CALL for PAPERS
Physical & Virtual participation

EFCF 2022
Lucerne, Switzerland, 5 – 8 July

15th European SOFC & SOE Forum

Chaired by:
Dr. Julie Mougin
Dr. Jerome Laurencin
CEA-Liten, Grenoble, France

Featuring
Solid Oxide Technologies
Fuel Cells SOFC, Electrolysers SOE,
Electrochemical Reactors, CO₂, Emission Reduction & Reuse

Exhibition: Suppliers, Materials, Testing, Components, SO-Technologies
Tutorials: FCH – Fuel Cell, Electrolyser & Hydrogen
          EIS – Electrochemical Impedance Spectroscopy
GSM 2022: Grid Service Market Symposium
          Grid Flexibility & Utilities & ESCO oriented Business

www.EFCF.com
European Electrolyser & Fuel Cell Forum
forum@efcf.com

MISSED the DEADLINE
Last chance for ORAL
www.EFCF.com/Like2Present
EFCE 2022
15th European SOFC & SOE Forum
Int. Conference Series est. 1994
KKL, Lucerne, Switzerland 5 - 8 July

Chaired by
Dr. Julie Mougín
Dr. Jerome Laurencin
CEA-Liten Grenoble, France

Scope of the Forum
The 15th EUROPEAN SOFC & SOE FORUM 2022 addresses issues of science, engineering, materials, systems, applications and markets for all types of Solid Oxide Fuel Cells (SOFC), Solid Oxide Electrolyzers (SOE) and Solid Oxide Electrochemical Reactors. Additionally the more and more established issue of CO₂ emission reduction & reuse is addressed as well. The EFCEForum is the largest international meeting on Solid Oxide Technologies, building the bridge from science to application. Business opportunities will be identified for manufacturers, industry operators & investors. Although a Europe-based event, participants are invited from all continents. About 500 participants & 30 exhibitors are expected. The EFCE - European FuelCell & FuelCell Forum is a leading international meeting place, providing an excellent opportunity to present recent progress, industrial achievements & inventions. New contacts are made at the unique networking events in the charming city of its great surroundings, which opens minds for fruitful exchange about technology's business. A Scientific Advisory Committee has been formed to evaluate and structure the technical programme. This panel exercises full scientific independence in all technical matters. All presented papers (oral & poster) will be collated in electronic proceedings available to registered participants. If the authors wish, all contributions with an extended abstract are published with their own DOI in www.EFCF.com/Library. In addition, other scientific publication options are offered (see Publication Policy). All participants will also receive a copy of the conference proceedings and special events, overview of all contributions, authors, institutions and exhibitors. The EFCF 2022 is planned as a physical event. Depending on the health situation, the possibilities of virtual access to the content will be adjusted.

Technical Status & Achievements: The following companies have presented in the previous SOFC & SOE editions:
- Anan Kasei, AVL, Boeing, Bosch, Cap Co, Ceratec Ceramic Coating, Ceramtec, Ceramtec Powder Technology, CCTC, CeramTec, Ceres Power, CerTech, Coven, EBZ, Elconen, Haldor Topsoe, Hexion/Vessemann, Kerkof, Nisan, Plansee, SOLDpower, Sunfire, Sylen, ThysenKrupp, Toho Gas, Toshiba Gas

Technical Program
www.EFCF.com/Conference
The three-day conference will feature parallel sessions with invited and contributed papers and posters. The Scientific Advisory Committee ensures that all presentations are of a high quality. The technical program will range from fundamental science and discussions on new materials, through cell, stack, and system development, to the latest achievements from commercial development.

The EFCE 2022 MOTTO is From materials to systems, including modelling & advanced characterization

TOPICS of the conference are set, but not limited to:
- State-of-the-art and novel materials
- State-of-the-art and novel cell/tack design and manufacturing routes
- Emerging technologies based on solid oxides
- Degradation mechanisms & overall lifetime from materials to system level
- Advanced characterization techniques
- Cell, stack & system modeling and optimization
- Balance of plant components
- System design and performance
- Solid oxide technology integration and energy system perspectives e.g.: CO₂ capture & re-use, Power-to-X, Grid Services, etc.
- Product presentation, demonstrations and novel concepts
- Technology status at industry and major groups
- Other topics such as training & education and cross-cutting initiatives/studies, R&D....

The EFCF 2022 will take place: Primarily physical and where necessary virtual, so all participants, regardless of limitations and origin can attend. Register for physical participation without risk - a refund and/or the switch to virtual attendance, as well as access to the EFCF community are guaranteed in any case.

