



# 5<sup>th</sup> INTERNATIONAL WORKSHOP ON DEGRADATION ISSUES OF FUEL CELLS and ELECTROLYSERS

Full Programme V.5.0



**Dates: 3 & 4 May 2022**  
**Location: Corfu Holiday Palace Hotel**  
**Corfu, Greece**

**PLENARY & WORKSHOP SESSIONS AGENDA**



## PLENARY SESSIONS

**TUESDAY 03 May 2022**

All times are given in local time, i.e. Eastern European Summer Time  
EST = CET-1

<b>QUO VADIS FUEL CELL &amp; ELECTROLYSIS DURABILITY?</b>		
<b>SESSION CHAIR: Anke Hagen</b>		
<b>9:00</b>	<b>Registration</b>	
<b>10:00</b> 09:00 CET	Welcoming address, Opening Remarks	Stelios Neophytides (FORTH)
<b>10:10</b>	A history of projects addressing fuel cell degradation	Robert Steinberger- Wilckens (U Birmingham)
<b>10:30</b>	Large-scale industrial applications of electrolysers	Chen-Yu Tsai / Mariana Heringer-Boucas (SunFire)
<b>11:00</b>	<b>Coffee break</b>	

### On-site only workshop session:

<b>17:00</b>	<b>EU Strategy Workshop</b>
	<b>What could a future EU project on FC&amp;ELY degradation look like?</b>
<b>19:00</b>	<b>Break</b>
<b>19:45</b>	<b>Welcome Drinks</b>
<b>20:30</b>	<b>Special Dinner</b>

**Wednesday 04 May 2022**

### On-site only workshop session:

<b>17:00</b>	<b>Summary plenum of the Workshop (LT &amp; HT)</b>
	<b>What are communalities and differences between LT/HT and FC/ELY?</b>
	<b>What could joint topics be and how could they be addressed?</b>
	<b>Re-visit: What could an EU project look like?</b>
<b>19:00</b>	<b>break</b>
<b>20:00</b>	<b>Dinner</b>



## AGENDA

### Tuesday 03 May 2022

<b>PARALLEL SESSION 1</b>		
<b>PE FCs and ELYs</b>		
<b>Electrode reactions</b>		
<b>SESSION CHAIR: Stelios Neophytides</b>		
<b>11:15</b> 10:15 CET	Durability testing of low-iridium PEM water electrolysis membrane electrode assemblies	Maximilian Möckl (ZAE Bayern)
<b>11:35</b>	Theoretical stability descriptors for PEM OER catalysts	Christoph Scheurer (FHI MPG)
<b>11:55</b>	Demystifying Oxygen Reduction Reaction kinetics and energetics in HT-PEMFCs	Panagiotis Giotakos (FORTH)
<b>12:15</b>	A titanium hydride layer as an efficient tool against anodic Ti PTL passivation	Karel Bouzek (VSCHT)
<b>12:35</b>	Discussion time and adjourn	
<b>13:00</b>	<b>Lunch</b>	
<b>Membrane and catalyst degradation</b>		
<b>SESSION CHAIR: Karel Bouzek</b>		
<b>15:00</b> 14:00 CET	Degradation issues of polymer electrolyte membrane electrolysis cells (Zoom)	Antonino S. Aricò (ITAE CNR)
<b>15:20</b> 14:20 CET	Challenges of endurance testing of PE fuel cell stacks (Zoom, only time slot available)	Ludwig Jörissen (ZSW)
<b>15:40</b> 14:40 CET	Catalyst degradation in PEM fuel cells (Zoom)	Nada Zamel (FhG ISE)
<b>16:00</b>	Discussion time and adjourn	
<b>16:30</b>	<b>Coffee break</b>	



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### Tuesday 03 May 2022

<b>PARALLEL SESSION 2</b>		
<b>SOC</b>		
<b>Industry position and SOC degradation</b>		
<b>SESSION CHAIR: Robert Steinberger-Wilckens</b>		
<b>11:15</b> 10:15 CET	Topsoe, Power-to-X, and SOEC Lifetime Capacity	Peter Blennow (HTAS)
<b>11:35</b>	Elcogen SOFC/SOE technology: current situation and market expectations	Sergii Pylypko (Elcogen)
<b>11:55</b>	Segmented SOFC/SOE testing with depletion of fuel/air/steam	Hamza Moussaoui (EPFL)
<b>12:15</b>	SOC electrode degradation in electrolysis mode	Giuseppe Sassone (CEA)
<b>12:35</b>	Discussion time and adjourn	
<b>13:00</b>	<b>Lunch</b>	
<b>Barrier layers and P2X</b>		
<b>SESSION CHAIR: Sergii Pylypko</b>		
<b>15:00</b> 14:00 CET	Effect of ALD-barrier properties on SOFC degradation	Markus Rautanen (VTT)
<b>15:20</b>	Sputtered barrier layers for high performance industrial Solid Oxide Fuel Cells	Nunzia Copola (U Salerno)
<b>15:40</b> 14:40CET	SOC for P2X application: addressing the challenge of durability (Zoom)	Remi Costa (DLR)
<b>16:00</b>	Discussion time and adjourn	
<b>16:30</b>	<b>Coffee break</b>	



