Written on 14 January 2021 2 minutes of reading

Events

Fundamental Research

Physical chemistry | Electrochemistry and corrosion

03 - 04 November 2020

IFPEN Scienc'Innov Workshop: Corrosion in Low Carbon Energies (Corrosion LCE); Web Conference 3-4 Nov. 2020

The development of new energies is facing new corrosion challenges.

Within the academic and industrial corrosion community, the aim of this workshop is **to provide the opportunity to exchange information and identify the scientific challenges to be solved in order to mitigate the corrosion issues in the new and developing fields of low carbon energies**.

The program focused on corrosion issues in what are often called “**sustainable**”, “**green**” or “**near-neutral carbon**” technologies, including energy production (renewables, geothermal, biofuels, etc.), energy conversion and storage (hydrogen, CO_2 storage, etc.).

For instance:

- the **development of geothermal energy** is linked to the selection of appropriate materials under severe corrosion and scaling conditions,
- **Offshore wind mills structures** face severe fatigue fretting corrosion degradations in sea water,
- The **production of biofuels from vegetable waste** also faces new corrosion challenges to be solved,
- **Metallic materials** used for the production, transport, storage and use of gaseous hydrogen have to be resistant to embrittlement,
- **Important corrosion studies** will also been necessary for the development of CO_2 capture, transport, storage and utilization technologies.

This event was the opportunity to participate to the discussion between experts from the academic and industrial corrosion communities.

IFPEN and Corrosion

Presentation of IFPEN's corrosion activity and its development over the past 15 years: from historic Oil & Gas activities to current renewable energies: geothermal energy, hydrogen and CO_2 transport, CCUS, biofuels, etc.

Organized by

Committee

Scientific Correspondents
François Ropital (applied Physical Chemistry and Mechanics Division, IFPEN)
Jean Kittel (applied Physical Chemistry and Mechanics Division, IFPEN)

Scientific Moderators
Stefania Specchia (politecnico di Turino, Italia)
Henri Van Damme (Massachussets Institute of Technology, USA)

Program

Tuesday 3rd November

9:45 Welcome - Introduction of the topics by X. Longaygue, IFPEN Scientific Division

Session 1 - Carbon Capture Utilisation

10:00 J. Kittel (IFPEN, France)
Corrosion and CO2 capture

10:30 Quynh-Hoa Le (BAM, Germany)
CO2-stream impurities and their effects on corrosion susceptibility of materials to be used in CCUS systems

11:00 Y. Hua (Leeds University, UK)
An appraisal of corrosion in CO2 transport in CCS; the role of impurities and their interactions

11:30 G. Svenningsen (IFE, Norway)
Formation of corrosive species in CCS streams

12:00 Discussion - Synthesis

Session 2 - Hydrogen Fuel Cells

14:00 C. Mendibide (Institut de la Corrosion, France)
State of the art of H2 injection into gas transport networks

14:30 L. Briottet (CEA, France)
Hydrogen gas storage and transport: hydrogen embrittlement issues and current studies

15:00 B. Normand (INSA Lyon, France)
Challenges and opportunities of the corrosionnist contribution in the material design dedicated to PEMFC

15:30 Discussion - Synthesis

Session 3 - Geothermy

16:00 S-N. Karlsdóttir (University of Island)
Corrosion studies and material testing for meeting challenges in deep high-temperature geothermal wells

16:30 R. Bäßler (BAM, Germany)
Metallic Materials for Geothermal Applications

17:00 Y. Hua (Leeds University, UK)
Understanding corrosion film evolution in geothermal conditions; using a combination of surface analysis and an appraisal of the Pourbaix diagram

17:30 R. Lindsay (Manchester University, UK)
Fundamentals for geothermal corrosion control engineering: understanding corrosion scales

18:00 Discussion - Synthesis

Wednesday 4 November

9:45 Video on IFPEN corrosion activities

Session 4 - Biofuels

10:00 F. Ropital (IFPEN, France)
Corrosion challenges for reliable biorefineries

10:30 N. Pålsson (RISE, Sweden)
Design and development of corrosion testing for alloys used in biorefinery processing

11:00 G. Marlair (INERIS, France)
The C1 test for the classification of the “corrosive-to metal” hazardous property: current concerns regarding its applicability and performance in the context of the CLP EU Regulation

11:30 G. Marlair (INERIS, France)
Corrosion potential of ionic liquids revisited in the context of energy transition

12:00 Discussion - Synthesis

Session 5 - Offshore windmills

14:00 F. Brennan (Strathclyde University, UK)
Offshore Wind Structural Integrity: Lessons learnt and future challenges

14:30 N. Larché (Institut de la Corrosion, France)
Cathodic protection in the context of offshore wind power

15:00 P. Refait (Université La Rochelle, France)
Cathodic protection of complex carbon steel structures in seawater

15:30 Discussion - Synthesis

15:45 - 16:15 Conclusion of the workshop

Invited Speakers

Invited Speakers

Ralph Bäßler (BAM, Germany)
Laurent Briottet (CEA LITEN, France)
Feargal Brennan (University of Strathclyde, United Kingdom)
Yong Hua (University of Leeds, United Kingdom)
Sigrun Nanna Karlsdóttir (University of Iceland, Iceland)
Quynh Hoa Le (BAM, Germany)
Rob Lindsay (University of Manchester, United Kingdom)
Guy Marlair (INERIS, France)
Christophe Mendibide (Institut de la Corrosion, France)
Bernard Normand (INSA Lyon, France)
Namurate Pälsson (RISE, weden)
Philippe Refait (University of La Rochelle, France)
Gaute Svenningsen (IFE, Norway)
Dominique Thierry (Institut de la Corrosion, France)

CORROSION IN LOW CARBON ENERGIES (2020)
14 January 2021

Link to the web page :