



European Materials Research Society

# 2024 Spring Meeting

May 27 - 31 / Strasbourg Convention Centre

## SYMPOSIUM C

Membranes for energy and the environment

*Symposium Organizers:*

Hongying HOU, Kunming Univ. Science and Technology, Kunming, P. R. China

Maria Luisa DI VONA, Univ. Rome Tor Vergata, Roma, Italy

Philippe KNAUTH (Main organizer), Aix Marseille Université, France



Monday May 27

## C01\_Anion exchange membranes

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : DI VONA Maria luisa

- |       |     |     |  |                   |
|-------|-----|-----|--|-------------------|
| 09:00 | 133 | INV | Durable anion exchanger membranes for fuel cells and water electrolysis                                | LEE Young Moo     |
| 09:45 | 460 |     | MOF(Fe, Zr) covalently linked to an anion exchange ionomer. Synthesis and electrocatalytic properties. | NARDUCCI Riccardo |

Monday May 27

## C02\_Proton Exchange Membranes 1

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : KNAUTH Philippe

- |       |      |  |   |                    |
|-------|------|--|---|--------------------|
| 11:00 | 2230 |  | High temperature Polymer electrolyte membrane fuel cell with Polybenzimidazole(PBI)/Tetravalent metal Phosphonate (TMP)/GO electrolyte membrane | MISHRA Jay N.      |
| 11:15 | 2578 |  | Novel PBI/SGO composites as alternative proton exchange membranes for fuel cells  | DI VIRGILIO Matteo |
| 11:30 | 450  |  | Innovative ultrasonic process for the manufacture of PEMFC membrane-electrode assemblies  | TOUGNE Claire      |

Monday May 27

## C03\_Water treatment membranes 1

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : LEE Young moo

- |       |      |     |  |                  |
|-------|------|-----|--|------------------|
| 14:00 | 3052 | INV | Toward a more sustainable membrane preparation   | FIGOLI Alberto   |
| 14:30 | 66   |     | Novel composite polyamide membranes with low fouling properties for water desalination | KOCHKODAN Viktor |

<b>14:45</b>	<b>2830</b>	Poly(ethylene glycol) di-acrylate hydrogels doped with silver nanoparticles for removing of Hg(II) ions from water	<b>BURRATTI Luca</b>
<b>15:15</b>	<b>2856</b>	Development of composite self-assembly membranes of rGO and waste-derived biochar for wastewater treatment	<b>GUAGLIANO Marianna</b>
<b>15:30</b>	<b>453</b>	Transforming Water Purification: Harnessing Waste-Based 2D Nanosheet Membranes for Enhanced Light-to-Heat Energy Conversion	<b>ANG Edison Huixiang</b>

**Monday May 27**

## **C04\_Battery membranes**

**LUXEMBOURG - GROUND FLOOR**

**Chairperson(s) : KNAUTH Philippe**

<b>16:30</b>	<b>2417</b>	Crosslinked single-ion PEO-based electrolytes for lithium-metal battery	<b>PHAN Thi Ngoc Trang</b>
<b>16:45</b>	<b>1081</b>	3D printed PLA/Sulfur/CNT membrane for Energy applications	<b>GUPTA Vinay</b>
<b>17:15</b>	<b>1233</b>	The microstructural influence on the Na-filament growth in all solid-state Na batteries	<b>DING Ziming</b>
<b>17:30</b>	<b>1479</b>	Copolymer electrolytes carrying negative charges for Lithium Batteries	<b>PASQUINI Luca</b>
<b>17:45</b>	<b>1385</b>	Polyacrylamide-Based Hydrogel Electrolyte for Modulating Water Activity in Aqueous Zinc-Ion Batteries	<b>RAKHMAN Damira</b>

Tuesday May 28

## C05\_Hydrocarbon membranes

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : DI VONA Maria luisa

08:45	105	INV	Hydrocarbon Membranes finding their Way into Proton Exchange Membrane Fuel Cells and Electrolyzers	KREUER Klaus-Dieter
09:30	498		Nanostructure-conductivity relationship in environmentally friendly hydrocarbon PEMs based on syndiotactic polystyrene as an alternative to the established PFSA ionomers.	RADULESCU Aurel
09:45	2323		High performance lab-scale VRFB system based on optimized SPEEK membranes	DILONARDO Elena

