CALL FOR PAPERS

EFCF 2024

28th Intern. Conference in Series KKL Lucerne/Switzerland 2 – 5 July

16th European SOFC & SOE Forum

Chaired by:

Prof. Albert Tarancón

IREC Catalonia Institute for Energy Research

Featuring

- **Solid Oxide Technologies**
  Fuel Cells (SOFC), Electrolysers (SOE) &
  Membrane Reactors (SOMR), CO_2 Emission Reduction & Reuse
- **Exhibition:** Suppliers, Materials, Testing, Components, SO-Technologies
- **Tutorials:** FCH – Fuel Cell, Electrolyser & Hydrogen
  EIS – Electrochemical Impedance Spectroscopy
- **SSD 2024:** Sustainable Shipping Days
- **GSM 2024:** Grid Service Market Symposium

EUROPEAN
ELECTROLYSER FUEL CELL FORUM

www.EFCF.com

CALL FOR PAPERS

Physical & Virtual Participation

EFCF 2024

16th European SOFC & SOE Forum

28th Int. Conference Series est. 1994

KKL, Lucerne, **Switzerland 2-5 July**

Chaired by

Prof. Albert Tarancón

IREC Catalonia Institute for Energy Research
ICREA Nanoionics & Fuel Cells Group

Featuring

SOLID OXIDE TECHNOLOGIES

Fuel Cells SOFC, **Electrolysers** SOE, **Electrochem. Reactors** & **CO_2 Emission Reduction** & **Reuse**

Scope of the Forum

www.EFCF.com/Scope

The 16th EUROPEAN SOFC & SOE FORUM 2024 addresses issues of science, engineering, materials, systems, applications and markets for all types of **Solid Oxide Fuel Cells - SOFC** & Solid Oxide **Electrolysers - SOE**, summarised under Solid Oxide **Electrochemical Reactors**. The issue of **CO_2 emission reduction & reuse** is addressed as well. The EFCForum is the world's largest meeting on Solid Oxide Technologies, building the bridge from science to application. More than 500 participants & up to 40 exhibitors are expected. Business opportunities will be identified for manufacturers, industry, operators & investors, and a presentation platform is given to start-ups. Although it is a Europe-based event, a significant share of participants come from other continents. The EFCF - **E**lectrolyser & **F**uel **C**ell **F**orum 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 & its great surroundings, which opens minds for fruitful exchange about technology & business.

A Scientific Advisory Committee has been formed to evaluate & structure the technical programme. This panel exercises **full scientific independence** in all technical matters. All oral & poster papers 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 an up-dated program of the conference and special events, with overview of all contributions, authors, institutions & exhibitors. EFCF 2024 is a physical network event that requires presenters to be on-site, but provides virtual access to the content.

Technical Status & Achievements: The following companies have presented in the previous SOFC & SOE editions:

Anan Kasei, AVL, Boeing, Bosal, Robert Bosch, Cap Co, Ceraco Ceramic Coating, Ceramatec, Ceramic Powder Technology, CCTC, CeramTec, Ceres Power, CerPoTech, Convion, EBZ, Elcogen, Fiaxell, Genvia, KCeracel, Kerafol, Nissan, Plansee, Shell, SolydEra, Sunfire, Sylfen, ThyssenKrupp, Toho Gas, Tokyo Gas, Topsøe, …

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 deployment.

The EFCF 2024 **MOTTO** is: **Shaping solid oxide technologies for a sustainable future**

TOPICS of the conference are set. but not limited to:

01-04 **Science & Know-how**	01 State-of-the-art and novel materials 02 State-of-the-art and novel cell/stack- designs and manufacturing routes 03 Emerging technologies based on solid oxides (reversible, protonic ceramics, etc.) 04 Degradation mechanisms & overall lifetime from materials to system level
05-09 **Bridge to Product**	05 Advanced characterization techniques 06 Cell, stack & system modelling and optimization 07 Balance of plant components e.g. gas train, electrical & thermal management, HEX part 08 System design and performance 09 Test infrastructure, analytical methods, Big Data & AI analysis
10-15 **Industrial Achievements**	10 SOC system integration e.g. CO_2 conversion, Power-to-X, Grid Services, seawater electrolysis 11 Novel concepts, technology demonstration and deployment 12 Scale-up: Use of critical raw materials, supply chain, manufacturing, … 13 Technology status at industry and major groups, Start-Up innovation presentation 14 Special talks e.g. keynotes, invited talks, demonstrations, entertainment 15 All others

Publication Policy

www.EFCF.com/PP

All contributions, which deliver an **extended abstract**, have the opportunity to be **published with** their own **DOI** in the **EFCF community** of the general-purpose **open-access repository** www.Zenodo.org. Since 2012 a limited number of contributions will be additionally invited to be included in a **Special Issue** in the peer reviewed Journal "**Fuel Cells – From Fundamentals to Systems**" published by Wiley-VCH, e.g.: **EFCF 2013** – Volume 14, Issue 5, pg 671–774; **EFCF 2019** – Volume 20, Issue 4, pg 383-514 (see www.EFCF.com/SI). Authors who wish to **publish "elsewhere"**, can opt out. All copyrights remain with the authors.

