

# 4<sup>th</sup> International Workshop on Membrane Distillation and Innovating Membrane Operations in Desalination and Water Reuse

Grand Hotel San Michele - Cetraro (CS) - Italy

June 4 - 6, 2025

## PROGRAM

### Wednesday June 04, 2025

10:00 – 15:00 Registration at the Grand Hotel San Michele

15:00 – 15:15 Welcome and Opening Remarks

*A. Figoli*

### Session I: Prof. Drioli Honorary Session

15:15 – 16:40 Afternoon Session I a

*Chairpersons: L. Giorno, E. Curcio*

15:15 – 15:20 Introduction

15:20 – 15:30 What would the world be like without membranes?

*Lidietta Giorno, Institute on Membrane Technology (CNR-ITM), Italy*

15:30 – 15:40 Molecular insights into crystallization: advancing a research path sparked with Prof. Enrico Drioli

*Elena Tocci, Institute on Membrane Technology (CNR-ITM), Italy*

15:40 – 15:50 Membrane-assisted crystallization for biomolecules purification

*Gianluca Di Profio, Institute on Membrane Technology (CNR-ITM), Italy*

15:50 – 16:00 Membrane crystallization for bioseparation

*Efrem Curcio, SELIGENDA Membrane Technology Srl, Italy*

16:00 – 16:10 Innovative ion exchange membranes for sustainable energy

*Enrica Fontananova, Institute on Membrane Technology (CNR-ITM), Italy*

16:10 – 16:20 Osmotic distillation in agro-food applications

*Alfredo Cassano, Institute on Membrane Technology (CNR-ITM), Italy*

16:20 – 16:30 From vacuum membrane distillation to vacuum membrane dryer

*Alessandra Criscuoli, Institute on Membrane Technology (CNR-ITM), Italy*

16:30 – 16:40 Toward a more sustainable membrane fabrication

*Alberto Figoli, Institute on Membrane Technology (CNR-ITM), Italy*

16:40 – 17:10 Coffee break

**17:10 – 19:10 Afternoon Session I b****Chairpersons: A. Cassano, E. Tocci**

- 17:10 – 17:30 **Fine-tuning membrane materials for desalination and nanofiltration**  
*Susana Nunes, King Abdullah University of Science and Technology (KAUST), Saudi Arabia*
- 17:30 – 17:50 **DESOLINATION - An innovative desalination concept**  
*Frank Lipnizki, Lund University, Sweden*
- 17:50 – 18:10 **Photothermal membrane distillation for desalination**  
*Mohamad Khayet, Department of Structure of Matter, University Complutense of Madrid, Spain*
- 18:10 – 18:30 **Environmental evaluation of membrane crystallization processes**  
*Patricia Luis Alconero, UCLouvain, Louvain-la-Neuve, Belgium*
- 18:30 – 18:50 **Niche opportunities of membrane distillation technologies**  
*Guillermo Zaragoza, CIEMAT-Plataforma Solar de Almería, Spain*
- 18:50 – 19:10 **Advancing sustainable life support systems through integrated water and nutrient recovery technologies**  
*Abhilash Ramachandran, Hydromars AB, Sweden*
- 20:00 – 22:00 **Poster session & Dinner buffet**

**Thursday June 05, 2025****Session II: Membrane development and scale-up****09:00 – 11:00 Morning Session II a****Chairpersons: G. Di Profio, F. Galiano**

- 09:00 – 09:20 **Simulation studies on the membrane-related hydrogen energy technology**  
*Chi Hoon Park, Gyeongsang National University (GNU), Republic of Korea*
- 09:20 – 09:40 **Porphyrin-based regular pore network formation for improved molecular separation**  
*Keizo Nakagawa, Research Center for Membrane and Film Technology, Kobe University, Japan*
- 09:40 – 10:00 **Thymol: nature's solvent for sustainable hollow fibre membrane fabrication**  
*Usman Taqui Syed, King Abdullah University of Science & Technology (KAUST), Saudi Arabia*
- 10:00 – 10:20 **Unveiling novel green solvent compositions for membranes preparation**  
*Mirko Zago, ASTROBIO™ division, Soft Chemicals S.r.l., Italy*
- 10:20 – 10:40 **Electrospinning as a promising approach for preparing membranes for water treatment and desalination**  
*Vojtěch Hýbl, ElMarco s.r.o., Czech Republic*
- 10:40 – 11:00 **Development of hydrophobic membranes for degassing from liquid**  
*Zhaoliang Cui, Nanjing Tech University, China*
- 11:00 – 11:20 **Coffee break**

**11:20 – 13:00 Morning Session II b****Chairpersons: T. Poerio, M. Frappa**

- 11:20 – 11:40 **A membrane distillation journey from heat and mass transfer mechanisms to long-term engineering-scale results**  
*Andrea Achilli, University of Arizona, USA*
- 11:40 – 12:00 **Progress on scalable membranes and modules for vacuum membrane distillation**  
*Alessandro Angelini, DeltaMem AG, Switzerland*

- 12:00 – 12:20     **Development of polypropylene hollow fiber membranes for ECMO: from pilot-scale fabrication to surface functionalization**  
*Lorenzo Morelli, TPM, Science and Technology Park for Medicine, Italy*
- 12:20 – 12:40     **Innovative membranes for water treatment and industrial separations**  
*Simone Arizzi, WembraneX, Italy*
- 12:40 – 13:00     **Comparative life cycle assessment for the fabrication of Polysulfone membranes derived from PolarClean and GVL using slot die coating as a scalable fabrication technique**  
*Isabel Escobar, University of Kentucky, USA*
- 13:00 – 13:20     **Workshop picture**
- 13:20 – 14:30     **Lunch**