Tuesday May 28

## C06\_Perfluorinated sulfonic acid membranes

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : KREUER Klaus-dieter

10:30	2610	INV	Water and Solvated Proton Distributions in Phase Segregated Proton Conducting Membranes: A Molecular Dynamics and Vibrational Spectroscopic Approach	SMOTKIN Eugene S.
11:00	1148		High Temperature Electrolyte Membrane Properties of MEA with Nafion and CSPPSU Membranes by Decal Method	KIM Jedeok
11:15	2225		Recovering Nafion™ membranes for better circularity of Proton Exchange Membrane Fuel Cells (PEMFCs)	FERNANDEZ RODAS Ana Carolina

Tuesday May 28

## C07\_Membranes for various applications

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : KNAUTH Philippe -SMOTKIN Eugene s.

13:30	2409	Surface engineering of bio-derived sorbents via Atomic Layer Deposition for cooperative photocatalysis	LOTITO Sara
13:45	2851	BTEX detection using sensors based on organosilicon PECVD-synthesized membranes	BOYER Stéphane
14:00	1629	Enhancing Water-Evaporation-Induced Generators with Eggshell-Based Carbon Porous Membrane: A Sustainable Approach to Energy Harvesting	OLIVEIRA Joana
14:30	1010	Dielectric elastomer transducers with enhanced performance	OPRIS Dorina M.
14:45	252	Antimicrobial Electrospun Polymer-Metal Oxide Composite Filters for Indoor Air Quality Improvement	ROBAYO MORENO Jacqueline

Tuesday May 28

## C08\_Water treatment membranes 2

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : FIGOLI Alberto

16:30	3047	Preparation of hydrophobic microporous membranes using more sustainable approaches	GALIANO Francesco
16:45	1207	Removal of Methyl Orange Dye and Lead Ions Using Polyaniline-Kapok Fiber	BALELA Mary Donnabelle
17:00	940	Ionomer/CQDs nanocomposite membranes for water treatment	SGRECCIA Emanuela
17:15	1581	ZIF-PEI composite membranes for application on selective ions extraction from saline water.	DE HOLANDA Matheus
17:30	2536	Macroporous Hydrogels with High ZIF-8 Loading Prepared via Ice-templating for Water Treatment Application	KOMIYAMA Katsuya
17:45	2828	Self-standing membranes of reduced graphene oxide, TiO <sub>2</sub> and waste-derived TiO <sub>2</sub> for water treatment through adsorption and photocatalysis	DOTTI Anna

Wednesday May 29

## C09\_Inorganic Membranes 1

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : KNAUTH Philippe

09:00	2600	INV	2D materials-based nanostructured interfaces for advanced membranes preparation	MIELE Philippe
09:30	3019		Preparation of oxynitride nanosheet membranes and application to proton conducting electrolytes for fuel cells	IDA Shintaro
09:45	492		Developing porous ceramic composite membranes with excellent mechanical properties at a fabrication temperature of only 1200 °C	ROY Siddhartha

Wednesday May 29

## C10\_Inorganic Membranes 2

LUXEMBOURG - GROUND FLOOR

Chairperson(s) : MIELE Philippe

10:30	236		Superior Piezo-Photo-Catalytic Performance with Model Multiferroic BiFeO <sub>3</sub>	AMDOUNI Wafa
11:00	672		Navigating Sustainability: Uncovering Potential Potholes on the Path to a Greener Future	WIDENMEYER Marc
11:15	707		Theory of defect-mediated ionic transport in Li, Na and K beta alumina membranes	CARVALHO Alexandra
11:30	1717		Strategies towards the fabrication of mixed-matrix membranes with aligned metal-organic framework crystals	GAEHYUN PARK Jesse
11:45	1987		High surface area metal foams as porous transport layers for hydrogen production	ANDREATTA Gaelle