Further on, the programme and event details are distributed in the **Final Announcement** by letter post, email and on www.EFCF.com/FA. All one-page abstracts of the oral & poster presentations are published in the **Book of Abstracts**. Together with all extended abstracts, they are made available in the electronic **Proceedings of the conference**. They are distributed to the EFCF participants only, as a temporary reference during the conference and as ongoing internal reference in the EFCF MemberZone. The **final EFCF Proceedings** will be a synthesis of the Book of Abstracts and access information to the available, event related publications. It is freely accessible on www.EFCF.com/Library together with all other event details.

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 EFCF 2024 featuring Solid Oxide Technologies. **The submission procedure and conditions are:**

1. **Download** Abstract Template, Instructions & Samples from www.EFCF.com/Download
2. **Upload** your one-page abstracts at www.EFCF.com/Upload **by 30 November 2023** (late abstracts cannot be considered for oral presentation).
3. Receive notification about acceptance in February 2024. This requires you to **submit an extended abstract/paper** by **30 April 2024** & to register4*. These are **mandatory** conditions for publication with DOI or in the Special Issue. Shorter versions are allowed for contributions never to be published.

4*. Presenting authors are required to **register** for the forum and to pay the appropriate registration fee. Presenters who are not registered for the conference **by 31 May** lose their presentation slot. **Non-shows** without timely cancellation will be **penalized**. EFCF cannot provide direct financial support to attendees, but consult the list of fees below for **early registration privileges, rebates & support options**.

For **F**requently **A**sked **Q**uestions please visit www.EFCF.com/**FAQ** or email IREC@efcf.com.

Venue & Access

www.EFCF.com/**Lucerne**, …/**Join**

EFCF events are traditionally held at the Culture and Convention Centre Lucerne (KKL) in conjunction with the Fuel Cell, Electrolyser & H_2 Technology and Supplier Exhibition and the popular FC, EL & H_2 Tutorial (FCH). An Electrochemical Impedance Spectroscopy (EIS) Tutorial and special events like the Sustainable Shipping Days SSD 2024, the Grid Service Market symposium GSM 2024, Project meetings, … are organised alongside the Forum.

The KKL conference centre is a well-known location on the picturesque waterfront of the Lake Lucerne, easy to reach by plane and train, and within a short walk from charming hotels and the historical town centre. EFCF 2024 will take place again as a physical and virtual event, offering participants from all continents regardless of restrictions and origin the opportunity to contribute and participate. However, being present in Lucerne in person is an unbeatable win-win situation for all. Therefore, it makes sense that only physically present participants will have the coveted opportunity to present orally (semi-hybrid).

Time Schedule & Events

www.EFCF.com/**Schedule**, …/**Events**

30 November 2023		Deadline for submission of **abstracts** via website – www.EFCF.com/Upload
February 2024		Notification about acceptance in the EFCF programme
March 2024		**Final Announcement** short with key-note speaker, session program & links to definitive oral program poster & exhibitor list
30 April 2024		Deadline for submission of **extended abstract/paper** – www.EFCF.com/Upload
1-2 July 2024	10:00 – 18.00	**GSM 2024:** www.GridServiceMarket.com Grid Flexibility & Utilities & ESCO oriented Business (separate registration required)
2 July 2024	09:00 – 17.00	**SSD 2024**: Sustainable Shipping Days, starting on 1 July 18.00 with SSD networking evening (separate registration required)
	10:00 –17:00	**Tutorials: EIS**: Electrochemical Impedance Spectroscopy; **FC&H_2**: Fuel Cells. Electrolyser & H_2, **Project meetings**
	11:00 –16:00	Exhibition and poster **Set-up**, 16:00 Opening of Exhibition and Registration, 18:00 "**Welcome Reception**"
3 July 2024	09:00 –18:00	International and Industrial Overviews – Keynotes – Oral & Poster Sessions, Exhibition
	18:30	"Swiss Surprise Night": An enjoyable exchange event with Swiss cuisine, folklore, culture and drinks
4 July 2024	09:00 –18:00	Keynotes – Oral & Poster Sessions, Exhibition
	19:30	"Dinner on the Lake": Unique pleasure boat tour with music and picturesque scenery, an unforgettable networking event
5 July 2024	09:00 –17:00	Oral & Poster Sessions – Plenary Keynotes, Exhibition, Schoenbein Medal Award, Closing Ceremony, Good bye coffee