### **Session III: Joint Workshop MELoDIZER & MEASURED EU projects**

#### **15:00 - 16:20 Afternoon Session III a**

***Chairpersons: F. Macedonio, A. Criscuoli***

- 15:00 – 15:20     **MELoDIZER – Sustainable Membrane Distillation for Industrial Water Reuse and Decentralised Desalination Approaching Zero Waste**  
*Alberto Tiraferri, Politecnico di Torino, Italy*
- 15:20 – 15:40     **Membrane scale up for chemical industries, MEASURED project overview**  
*Fausto Gallucci, Eindhoven University of Technology, The Netherlands*
- 15:40 – 16:00     **Development of Direct Contact Membrane Distillation for the Treatment of Industrial Wastewaters**  
*Aamer Ali, Aalborg University, Denmark*
- 16:00 – 16:20     **Challenges of industrial deployment of membrane distillation for wastewater recovery: a case study**  
*Davide Venturi, GVS S.p.A., Italy*
- 16:20 – 16:40     **Coffee Break**

#### **16:40 - 18:00 Afternoon Session III b**

***Chairpersons: M. Llosa Tanco, M. Fasano***

- 16:40 – 17:00     **Analysis of hybrid energy recovery strategies in MD - Electrification of the thermal MD process by the integration of heat pumps**  
*Daniel Winter, Fraunhofer-Institute for Solar Energy Systems ISE, Germany*
- 17:00 – 17:20     **Pervaporation-enhanced esterification reaction using acid resistant Hybrid Silica (HybSi): from laboratory to large-scale multi-channel membranes**  
*Mahdi Nikbakhtfini, TNO, The Netherlands*
- 17:20 – 17:40     **Development and demonstration of a ceramic membrane-based process for re-refining of used lubricant oil**  
*Pieter Vandezande, Flemish Institute for Technological Research (VITO), Belgium*
- 17:40 – 18:00     **Advancements and trends in membrane distillation research in Korea: towards sustainable water treatment solutions**  
*Sanghyun Jeong, Pusan National University (PNU), Republic of Korea*
- 20:00 – 22:00     **Gala dinner**

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**Friday June 06, 2025****Session IV: Membrane processes for desalination and water treatment****8:30– 10:30 Morning Session IV a*****Chairpersons: E. Fontananova, M.C. Carnevale***

- 08:30 – 08:50 **Innovating membrane operations in desalination and water reuse**  
*Amy Childress, University of Southern California; USC's ReWater Center, USA*
- 08:50 – 09:10 **Thermal integration of membrane distillation for efficient water purification**  
*Andrew Martin, KTH Royal Institute of Technology, Sweden*
- 09:10 – 09:30 **From discovery to innovation: taking (good) inventions to (great) products and processes**  
*Adil Dhalla, START Centre and Singapore Membrane Consortium, Singapore*
- 09:30 – 09:50 **Critical aspects of membrane distillation: fouling, wetting and produced water safety**  
*Alla Alpatova, King Abdullah University of Science and Technology (KAUST) Saudi Arabia*
- 09:50 – 10:10 **Membrane distillation for textile wastewater treatment: insights into fouling, wetting, and process optimization**  
*Luca Fortunato, University of Napoli Federico II, Italy*
- 10:10 – 10:30 **A method for real time monitoring of membrane wetting**  
*Andreas Sapalidis, Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", Greece*
- 10:30 – 10:50 **Coffee break**

**10:50– 13:10 Morning Session IV b*****Chairpersons: A. Figoli, F. Russo***

- 10:50 – 11:10 **Aeration of aqueous systems by membrane diffusers and effect of surface properties**  
*Antonio Comite, University of Genoa, Italy*
- 11:10 – 11:30 **Biopolymer-based membranes for gas separation and pervaporation**  
*Clara Casado-Coterillo, Universidad de Cantabria, Spain*
- 11:30 – 11:50 **Recovery of valuable minerals with hybrid ceramic membrane crystallization**  
*Mieke Luiten-Olieman, Inorganic Membranes group, MESA+ Institute, University of Twente, The Netherlands*
- 11:50 – 12:10 **Electrocoagulation, membrane distillation and crystallization to treat hydraulic fracturing produced water**  
*Ranil Wickramasinghe, University of Arkansas, USA*
- 12:10 – 12:30 **Water electrolysis with polymeric electrolyte membranes for green hydrogen production**  
*SangYong Nam, Department of Materials Engineering and Convergence Technology, Engineering Research Institute, Gyeongsang National University, Republic of Korea*
- 12:30 – 12:50 **Thermal Integration of Membrane Distillation and Electrolysis: A Novel Approach to the Water–Energy Nexus**  
*Alicia Kyoungjin An, The Hong Kong University of Science and Technology (HKUST), China*
- 12:50 – 13:10 **Electromembrane technologies as a circularity booster in desalination and brine valorisation schemes**  
*Andrea Cipollina, Università degli Studi di Palermo, Italy*
- 13:10 – 13:30 **Closing remarks & Awards!**
- 13:30 – 15:00 **Lunch and Departures**