00-12:30	**Modeling of degradation mechanisms in a PEMFC: methodology of a full multi-scale approach from the nano to the system** Guillaume Serre (CEA)
12:30-13:00	**Round table discussion on Hydrogen Fuel cells**
13:00-14:30	Lunch

Hands-on training session for use of the Cyber-laboratory (http://h2fc.eu/cyber-laboratory)

Facilitators:James Keenan (UU), Klaus Bittner (KIT-IAI), Ioannis Tsimpanogiannis (NCSRD) and Guillaume Serre (CEA)

14:30-15:00	**Overview of Cyber-Laboratory: Engineering tools and modelling** James Keenan (UU)
15:00-15:15	**H2FC Sage framework - Crowdsourcing in the Hydrogen and Fuel Cells community** Klaus Bittner (KIT)
15:15-15:45	**Interactive Demonstration: Cyber-Laboratory in action (Safety session)** James Keenan (UU)
15:45-16:15	Coffee and networking around posters
16:15-16:40	**Interactive Demonstration: Cyber-Laboratory in action (Storage session)** Ioannis Tsimpanogiannis (NCSRD)
16:40-17:00	**Recall of the simple tool for global mass balance for PEMFC and objectives for an Open Foam PEMFC model** Guillaume Serre (CEA)
17:00-17:10	**Close of the Technical School 2015** Vladimir Molkov, Olaf Jedicke
19:00-19:30	**Departure** (19:00) – **Arrival** (19:30)
20:00-22:00	**Gala dinner**

Saturday, 27 June 2015

12:00	**Departure of participants (Latest check-out time for all participants is 12:00)**

POSTER SESSION

Tuesday, 23 June 2015

1. **New highly efficient syngas precursor from atmospheric CO2 and H2,** Holzer Marco, EMPA (Switzerland).
2. **Zr(BH4)4·8NH3: A novel compound for hydrogen storage**, Jianmei Huang, EMPA (Switzerland).
3. **Misurata Solar-Hydrogen House**, Gibril Eljrushi, Misurata University (Libya).
4. **Fluid Behavior Through a Simulated PEMFC Gas Diffusion Layer**, Mayken Espinoza, Lund University (Sweden).
5. **In-operando measurement of water repartition in PEM tanks to Raman spectroscopy**, Arnaud Morin, CEA (France).
6. **New polymer electrolyte membranes for fuel cells**, Annika Carlson, Royal Institute of Technology (Sweden)
7. **Non-noble metal catalysts for PEMFC,** Björn Eriksson, Royal Institute of Technology (Sweden)
8. **Influence of contaminants in PEM Fuel Cell,** Yasna Acevedo Gomez, Royal Institute of Technology (Sweden)
9. **Modelling of Processes inside a Rechargeable Oxide Battery**, Viktoria Erfurt, Forschungszentrum Jülich (Germany)
10. **Pt-free Electro-catalysts for the Oxygen Reduction Reaction in Fuel Cells**, Kathrin Preuss Queen Mary University of London (UK)
11. **Proposed Changes in Legislation For Hydrogen Implementation For Alternative Vehicle Refuleing**, Justs Dimants, University of Latvia (Latvia)
12. **Various Metal Alloys For Hydrogen Storage in Fermentation Bioreactor**, Ilze Dimanta, University of Latvia (Latvia)
13. **Preliminary study on hydride powder flowability as a function of activation**, Maximiliano Melnichuk, Conicet (Argentina)
14. **Initial study of MCFC degradation due to solid impurities in the cathode inlet gas mixture**, Jarosław Milewski, Warsaw University of Technology (Poland)
15. **Inelastic Neutron Scattering of H2 adsorbed in a clay mineral**, Jacqueline Edge, Imperial College London (UK)
16. **Modelling of thermal stress in a planar solid oxide fuel cell in varying operating conditions**, Tomasz Zinko, West Pomeranian University of Technology in Szczecin (Poland)
17. **DC-sputtered catalysts for PEM Electrolyzers**, Daniela Ion-Ebrașu, ICSI-Rm.Valcea (Romania)
18. **Ammonia-fuelled alkaline fuel cells for remote power applications (ALKAMMONIA)**, Ahmed Aly, Federazione delle associazioni scientifiche e tecniche (Italy)
19. **Demonstration of 500 kWe alkaline fuel cell system with heat capture (POWER-UP),** Ahmed Aly, Federazione delle associazioni scientifiche e tecniche (Italy)
20. **Demonstration of new qualitative innovative concept of hydrogen out of wind turbine electricity (DON QUICHOTE),** Ahmed Aly, Federazione delle associazioni scientifiche e tecniche (Italy)
21. **Improving the Knowledge in Hydrogen and Fuel Cell Technology for Technicians (KnowHY),** Ahmed Aly, Federazione delle associazioni scientifiche e tecniche (Italy)
22. **Space Charge Layer Effect at Nickel/BaZr0.9Y0.1O3-d interfaces in Protonic Ceramic Fuel Cells**, Min Chen, University of Oslo (Norway)
23. **Verification method for TPRD activation status for the vehicle fire**, Koji Yamazaki, Japan Automobile Research Institute (Japan)
24. **Energy storage from renewable resources: a case study in Turin, Italy**, Nadia Belmonte, University of Turin (Italy)