Services & Fees

www.EFCF.com/**Fee**

Conference — Registration Deadlines	Physical: Early - 31 March	Physical: Regular from 1 April	Physical: Late from 15 May	Virtual: Regular - 14 May	Virtual: Late from 15 May
• Students, trainees and unemployed persons etc. with valid identification	**600**	+150	+100 CHF	**375**	+50 CHF
• Government, universities, consultants etc.	**1'350**	+150	+100 CHF	**750**	+50 CHF
• Industry and commerce	**1'950***	+150	+100 CHF		
Tutorials	Single & two-day tickets are also available.				
• FC, EL & H_2 Tutorial - Fuel Cells, Electrolysers & Hydrogen (kick-start, www.EFCF.com/FCH):	**580** CHF			**400**	+50 CHF
• EIS Tutorial - Electrochemical Impedance Spectroscopy (advanced, www.EFCF.com/EIS)	**580** CHF			**400**	+50 CHF

Starting from 3 people attractive rebates are offered for group registration.
Exhibitors are entitled to up to a 55% discount on conference fees.
To benefit mail your request to forum@EFCF.com.

*Incl. 600 CHF donation for student support , All fees include the 8,1% VAT, where applicable, One Swiss Franc ("CHF") is valued at about 1.05 EURO, 1.14 US Dollar, 166 YEN, 8.3 CNY (Sept 2023, www.efcf.com/Currency).

Physical fees include access to conference and exhibition, plus all advantages of the virtual access as well as business lunches, all refreshments, welcome reception on Tuesday and the Dinner on the Lake on Thursday. Optional: Swiss Surprise on Wednesday (135 CHF pp). **Virtual fees include** virtual live and on-demand access as well as access to the virtual community rooms during and to the member zone after the conference, proceedings of the EFCF 2024 conference, Valued EFCF membership with all additional services and rebates until the next conference and post conference access to available on-demand streams, book of abstracts and ISBN proceedings back to 1994.

Excellent Student Support Fund

www.EFCF.com/**ESSF**

The ESSF offers support to 3 students, providing first class scientific contributions in form of free registration and a contribution for accommodation.

Researcher Support and Sponsorship

www.EFCF.com/**RSS**

INDIVIDUALS with limited financial resources can get support in finding a sponsor. These SPONSORS profit from additional privileges and visibility.

Exhibition

www.EFCF.com/**Exhibition**

Book your Booth on www.EFCF.com/**ByB**

Why exhibit at EFCF?

Efficient & Effective
Contact with exactly the right people, who understand and benefit from your added values and impact the decision process.
Valuable Contacts

Complete & Convenient
Booth fees include kit, services, VAT, etc. and you profit from striking offers e.g. fully equipped booth from 800 CHF, when 2 participants are booked.
All Inclusive

100% Visibility
in the core of the Fuel Cell, Electrolyser & Hydrogen community boosts
Product Request

Some valued former exhibitors: Bosal Energy Conversion Industry, CerPoTech, COVESS nv, Fiaxell, HORIBA, I-GraphX GmbH, KERAFOL GmbH, Powidian, Praxair Surface Technologies, Inc., SulfaTrap LLC, ZAHNER-elektrik GmbH & Co. KG, ….

EFCF 2024
Lucerne, Switzerland, 2 – 5 July

16th European SOFC & SOE Forum

- This 28th 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 Commitee

www.EFCF.com/SAC

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- Viola Birss, Uni Calgary, CA
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- Christian Walter, Sunfire, DE

International Board of Advisors

www.EFCF.com/IBoA

IBoA Chair: K. Andreas Friedrich, DLR, DE

Keynote speakers & Invited contributions

regularly updated on **www.EFCF.com/HighLights**

Gold Medal of Honour Award Winners: **www.EFCF.com/Award**

Chair of the Conference

Prof. Albert Tarancón is head of the Nanoionics & Fuel Cells group ICREA at the Catalonia Institute for Energy Research IREC. Albert holds M.Sc. and PhD in Physics from the University of Barcelona (2001, 2007) and an M. Eng. in Materials Science from the Polytechnic University of Catalonia (2007). He has worked as a research associate at CSIC (ES) and as a visiting researcher at the University of Oslo (NO), Imperial College London (UK) and Caltech (USA). In 2010, Albert joined the Catalonia Institute for Energy Research (IREC) as Head of Group. Since 2018, he is ICREA Research Professor at IREC and leads a group of 35+ people dedicated to hydrogen technologies and alternative energy sources.

Albert has devoted more than 20 years to the field of Solid Oxide Cells developing innovative materials, cells and stacks close together with the major industrial players in Europe. In recent times, Albert's team is pioneering the introduction of revolutionary 3D printing technologies in the SOC community exploring unprecedented shapes and interfaces to improve performance and efficiency. In his active career, Albert has been Principal Investigator of 12 European projects, including two ERC grants, coordinating four of them on hydrogen technologies. Moreover, he has been actively involved in the definition of national and international research programmes in the field of power generation and energy storage.