Fees - www.EFCF.com/Fee

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Physical</th>
<th>Late Regular</th>
<th>Early Regular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Deadlines</td>
<td>Early 24 Mar</td>
<td>17 Apr</td>
<td>15 May</td>
</tr>
<tr>
<td>Students, trainees and unemployed persons etc. with valid identification</td>
<td>580</td>
<td>120</td>
<td>100 CHF</td>
</tr>
<tr>
<td>Government, universities, consultants etc.</td>
<td>1'280</td>
<td>240</td>
<td>200 CHF</td>
</tr>
<tr>
<td>Industry and commerce</td>
<td>1'880</td>
<td>360</td>
<td>300 CHF</td>
</tr>
</tbody>
</table>

The Virtual Fees are published when the health rules are clear, which is expected in March/April 2022. Register with NO Risk for physical participation: Refund and/or switch to virtual attendance & access to the EFCF community are guaranteed.

Ask forum@EFCF.com for group rebate. All fees include the 7.7% VAT, where applicable. *Incl. 600 CHF donation for student support

The EFCE 2022 is planned as a physical event. Depending on the health situation, the possibilities of virtual access to the content will be adjusted. The final program will be a synthesis of the Book of Abstracts and all other event details. It is freely accessible on www.EFCF.com/Library together with all other event details.

Publication Policy
www.EFCF.com/PP

Publication Policy
www.EFCF.com/PublicationPolicy

Abstract Submission
www.EFCF.com/AuthorCentre

Members of academic institutions, R&D organizations, engineering firms and industry are invited to submit contributions for oral or poster presentation at the EFCE 2022 featuring Solid Oxide Technologies. The submission procedure is:
1. Download Abstract Template, Instructions & Samples from www.EFCF.com/Download
2. Upload your one-page abstract at www.EFCF.com/upload, Evaluation for oral has started, POSTER can longer be accepted.
3. Receive notification about acceptance in February 2022. This requires you to submit an extended abstract/paper by 30 April 2022.
4. This is a condition to be included in the final program either as an oral or poster, and to be given the opportunity to be published with a DOI.

Please consult the list of fees for details of privileges offered for early registration. Presenting authors are required to register for the forum and to pay the appropriate registration fee. EFCE cannot provide financial support to authors of papers, but offers a motivating support for first student contributions (ESSF) and for sponsor finding (RSS). Additionally attractive rebates are offered for group registration (starting from 3 people) and exhibitors are entitled to up to 50% rebate on conference fees, and may additionally profit from “Early Bird” and “Friendy” discounts. See below why it is valuable to exhibit at the EFCEFs. For Frequently Asked Questions please visit www.EFCF.com/FAQ or email CEA@efcf.com.

Exhibition
www.EFCF.com/Exhibition

Virtual Participation
www.EFCF.com/AuthorCentre

Physical & Virtual Participation
www.EFCF.com/AuthorCentre

EFCE events are traditionally held at the Culture & Convention Centre Lucerne (KUL) in conjunction with the Fuel Cell, Electrolyzer & Hydrogen Technology and Supplier Exhibition and the popular FC, EL & H Tutorial (FCF). An Electrochemical Impedance Spectroscopy (EIS) Tutorial and special symposia on Microbial Electrochemistry MEMEEP and Grid Service Market GSM are additionally organised. The KUL conference centre is a well-known location on the picturesque waterfront of Lake Lucerne, easy to reach by plane and train, and a short walk from charming hotels and the historic town centre.

It is still unknown what the health situation will look like in 2022, and if there will still be restrictions for physical events. However, if necessary, the EFCE 2022 can take place: Primarily physical and where necessary virtual, so all participants, regardless of limitations and origin can attend. Register for physical participation without risk - a refund and/or the switch to virtual attendance, as well as access to the EFCF community are guaranteed in any case.

Evaluation for oral has started, POSTER can longer be accepted.

For frequently asked questions please visit www.EFCF.com/FAQ or email CEA@efcf.com.

Book Your Booth
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www.EFCF.com/Download

MISSED the DEADLINE for ORAL!
30 April 2022.

