HITESEA

WORKSHOP AND WINTER SCHOOL

High and Intermediate Temperature Electrochemical Systems for Energy Applications

Instituto de Cerámica y Vidrio, CSIC, Madrid

29-30th January, 2020

Registration closed. If you would still like to attend write to mather@icv.csic.es

Promoted by the Excellence Network

High Temperature Electrochemical Systems for Energy Applications (MAT2017-90695-REDT):

- Instituto de Cerámica y Vidrio (CSIC)
- Instituto de Ciencia de Materiales de Madrid (CSIC)
- Instituto de Tecnología Química (CSIC)
- Instituto de Ciencia de Materiales de Aragón (CSIC)
- Universidad San Pablo CEU
- Universidad Complutense de Madrid
- Universidad de Málaga

Sponsors

Free attendance

Attendance certificate

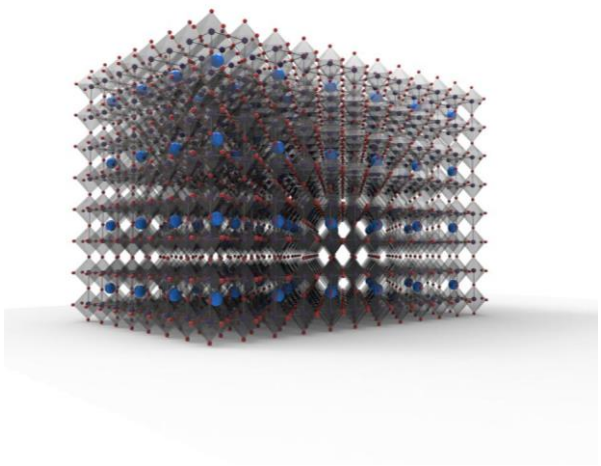
Register at:
https://forms.gle/fstcqyiBgqgYFkhR9

HITESEA Workshop 29-1-2020

- Keynote speakers
- Invited speakers
- Poster session

HITESEA Winter School 30-1-2020

- Advanced synthesis
- Solid Oxide Fuel Cells
- Protonic Ceramic Cells
- Electrical Measurements
- Structural and Microstructural Aspects



"Advance your knowledge of ceramic ionic-conducting membranes for sustainable energy "

" Learn about related theory and experimental techniques"

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High-temperature electrochemical devices, which transport oxide-ions or protons, are expected to play a fundamental role in a new energy economy in which fossil fuels are largely replaced by hydrogen and another renewable-energy vectors. The HITESEA network is focused on the development of the following ceramic membrane technologies: high-temperature fuel cells, electrolysers and gas-separation membranes. The network adopts a multidisciplinary approach from advanced processing methods to state-of-the-art electrochemical techniques to accelerate ceramic ion-conducting membrane development. The socioeconomic benefits of these devices include excellent efficiency, low chemical, thermal and acoustic emissions, siting flexibility, facile energy storage, decarbonisation of hydrogen production and conversion, and lower dependence on natural resources. The devices thus directly address national and international concerns of meeting increasing hydrogen demand, and lowering fossil-fuel dependence and carbon emissions.

Workshop

The HITESEA Workshop will involve keynote and invited contributions from renowned national and international experts in the field of ceramic membrane technology for energy applications. Further contributions will be presented from the HITESEA network members. Attendees may participate in a poster session which will run in parallel with coffee and lunch breaks.

The language of the workshop is English.

Winter School

The Hitesea Winter School will involve a series of "Master Classes" focusing on the most important theoretical, experimental and practical aspects of high- and intermediate-temperature ion-conducting materials and devices for energy applications, including solid oxide fuel cells, protonic ceramic fuel cells and solid oxide electrolysis. Specific themes will include electrochemical measurements, structural and microstructural aspects. The classes will be imparted by experts from participating groups of the HITESEA network.

The language of the school is Spanish.