Albert has authored more than 200 scientific articles in peer-reviewed journals collecting more than 6500 citations and 200+ oral presentations in international congresses (60+ invited and keynotes). Albert has been recently included in the 1% top-cited scientists in the field of "Energy". Moreover, he is currently editor of the emerging Journal of Physics Energy (IoP) and APL Energy (AIP) and the well-reputed Journal of the European Ceramic Society (Elsevier).

Organised by the
EUROPEAN FUEL CELL FORUM
Olivier Bucheli & Michael Spirig
Obgardihalde 2, CH-6043 Luzern-Adligenswil, Switzerland
forum@efcf.com · www.EFCF.com

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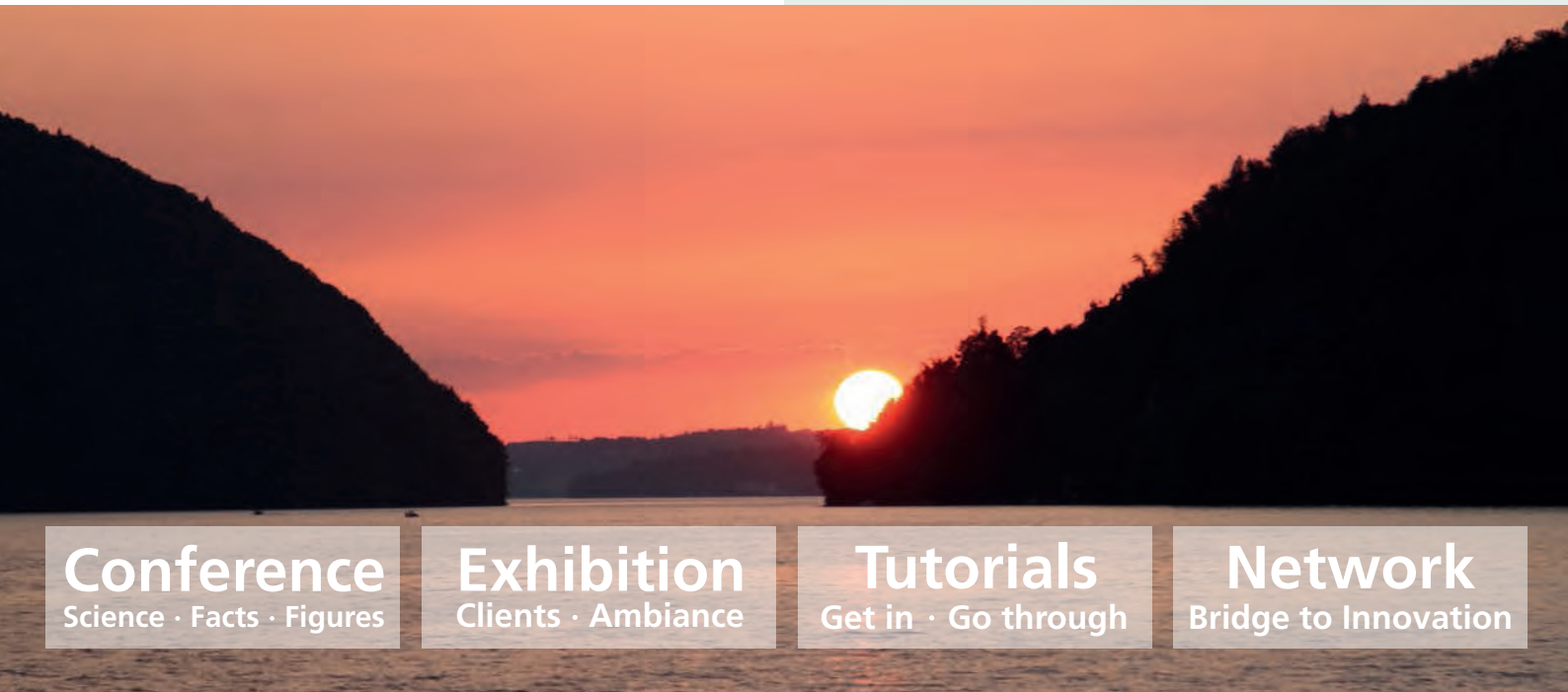


ANNOUNCEMENT

SSD 2024

1 – 2 July

Lucerne, Switzerland

SUSTAINABLE SHIPPING DAYS

Electrolysers & Fuel Cells for waterborne transport

Conference
Exhibition
Network

Chaired by:

Dr. Syed Asif Ansar
ESI – Energy System Integration
DLR – German Aerospace Center

Featuring

- Marine fuel cell technology
- Advanced propulsion systems
- Electrolysis & green marine fuels
- Ship integration & port eco systems

Organised by

www.EFCF.com

European Electrolyser & Fuel Cell Forum • forum@efcf.com

SSD 2024
1 – 2 July

Scope

The Sustainable Shipping Days 2024 (SSD) aim to explore and promote advancements in maritime sustainability through the integration of fuel cell-based onboard energy systems and electrolysis technology at ports for fuel supply. Over one and a half days, this event will facilitate connecting experts, industry leaders, and researchers in these vital fields. It will focus on presenting and fostering in-depth discussions about the latest developments in maritime fuel cell technology, showcasing its potential to power ships, enhance energy efficiency, and reduce emissions. Furthermore, the conference will emphasize the pivotal role of electrolysis in green hydrogen production for sustainable fuel supply at ports for ambitions of net-zero. It will encourage dialogues regarding the integration of these technologies into the shipping industry, with a keen eye on their broader impacts on environmental conservation, energy security, and market dynamics.