Exhibition
www.EFCF.com/Exhibition

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www.EFCF.com/Schedule

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15th European SOFC & SOE Forum

- This 26th high-level international event offers an unbiased presentation of the state-of-the-art technology in beautiful Switzerland
- Up-to 300 technical contributions with full length manuscripts, available to download as Proceedings
- Modern conference facilities with top services, excellent food and refreshments
- Unique networking events: "Welcome Reception", "Swiss Surprise", and "Dinner on the Lake"
- Pleasant walking from hotels to conference centre

International Exhibition of fuel cell, electrolyser and hydrogen products and components. See www.EFCF.com/IMPRESSIONS

Scientific Advisory Committee

- Alan Atkinson, Imp College, GB
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- Katherine Bagarinao, AIST, JP
- Jean-Marc Bassat, CNRS/ICMCB, FR
- Brian Borglum, FCE, USA
- Ming Chen, DTU, DK
- Paola Costamagna, Uni Genova, IT
- Kiochi Eguchi, Kyoto University, JP
- Marie-Laure Fontaine, SINTEF, NO
- André Weber, KIT, DE
- Dr-Ing. Julie Mougin, CEA-Liten, Grenoble, France
- Martin Marcus, University of Cape Town, ZA
- Jérôme Laurencin, CEA, FR
- Florence Lefebvre-Joud, CEA, FR
- Dr. Hab. Jerome Laurencin is a senior scientist at the French Atomic and Alternative Energies Commission (CEA), where he leads a research group on the modeling and characterizations of Solid Oxide Cells (SOC). After a Master degree in material science and engineering, he obtained his Ph.D. from Grenoble Institute of Technology (INPG) with a dissertation on the performance and durability of solid oxide fuel cells. He received his habilitation in 2013 on the modeling of high temperature electrochemical devices. Jérôme Laurencin has been working on the field of SOC for more than 15 years at CEA. His research activities are related to the modelling coupled with advanced material and mechanical characterizations. With his research group, he has adapted methods based on synchrotron X-ray radiation for the microstructural and physico-chemical characterizations. He developed a multi-scale and multi-physic modeling framework that accounts for the electrochemical and mechanical cell behavior. His current research interests aim at understanding the complex relationships between the electrode microstructure and the fundamental properties of materials to optimize the cell durability and robustness in electrolysis and fuel cell modes. Jérôme Laurencin has participated to several National and European projects as work-package leader. He is author/co-author of 84 articles in peer-reviewed scientific journals (more than 120 in total), three book chapters and holds 5 patents.
- Andreas Mai, Hexis, CH
- Olga Marina, PNNL, USA
- Nobert Menzler, FZJ, DE
- Dario Montinaro, Solidpower, IT
- Julie Mougin, CEA, FR
- Cesare Pianese, UNISA, IT
- Oliver Posdzieach, Sunfire, DE
- Massimo Santarelli, POLITO, IT
- Kazunari Sasaki, Kyushu University, JP
- Albert Tarancon, IREC, SP
- Jan van Herle, EPFL, CH
- Ligang Wang, North China Electric Power University, CN
- André Weber, KIT, DE

Keynote speakers & Invited contributions

- Regularly updated on www.EFCF.com/Highlights
- Gold Medal of Honour Award Winners: www.EFCF.com/Award

Organised by the EUROPEAN FUEL CELL FORUM

Olivier Bucheli & Michael Spirig
Obgardihalde 2, CH-6043 Luzern-Adligenswil, Switzerland
Tel: +41-44-586-5644
forum@efcf.com - www.EFCF.com
Invitation

Green Hydrogen Forum & Expo

H₂ enabling the cyclic economy & decarbonisation

part of

Europe's Largest and Most International Exhibition for Batteries and Energy Storage Systems

www.EFCF.com/GHFe

NEXT GHF event is at TheSmarterE
10-11 May 2022 - ICM MÜNCHEN
Pre-Announcements

GSM 2021 + GSM 2022
Virtual + Free  3 Nov.  Lucerne  4 - 5 July
Switzerland

GRID FLEXIBILITY & BUSINESS
ENABLING RENEWABLE TECHNOLOGIES

www.GridServiceMarket.com
Pre-Announcements

MEEP 2021
Free + Virtual
Date tba
Lucerne
7 - 8 July
Switzerland

MEEP 2022
Int. Microbial/Enzymatic Electrochemistry Platform

Featuring

Microbial,
Enzymatic & Bio-Photovoltaic
Electrochemical Reactors
Fuel Cell-Systems
Electrolyser-Systems

www.I-MEEP.com
Fuel Cell, Electrolyser & Hydrogen

FCH Tutorial

- Basic understanding of chemical, physical & technical principles
- Application requirements & practical examples of current developments
- Strong base to exchange with your partners & clients

Tutors:
Dr. Günther G. Scherer
formerly PSI, Switzerland

MER Dr. Jan Van Herle
EPFL, Switzerland (right)