**Wednesday May 29**  
**CP01\_Poster session**

**ETOILE - FIRST FLOOR**

<b>13:45</b>	<a href="#">01_1250</a>	<b>105</b>	01_1250 Colloid syringeless electrospinning for highly functional nonwoven nanofiber membrane	<b>Lee Jaeyu</b>
<b>13:45</b>	<a href="#">02_1300</a>	<b>105</b>	02_1300 Biomass-derived Membranes for eco-friendly Fuel Cell Applications	<b>CHANDRASEKARAN Suhas</b>
<b>13:45</b>	<a href="#">03_1389</a>	<b>105</b>	03_1389 Modeling, Simulation, and Optimization of Desalination Process Using Artificial Intelligence Technique	<b>GUPTA Vinay</b>
<b>13:45</b>	<a href="#">04_1565</a>	<b>105</b>	04_1565 Characterization of Reaction Area to Improve Performance of Si-Based $\mu$ -SOFC	<b>Kim Yoojin</b>
<b>13:45</b>	<a href="#">06_1638</a>	<b>105</b>	06_1638 Safety Reinforced Separator via Positively Charged Self-Assembled Monolayers for High-Performance Lithium Metal Battery	<b>BYEONGYUN Min</b>
<b>13:45</b>	<a href="#">07_1675</a>	<b>105</b>	07_1675 Development of fuel cells with proton conducting inorganic nanosheet laminated membrane capable of operating at 100-150 ?	<b>OKA Kanako</b>
<b>13:45</b>	<a href="#">08_1705</a>	<b>105</b>	08_1705 Fabrication and Adsorption Study of Nanofiber Membrane for Efficient Removal of Methylene Blue	<b>Kim Jihyeon</b>
<b>13:45</b>	<a href="#">09_1766</a>	<b>105</b>	09_1766 Proton exchange membrane water electrolysis using inorganic nanosheet membranes	<b>KINOSHITA Sho</b>
<b>13:45</b>	<a href="#">10_1783</a>	<b>105</b>	10_1783 Strategies to improve the stability of anion exchange membranes	<b>DI VONA Maria Luisa</b>
<b>13:45</b>	<a href="#">13_2236</a>	<b>105</b>	13_2236 Seawater battery performance with NASICON solid separator and bio-waste electrocatalyst	<b>OLIVEIRA Joana</b>
<b>13:45</b>	<a href="#">18_2566</a>	<b>105</b>	18_2566 Metal Organic Framework (MOF) functionalized copper mesh for spontaneous oil and water separation	<b>TAN Laudimer Tye</b>
<b>13:45</b>	<a href="#">20_2724</a>	<b>105</b>	20_2724 Multi-scale water dynamics in environmentally friendly hydrocarbon membranes based on the functionalized syndiotactic polystyrene by multi-resolution QENS	<b>RADULESCU Aurel</b>
<b>13:45</b>	<a href="#">23_580</a>	<b>105</b>	23_580 Chitosan-Silver Nanoparticle Composite Material with Catalytic Activity for Photodegradation of Organic Dyes	<b>MARSICO Michela</b>

13:45	24_635	105	24_635 Hydroxide ion mobility in anion exchange ionomers	<b>KNAUTH Philippe</b>
13:45	25_661	105	25_661 Synergetic Electronic Modulation in Bimetallic Phosphide Heterostructure on Porous Carbon Template for Sustainable Hydrogen Production via Renewable Energy Storage Devices	<b>AFSHAN Mohd</b>
13:45	27_2360	105	Polydopamine Functionalized Metal Organic Framework Enabled High Performance Antifouling Hybrid Ultrafiltration Membranes for Water Treatment	<b>GUPTA Vinay</b>
13:45	28_911	105	28_911 Enhanced proton conductivity of composite membranes with acid-base pairs	<b>PARK Yeji</b>
13:45	29_914	105	29_914 Improved Performance and Durability of Proton Exchange Membrane Fuel Cells (PEMFCs) through Phosphotungstic Acid-Coated Glass Fiber with Thin Pd-Sputtered Films	<b>Chowdury Md Shahjahan Kabir</b>
13:45	30_915	105	30_915 Synergistic Acid-Base Enhancement of Proton Transfer in Proton Exchange Membrane Fuel Cells through a Novel Nanocomposite Membrane with (3-Mercaptopropyl)trimethoxysilane and Basic Amino Ligands	<b>Chowdury Md Shahjahan Kabir</b>
13:45	31_917	105	31_917 Improved proton conductivity and mechanism of acid-base functionalized graphene oxide membranes	<b>Jeong Sumin</b>
13:45	32_945	105	32_945 Preparation and application of covalently linked PPO-MOF in combination with SPEEK for water decontamination	<b>MONTELLA Alessio Vincenzo</b>