Program

The Sustainable Shipping Days 2024 (SSD) program offers an engaging and dynamic agenda, including high-level keynotes, focused invited talks, and the unveiling of results from national and EU projects. Designed to facilitate the exchange of knowledge and foster meaningful connections, the program sets the stage through pre-event gatherings, including an inviting aperitif and an enjoyable dinner, fostering an atmosphere conducive to enriching interactions. SSD extend an invitation to partake in a comprehensive exchange with the Electrolyser & Fuel Cell Forum (EFCF) 2024 community at the EFCF-Welcome Reception. EFCF, spanning the ensuing three days amidst the picturesque backdrop of Lucerne, gathers the world's foremost experts in the field. The combined SSD and EFCF experience offers an exclusive opportunity to propel sustainable shipping forward, with a primary focus on the integration of maritime fuel cells and integrated electrolysis plants within ports.

Who should join:

- OEMs of Fuel Cells, Electrolysers & Storage Systems
- Marine Fuel Suppliers
- Marine Genset Manufactures
- Ship Yards, Ship Owners & Ship Operators
- Port Builders, Integrators, Operators & Authorities
- Investors, Banks, Scouts
- Marine Safety & Classification Organisations
- Regulators, Consultants
- R&D specialists in the related fields

Chair of the Conference

Head of Department ESI / DLR

Dr. Syed Asif Ansar currently holds the position of Head of the Department of Energy System Integration (ESI) at the German Aerospace Center (DLR). His primary focus centers around the development of technologies aimed at reducing carbon intensity in both waterborne and airborne transport sectors.

To achieve this, his department, comprising a dedicated team of over 70 professionals, concentrates on advancing the domains of Fuel Cell and Battery powertrains, as well as the generation of hydrogen and its derivatives through cutting-edge Electrolyser technologies. The laboratories are equipped with comprehensive experimental facilities spanning both laboratory to pilot-scale operations.

Dr. Ansar's has also served as a member of the Roadmap Leaders Committee of the EU Clean Hydrogen Partnership and a steering board member of the EERA Fuel Cell and Hydrogen. He has authored over 80 published papers, multiple book chapters, and secured 10 patents. He attained his doctorate from the University of Limoges, France in 2004.

Partnership with:

NAUTILUS
www.Nautilus-Project.eu

Organised by the European Fuel Cell Forum
Obgardihalde 2, CH-6043 Luzern-Adligenswil, Switzerland
forum@efcf.com, www.EFCF.com
Olivier Bucheli & Michael Spirig

Follow-us: LinkedIn **@EFCF**

Twitter **@EFCForum**

SSD 2024
1 – 2 July

Scientific Board

www.EFCF.com/**SSDboard**

Syed Asif Ansar	**Board Chair** Head of Department Energy System Integration	German Aerospace Center (DLR), Institute of Engineering Thermodynamics	www.dlr.de
Jostein Bogen	VP Global Product Line Manager Electric Solutions	ABB Marine & Ports	www.abb.com
Laurence Grand	Founder and CEO	Persee	www.pers-ee.com
Øystein Ulleberg	Chief Scientist	IFE, Institute for Energy Technology	www.ife.no/en
Spyros Paris Voutetakis	Director	Process Systems Design and Implementation Laboratory/CPERI/CERTH	www.certh.gr/root.en
Malte Zeretzke	Head or R&D	Carnival Maritime	www.carnival-maritime.com

Program Overview

www.EFCF.com/**SSDprogram**

MONDAY, 1 July 2024	
09.00 – 18.00	Project Meetings
19.00 – 22.30	**SSD Networking Dinner**
TUESDAY, 2 July 2024	
08.00	Registration
09.00	**Welcome & Opening**
09.10	Keynote Lecture
09.40	Lecture 1: **Demonstrators and Operations**
11.10	Lecture 2: **Green marine fuels production**
12.30	**Lunch & Poster Session**
14.00	Lecture 3: **Advanced propulsion systems**
15.30	Lecture 4: **Marine Fuel Cell Technology**
16.50	Interactive Summary
17.30	**End of the meeting**
18.00 – 19.00	EFCF Welcome Reception

The Sustainable Shipping Days 2024 (SSD) will be held alongside the already well established and highly respected European Electrolyser & Fuel Cell Forum established 1994, with 400 - 500 experts attending, 20-30 exhibitors, tutorials, ... see www.EFCF.com.