Keynote Speakers

- Truls Norby (University of Oslo)
- Henny Bouwmeester (University of Twente)
- Jorge Frade (University of Aveiro)

Invited Speakers

- Monica Burriel (LMGP, Grenoble)
- Duncan Fagg (University of Aveiro)
- Ainara Aguadero (Imperial College, London)
- Jose Santiso (ICN2, Barcelona)
- Elisabetta di Bartolomeo (university Tor Vergata)
- Armelle Ringuedé (IRCP, Paris)

Organising Committee

- Glenn Mather (ICV, CSIC)
- Domingo Pérez Coll (ICV, CSIC)
- Miguel Laguna Bercero (ICMA, CSIC)
- María Teresa Azcondo Sánchez (San Pablo, CEU)
- Ulises Amador Elizondo (San Pablo, CEU)

Registration Details

Maximum 140 attendees

Free attendance

Attendance certificate

Please register at:
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WORKSHOP PROGRAMME

8.30-9.00. Registration

9:00-9:10. Workshop Presentation: Glenn Mather, Institute of Ceramics and Glass

Engineering Systems and Transport Mechanisms Chairperson: Ainara Aguadero, Imperial College London

9:10-9:50. Jorge Frade **Keynote**
Defect chemistry engineering with multivalence transition elements

9.50-10:10. Armelle Ringuedé **Invited**
Between molten carbonate and solid oxide cells

10:10-10:30. Alodia Orera
Generation of green fuels in microtubular SOFC through electrolysis and co-electrolysis processes

10:30-10.50. Angel Triviño
Enhanced proton Conductivity and stability of Ba substoichiometric $BaCeO_3$-based electrolytes

10:50-11:20. Coffee break. Posters

Development of electrodes Chairperson: Susana García Martín, Complutense University of Madrid

11:20-12:00. Truls Norby **Keynote**
Electrodics for protonics

12:00-12:20. Elisabetta Di Bartolomeo **Invited**
Pd-doped lanthanum strontium ferrite as promising electrodes for symmetric SOFCs

12:20-12:40. Khalid Boulahya
Promising layered-type perovskites as electrodes for SOFCs

12:40-13:00. María Balaguer
Influence of humidity on PCFC electrodes based on double perovskite cobaltites

13:00-15:00. Lunch. Posters

Surfaces and thin films Chairperson: Ángel Larrea, ICMA (CSIC-UZ)

15:00-15:40. Henny Bouwmeester **Keynote**
Oxygen surface exchange and transport kinetics of mixed ionic-electronic conducting oxides

15:40-16:00. Ainara Aguadero **Invited**
Quantification of oxygen dynamics in passivated surfaces of perovskites due to strontium segregation

16:00-16:20. José Santiso **Invited**
Oxygen surface exchange in mixed ionic-electronic conducting oxides

16:20-16:40. Monica Burriel **Invited**
Fast oxygen diffusion in nano-architectured manganite thin films

16:40-17:00. Coffee break. Posters

Advanced synthesis and processing Chairperson: Rosa Merino, ICMA (CSIC-UZ)

17:00-17:20. María Mellado-Palacios
One pot synthesis of SOFC electrode materials and composited decorated with metallic nanoparticles

17:20-17:40. Javier Zamudio-García
Symmetrical nanostructured electrodes based on $LaCrO_3$-CGO

17:40-18:00. Duncan Fagg **Invited**
Doping mechanisms for Zn in BZY: effects on densification, microstructure and partial conductivities

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WINTER SCHOOL PROGRAMME

9:00-9:10. **Presentación:** Domingo Pérez Coll, Instituto de Cerámica y Vidrio

9:10-10.00.
Síntesis por métodos no convencionales de materiales y composites para SOFC
María Teresa Azcondo Sánchez
Universidad San Pablo-CEU

10.00-10:50.
Electrodos más eficientes para SOFCs mediante control microestructural
David Marrero López
Universidad de Málaga

10:50-11:10. **Pausa café. Pósters**

11.10-12.00.
Advanced protonic cells for energy and chemistry applications
José M. Serra Alfaro
Instituto de Tecnología Química (CSIC-Universitat Politècnica de València)

12:00-12:50.
Aberration-corrected scan-transmission electron microscopy for atomic structural and chemical characterization of materials
Susana García Martín
Universidad Complutense de Madrid

12:50-13:40.
Conductividad y transporte iónico en sólidos
Rosa Merino Rubio
Instituto de Ciencia de Materiales de Aragón (CSIC-Universidad de Zaragoza)

13.40-15.00. **Almuerzo. Pósters**

15:00-15:50.
Determinación de conductividades parciales en conductores iónicos
Domingo Pérez Coll
Instituto de Cerámica y Vidrio (CSIC)

15:50-16:40.
Caracterización estructural y microestructural por DRX y NPD de materiales para SOFC
Ulises Amador Elizondo
Universidad San Pablo-CEU