## AGENDA WEDNESDAY 04 MAY 2022

<b>PARALLEL SESSION 1 PE FCs and ELYs</b>		
<b>Catalysis and membranes</b>		
<b>SESSION CHAIR: Panagiotis Giotakos</b>		
<b>10:00</b> 9:00 CET	Shedding Synchrotron Light on Nanocatalysts Degradation in Operating Fuel Cell (Zoom)	Raphaël Chattot (U Montpellier)
<b>10:20</b> 9:20 CET	Enhancing the membranes stability for HT PEMFCs operating above 180°C (Zoom)	Aikaterini Andreopoulou (U Patras)
<b>10:40</b>	n.n.	n.n.
<b>11:00</b>	Discussion time and adjourn	
<b>11:30</b>	<b>Coffee Break</b>	
<b>Systems and operating strategies</b>		
<b>SESSION CHAIR: Christoph Scheurer</b>		
<b>12:00</b> 11:00CET	PEM fuel cell systems with improved durability (Zoom)	Daniel Hissel (t.b.c.) FEMTO
<b>12:20</b> 11:20CET	Degradation of PEM water electrolyzers in connection to operating strategies (Zoom)	Georgios Papakonstantinou (MPI)
<b>12:40</b> 11:40CET	n.n.	n.n.
<b>13:00</b>	Discussion time and adjourn	
<b>13:30</b>	<b>Lunch</b>	
<b>Time off</b>		
<b>16:30</b>	<b>Coffee break</b>	



## Agenda WEDNESDAY 04 MAY 2022

<b>PARALLEL SESSION 2 SOC</b>		
<b>Lifetime and accelerated testing</b>		
<b>SESSION CHAIR: Hamza Moussaoui</b>		
<b>10:00</b> 9:00 CET	SOC Degradation 2.0 - Prolonging Reliability and Lifetime of SOECs	Stephanie Wolf (FZJülich)
<b>10:20</b>	Optimization of solid oxide electrolyzers - from microstructural modifications to an improved macro-level performance	Jakub Kupecki (IEn)
<b>10:40</b>	Accelerated Degradation of SOC via Artificial Aging of the Fuel Electrode	Blagoy Burdin (IEES BAS)
<b>11:00</b>	SOC: From life time to accelerated testing	Anke Hagen (DTU)
<b>11:30</b>	<b>Coffee Break</b>	
<b>Materials and lifetime</b>		
<b>SESSION CHAIR: Stephanie Wolf</b>		
<b>12:00</b> 11:00 CET	Integration and joining of glass-based sealings with metallic interconnects in SOCs: interfacial stability and degradation issues	Federico Smeacetto (POLITO)
<b>12:20</b>	Degradation of long-term and accelerated aged SOFC interconnects (ICs)	Samaneh Daviran (EPFL)
<b>12:40</b>	Chromium release reduction by heat exchanger passivation	Robert Steinberger-Wilckens (U Birmingham)
<b>13:00</b>	Finding the Optimum Loading of Au & Mo in NiO/GDC and the Influence of Fe for the Reversible Operation of SOC	Fotis Zaravelis (FORTH)
<b>13:30</b>	<b>Lunch</b>	
<b>Long-term operation and contaminants</b>		
<b>SESSION CHAIR: Fotis Zaravelis</b>		
<b>15:00</b> 14:00 CET	Degradation rate assessment of long-term operated SOEL cell, stack and module (Zoom)	Aline Leon (EIFER)
<b>15:20</b> 14:20 CET	SOC Degradation from the point of view of the stack (Zoom)	Norbert Menzler (FZ Jülich)
<b>15:40</b> 14:40 CET	Fuel contaminant impact in SOC operation (Zoom)	Vanja Subotic (U Graz)
<b>16:00</b> 15:00 CET	Thin film barrier layers for reduced long-term degradation in SOFC (Zoom)	Alex Morata Garcia (IREC)
<b>16:30</b>	<b>Coffee break</b>	