This offers further opportunities with researchers and industry members in the field of high temperature Fuel Cells, Electrolysers, & H_2 Processing research from around the world as well as to visit the accompanying exhibition or to join attractive networking events.

Registration is open. Attractive combination tickets and group rebates are available.

Services & Fees

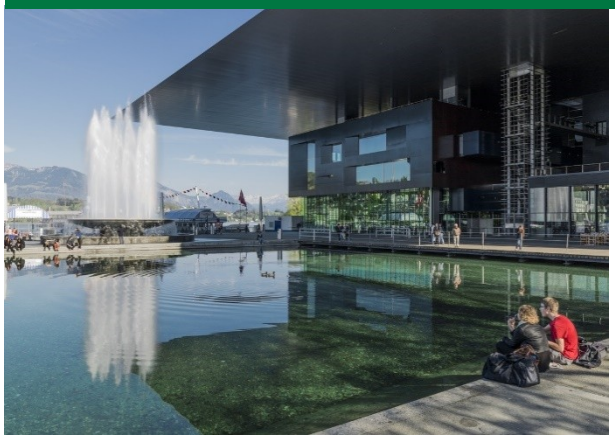
www.EFCF.com/**SSDfee**

Conference	**Physical**			**Virtual**	
	Early	Regular	Late	Regular	Late
Registration deadlines	- 31 March	from 1 April	from 15 May	- 14 May	from 15 May
• Students, trainees and unemployed person etc. with valid identification	**300**	+150	+100 CHF	**270**	+50 CHF
• Academic staff, Governement, Industry, Trade	**690**	+150	+100 CHF	**450**	+50 CHF

Attractive rebates are offered: In combination with an EFCF registration; For group registration (starting from 3 attendees); For exhibitors/sponsors, contact SSD@efcf.com. Physical fees include: Access to conference, plus all advantages of the virtual access as well as business lunch, all refreshments and the SSD Networking Evening on July 1. Virtual fees include: Virtual live and on-demand access as well as access to the virtual community rooms during and to the member zone after the conference.

Venue & Access

www.EFCF.com/**Lucerne**



The Sustainable Shipping Days SSD 2024 is held at the Culture and Convention Centre Lucerne (KKL) in conjunction with the Fuel Cell, Electrolyser & H2 Technology and Supplier Exhibition.

The KKL conference centre is a well-known location on the picturesque waterfront of the Lake Lucerne, easy to reach by plane and train, and within a short walk from charming hotels and the historical town centre.

SSD 2024 will take place as a physical and virtual event, offering participants from all continents regardless of restrictions and origin the opportunity to contribute and participate. However, being present in Lucerne in person is an unbeatable win-win situation for all.

Fuel Cell, Electrolyser & Hydrogen

Kick-Starter, 0.5 ECTS
for
→ Newcomers
→ Medium-experienced

Live onsite 2 July 2024
In Lucerne Switzerland
&
Live virtual or **on-demand**

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)

www.EFCF.com/FCH

Related with **EFCF 2024**, 2 - 5 July
16th European SOFC and SOE Forum
28th Int. Conference Series, Tutorials & Exhibition est. 1994

PROGRAM

FCH Tutorial: Live 2 July 2024

www.**EFCF**.com/**FCH**

09:30 Registration, welcome refreshments

10:00 Welcome and Introduction

10:00 **Lecture 1 Fundamentals of Electrochemical Energy Conversion**

11.00 **Lecture 2 Characteristics of the important Fuel Cell & Electrolyser Technologies**

11:45 Coffee break

12.00 **Lecture 3 Fuels for fuel cells, fuel processing**

12:45 Lunch break

14:00 **Lecture 4 Applications of Polymer Electrolyte Technologies** such as PEFC, DMFC, H2FC, …

14:45 **Lecture 5 System aspects, applications of Solid Oxide Technologies** such as SOFC, SOE, SOMR

15.30 Coffee break

15:45 **Lecture 6 State-of-the-art, challenges, summary**

17:00 End of FCH Tutorial, Visit the exhibition and poster area of EFCF

The Tutorial language is English.

Registration, Services & Fees

Both **on-site** & **virtual** participation are available & include: Complete documentation of the tutorial lectures, exchange with FCH 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 & access to the poster session.

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

CHF 580 for live, on-site participation

CHF 400 for live, virtual participation (+CHF 50 late fee from 15 May)

CHF 350 for on-demand access to recorded lectures

- ca. 2-3 weeks after live performance published
- email exchange with the tutors possible

Exhibitors & groups are entitled to rebates. Ask forum@efcf.com.