Related with EFCF 2022 5 - 8 July
15th European SOFC & SOE Forum
Solid Oxide Technologies & Applications
Int. Conference Series with Tutorials & Exhibition est. 1994
FCH Tutorial: On-Demand or 5 July 2022  
www.EFCF.com/FCH

**PROGRAM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30</td>
<td>Registration, welcome refreshments</td>
</tr>
<tr>
<td>10:00</td>
<td><strong>Lecture 1</strong> Welcome &amp; Fundamentals of Electrochemical Energy Conversion</td>
</tr>
<tr>
<td>11:00</td>
<td><strong>Lecture 2</strong> Characteristics of the important Fuel Cell &amp; Electrolyser Technologies</td>
</tr>
<tr>
<td>11:45</td>
<td>Coffee break</td>
</tr>
<tr>
<td>12:00</td>
<td><strong>Lecture 3</strong> Fuels for fuel cells, fuel processing</td>
</tr>
<tr>
<td>12:45</td>
<td>Lunch break</td>
</tr>
<tr>
<td>14:00</td>
<td><strong>Lecture 4</strong> Applications of Polymer Electrolyte Technologies such as PEFC, DMFC, H2FC, ...</td>
</tr>
<tr>
<td>14:45</td>
<td><strong>Lecture 5</strong> System aspects, applications of Solid Oxide Technologies such as SOFC, SOE, SOMR</td>
</tr>
<tr>
<td>15:30</td>
<td>Coffee break</td>
</tr>
<tr>
<td>15:45</td>
<td><strong>Lecture 6</strong> State-of-the-art, challenges, summary - Summary</td>
</tr>
<tr>
<td>17:00</td>
<td>End of FCH Tutorial, Visit the exhibition of the EFCF</td>
</tr>
</tbody>
</table>

The FCH Tutorial language is English.

**Registration, Services & Fees**

Both physical & virtual registration is available and includes: Complete documentation of the tutorial lectures, exchange with EIS experts & users, admission to the EFCF exhibition, VAT & the certificate of attendance with confirmation of 0.5 ECTS credits. Additionally for onsite participants: Welcome refreshments, business lunch, snacks & drinks and access to the poster session.

**On-line Registration**

- Onsite: CHF 500 for regular registration
- Virtual: CHF 220 for regular registration (on-demand & live)

Exhibitors & Groups are entitled to rebates.

The FCH tutorial will also be made available on-demand. Request a quote at forum@efcf.com

www.EFCF.com/TutReg
Electrochemical Impedance Spectroscopy

EIS Tutorial

- Basic principles of EIS for analysing Electrochemical Reactor Technologies
- Advanced applications, sophisticated cases & practical details
- Discussions & exchange of experience with top-class experts

Tutors:
Dr. André Weber
KIT, Germany

Dr. Dino Klotz
I2CNER, Kyushu Uni, Japan

Related with EFCF 2022 5 - 8 July
15th European SOFC & SOE Forum
Solid Oxide Technologies & Applications
Int. Conference Series with Tutorials & Exhibition est. 1994
PROGRAM

EIS Tutorial: On-Demand or 5 July 2022
www.EFCF.com/EIS

09:30 Registration, welcome refreshments

10:00 Lecture 1 Welcome & Fundamentals of Electrochemical Impedance Spectroscopy
11:00 Lecture 2 Impedance Spectra Eval., Kramers-Kronig Test, DRT-Analysis, CNLS Fit
11:45 Coffee break

12:00 Lecture 3 Applications I - Analysis - Materials and (Model-) Electrodes
12:45 Lunch break

14:00 Lecture 4 Applications II - Analysis - Single Cells and Stacks
14:45 Lecture 5 Impedance Modelling and Simulation
15:30 Coffee break

15:45 Lecture 6 "EIS challenge" - Summary

17:00 End of EIS Tutorial, Visit the virtual exhibition of EFCF

The EIS Tutorial language is English.

Registration, Services & Fees

Both physical & virtual registration is available and includes:
Complete documentation of the tutorial lectures, exchange with EIS experts & users, admission to the EFCF exhibition, VAT & the certificate of attendance with confirmation of 0.5 ECTS credits.
Additionally for onsite participants: Welcome refreshments, business lunch, snacks & drinks and access to the poster session.

On-line registration: www.EFCF.com/TutReg

Onsite CHF 350 for EFCF 2022 participants & EFCF members
CHF 500 for regular registration

Virtual CHF 150 for EFCF 2022 participants & EFCF members
CHF 220 for regular registration (on-demand & live)

Exhibitors & Groups are entitled to rebates. The EIS tutorial is also on-demand available. Request a quote at forum@efcf.com.