Electrochemical Impedance Spectroscopy

Advanced Know-how Booster, 0.5 ECTS
for
→ Medium - Top Experienced

Live onsite 2 July 2024
In Lucerne Switzerland
&
Live virtual or **on-demand**

EIS Tutorial

- ✓ Basic principles of EIS for analysing Solid Oxide Cells and Stacks
- ✓ Advanced applications, sophisticated cases & practical details
- ✓ Discussions & exchange of experience with top-class experts

Tutors:

Dr. André Weber
KIT, Germany

Dr. Dino Klotz

www.EFCF.com/EIS

Related with **EFCF 2024**, 2 - 5 July
16th European SOFC & SOE Forum
28th Int. Conference Series, Tutorials & Exhibition est. 1994

PROGRAM

EIS Tutorial: Live 2 July 2024

www.EFCF.com/EIS

09:30 Registration, welcome refreshments

10:00 Welcome and Introduction

10:10 **Lecture 1 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 exhibition and poster area of EFCF

The EIS Tutorial language is English.

Registration, Services & Fees

Both **on-site** & **virtual** participation are available & include: 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 & access to the poster session.

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

CHF 580 for live, on-site participation

CHF 400 for live, virtual participation (+CHF 50 late fee from 15 May)

CHF 350 for on-demand access to recorded lectures

- ca. 2-3 weeks after live performance published
- email exchange with the tutors possible

Exhibitors & groups are entitled to rebates. Ask forum@efcf.com.

EXHIBITION

EFCF 2024

28th Int. Conference in Series — KKL Lucerne/Switzerland — 2 – 5 July

16th European SOFC & SOE Forum

Chaired by:

Prof. Albert Tarancón

IREC – ICREA Nanoionics & Fuel Cells group

Featuring

- Sol

Reduction & Reuse

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Exhibit:

Developers FCH Industry Suppliers exhibit

- Cells Systems Applications
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EXHIBITION

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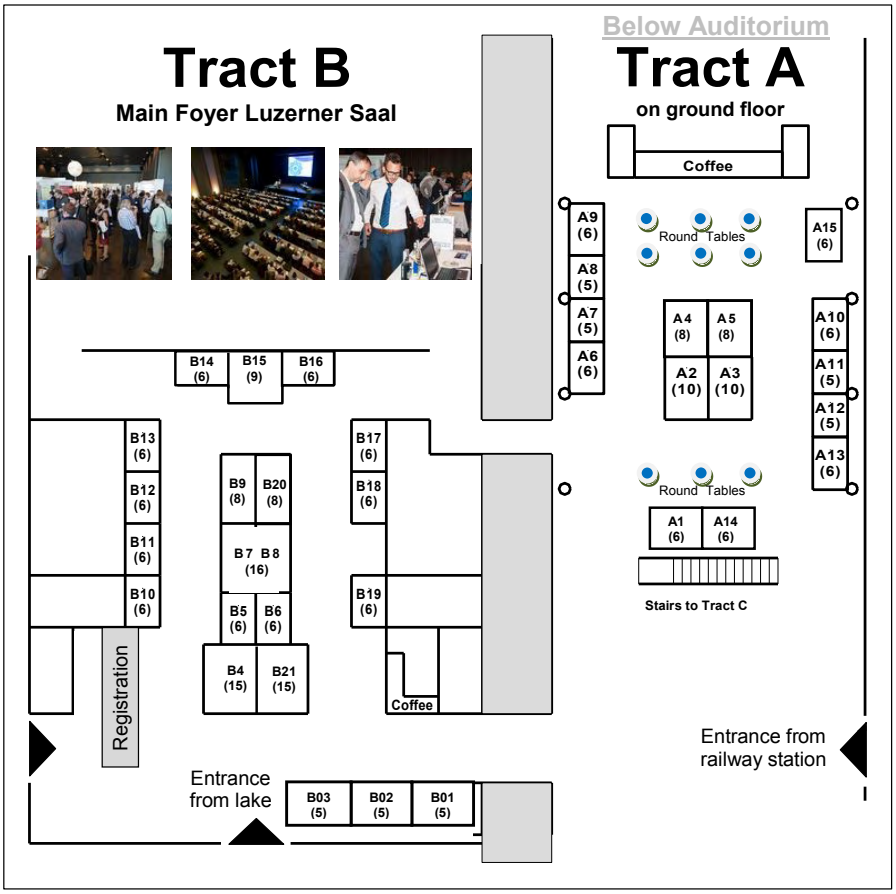
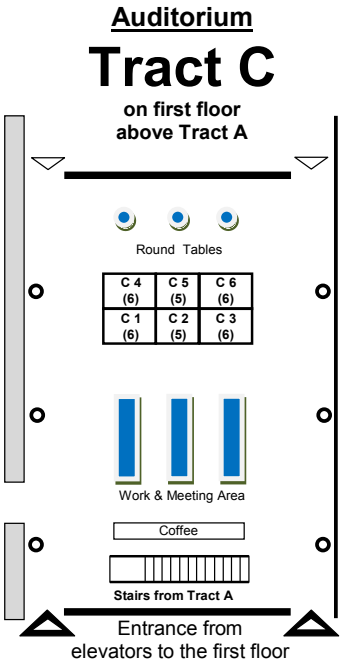
Floor Plan:





Legend:
A1-15, B1-20, C1-6 Booth identification
(6), (9), (12), (16), etc. Booth area in square meters

In 2024 the EUROPEAN ELECTROLYSER & FUEL CELL FORUM will be a four-day event with exhibition set-up on 2 July (Tuesday) and lectures all day from Wednesday to Friday. Exhibitors may remove their displays on 5 July (Friday) at 12.30 pm. Booths of different sizes are available in the adjacent lobby areas of the lecture halls. Participants have to walk through the exhibition to attend lectures and the refreshments are served in the exhibition areas during the intermittences.

All inclusive Booth-Fees:

Size m²	Fees CHF	8.1%VAT	Total CHF
5	3,217	261	3,478
6	3,717	301	4,018
8	4,511	365	4,876
9	4,893	396	5,289
10	5,327	432	5,759
12	6,084	493	6,577
16	7,687	623	8,310
24	10,870	880	11,750

Unforeseen price adjustments remain reserved

Get Details:

www.EFCF.com/Exhibition

European Fuel Cell Forum AG
Obgardihalde 2
CH-6043 Luzern-Adligenswil, Switzerland

+41 44 586 56 44 exhibition@efcf.com

EXHIBITION

16th European SOFC & SOE Forum

28th Int. Conference Series est. 1994 KKL, Lucerne, **Switzerland 2-5 July**

Visibility & Presence WITHOUT BOOTH!

Visibility Elements

a. **Inserts in the Conference** Bag (Size max A4 Form, thickness to be discussed)
b. **Promotional slides** during the conference breaks
c. **Roll-up and flyer display** in the Exhibition Hall
d. **Pre-recorded mp4 file,**
with promotional and contact messages, which will be uploaded in the public zone, announced in different places, so that every participant can get to see it.
NB: In difference to the mp4 of the scientific contribution, such a MP4 can be fully commercial. Both MP4 can be announced within the other.
e. **Advertising space** in the **Final Announcement** (reaching approx. 8-9'000 stakeholders worldwide) or in the **Proceedings** with ISBN, which will remain live long in the EFCF Library.
f. **Sponsorship of a networking** event with naming or speech of the sponsor.
e.g. Welcome or Industry Reception. See also separate Sponsoring Pack

OFFER

- ➔ Item **a-d:** cost 1000.-CHF each, for each additional item +600.-CHF.
- ➔ Point **e:** ¼ page 400 CHF
  ½ page 500 CHF
  1 full page 800 CHF
- ➔ Point **f**: services and price are to be discussed as well as if a total package is desired. See separate Sponsoring Pack
- ➔ If more than 3 elements (a-f or a booth) are booked, we are open for **further quantity discounts**, as the effort is reduced for us as well.

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Name: …… Street: …….....

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Call for Papers Academia & Industry

GSM 2024

KKL Lucerne 1 - 2 July

Switzerland

7th **Grid Service Market** symposium
featuring Grid **Flexibility** & **Business**

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2. **International Collaboration**
3. **Advanced Technologies providing Flexibility**
4. **Grid Service Operation Enabling Technologies**
5. **Case Studies, Demonstrations & others**

Get Call & Exhibition Information

www.GridServiceMarket.com

SCOPE of the 7th **G**rid **S**ervice **M**arkets symposium **GSM 2024**

The **integration** of a large amount of new **renewable energy** sources poses great challenges for the European **electricity grids** & **markets**. Network reinforcement, market harmonisation and integration are both solutions and challenges for the various players in the electricity industry. The integration of new technologies and methods to provide **grid services** and optimise the use of existing infrastructure is changing the face of the electricity industry in the long term.

GSM 2024 aims to outline **recent developments** in the European grid service markets, to highlight advancements and challenges in international cooperation, and to reflect the technological progress. The two-day symposium will feature parallel sessions with invited and contributed talks and posters. The **International Advisory Board (IAB)** ensures that all presentations are of high quality. The **technical program** will include: Future of GSM, international collaboration, advanced technologies providing flexibility, grid service operation & enabling technologies as well as real world case studies & demonstrations. In all fields high level keynotes and deepening discussions are planned.

GSM 2024 will bring together grid and technology experts, scouts and managers from the electricity industry, administration bodies and researchers interested in the commercial aspects of grid services and new technologies. The international audience will exchange on market logic, regulations and harmonization activities, future trends, operations, technology capabilities, and long term business plans and other business related aspects of European grid service markets.

www.**GridServiceMarket**.com/**Scope**