AMSIC Newsletter

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AMSIC-4: a Continental Celebration of Membrane Science in Addis Ababa

Highlights

Editorial note by Dr. Sara CHERGAOUI

AMSIC co-Director of Communication

Dear AMSIC'ers,

It is with great pride that we present the 15th issue of the AMSIC Newsletter, capturing the vibrant momentum of our community across Africa and beyond. This edition highlights the landmark AMSIC-4 Congress held in Addis Ababa, Ethiopia, which brought together membrane scientists from around the world for a rich program of workshops, panel discussions, technical sessions, and cultural exchanges. From the hands-on training for students to the membrane education workshop, the technical tour of a local water treatment facility, and the cultural gala dinner, the congress showcased the power of collaboration and knowledge-sharing.

A particularly moving moment was the honorary session dedicated to Prof. Enrico Drioli, whose legacy continues to inspire generations of membranologists. His profound impact on the field and on our community was celebrated through heartfelt tributes from colleagues and friends.

Editorial

We also spotlight regional updates, including AMSIC's growing presence in international forums such as the World Filtration Congress, and the signing of a Memorandum of Understanding with the Egyptian Society for Membrane Technology. Our AMSIC'er Spotlight section celebrates the achievements of members like Dr. Ramato Tufa, Dr. Adel Zrelli, Dr. Arouna Dolo, and Dr. Lebea Nthunya, whose work continues to shape the future of membrane science in Africa.

This issue also celebrates the recognition of Prof. Raja Ben Amar as Best Female Researcher at the University of Sfax. It also shares recent thesis defenses, scientific publications, and awards, including my own PhD journey at UCLouvain, which I am grateful to share with you.

Finally, we look ahead to AMSIC-5 in Morocco, and invite you to contribute to upcoming international events and special issues in leading journals. Thanks to everyone who contributed to this issue and continues to make AMSIC a thriving, inclusive, and impactful community.

Warm regards,

Sara

AMSIC-4 congress took place in Addis Ababa, Ethiopia, from 5th to 8th November 2024. The congress hosted membrane scholars globally. The program covered plenary and keynote talks, oral and poster presentations, panel sessions, cultural and industrial visits.

TECHNICAL CONFERENCE HIGHLIGHTS

Representatives from local Ethiopian committees and Membrane Societies welcomed scholars from all over the world in Addis Ababa. They highlighted the opportunity to get to know one another while indulging in intriguing discussions on membrane science and technology. Above all, the opening ceremony included a minute of silence to pay respect to the late Prof. Enrico Drioli.

The program included 11 plenary lectures, 36 keynote talks, 24 oral presentations and more than 20 poster presentations. A range of topics were covered including filtration, crystallization, scale-up, bio-applications, gas separations, membrane synthesis, etc.

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PANEL Session I

Women Excellence in Membrane Science and Technology

The panel session on Women Excellence in Membrane Science and technology was hosted by Dr. Sara Chergaoui and Dr. Lidietta Giorno and hosted 5 scientists of various backgrounds; notably, Eng. Caroline Jelagat (Kenya), Prof. Heidi Richards (South Africa), Prof. Andrea Idris Schäfer (Germany), Dr. Rhea Verbeke (Belgium), and Prof. Soraya Malinga (South Africa).

Key points that were discussed:

- Each person male or female should have the freedom to choose their own understanding of excellence, and the environment/ society should respect and endorse it.
- Men have their share of struggle today between taking up responsibility, competition and meeting societal expectations as not all countries offer a parental leave to fathers.
- Membrane technology particularly is marginally chosen based on passion and motivation to make an impact. It does not particularly endorse male/ female recruitment.
- In academia, there is still unfortunately extra pressure on women to prove themselves. It drives some lose the motivation along the way. Let's all support one another and set an environment comfortable to all.

PANEL Session II
Higher education and industrial institutes

Dr. Walid Khoury and Dr. Abdoulaye Doucouré animated the panel session on Higher education and industrial institutes.

- The African Union is putting efforts in facilitating the exchange of goods among countries. Entrepreneurs should be aware of these advancements and try using local suppliers for raw material.
- Companies not only should they offer engineering solutions but also the training and education necessary to build skilled workers, in collaboration with universities.
- It is important to start planning and come up with solutions for specific applications that are competitive and cheap.
- Work safety and health is an aspect to be improved in the workplace. Workers should be well informed of safety practices especially regarding hazardous chemicals.

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MEMBRANE EDUCATION WORKSHOP

On November 4th, AMSIC-4 hosted a dynamic workshop at the **Africa Center of Excellence for Water Management**, Addis Ababa University. The event featured insightful lectures from leading experts in membrane science and technology, including Prof. Ranil Wickramasinghe, Prof. Mathias Ulbricht, Prof. Ludovic (Ludo) Dumée, Prof. João Crespo, and Dr. Abaynesh Yihdego Gebreyohannes. Topics covered ranged from bioprocesses and water purification to gas separation, showcasing the breadth and impact of membrane research in addressing global challenges.

TECHNICAL TOUR

As part of the AMSIC-4 program, participants had the opportunity to visit a local water treatment facility, offering a valuable glimpse into the region's infrastructure and practical approaches to water management. The tour provided insights into the operational processes, challenges, and innovations involved in treating municipal and industrial wastewater. It also served as a platform for exchanging ideas on how membrane technologies can be integrated into existing systems to enhance sustainability and efficiency. This hands-on experience was a highlight for many attendees, reinforcing the connection between academic research and real-world applications.

CULTURE, TOURISM AND LEASURE

The AMSIC-4 congress was not only a scientific success, it was also a celebration of Ethiopian culture. The gala dinner offered a delightful immersion into Ethiopian cuisine, with its rich spices and unique flavors adding a memorable touch to the event.

Guests were treated to a vibrant evening featuring traditional music and dance performances, showcasing the country's artistic heritage. A highlight of the night was the Ethiopian coffee ceremony, a cherished ritual that brought warmth and connection to the gathering.

This cultural experience added depth to the congress, fostering a sense of community and appreciation for the local traditions that hosted our global membrane science dialogue.

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MEMORIUM Prof. Enrico Drioli

A heartwarming honorary session of the late **Prof. Enrico Drioli** also took place before officially concluding the congress. Ranil Wickramasinghe, Elena Tocci, Raja BEN AMAR, Lidietta Giorno, Abdoulaye Doucoure, Abaynesh Yihdego Gebreyohannes, Joao Crespo, Efrem Curcio and Sara Chergaoui all shared a word honoring the multiple ways he touched lives of membranologists around the globe.

SPONSORS

AMSIC is thankful to sponsors listed below who contributed immensely to the successful realization of the congress.

NORTH AFRICA

Prof. Raja Ben Amar| Giza, Egypt

Participation of Raja Ben Amar to the 5th International conference for membrane Technology and its applications, 19-20 August 2024, (MTAIC 2024), held on National Research Centre, Dokki, Giza, Egypt

The President of AMSIC was invited as Keynote speaker, her presentation is untitled 'New Strategies for enhancing the performances of water treatment using low-cost materials for water filtration and treatment processes'

Signature of a Memorandum of Understanding (MOU) between 'Egyptian Society for Membrane Technology and its applications' and the African Membrane Society (AMSIC) during the conference.

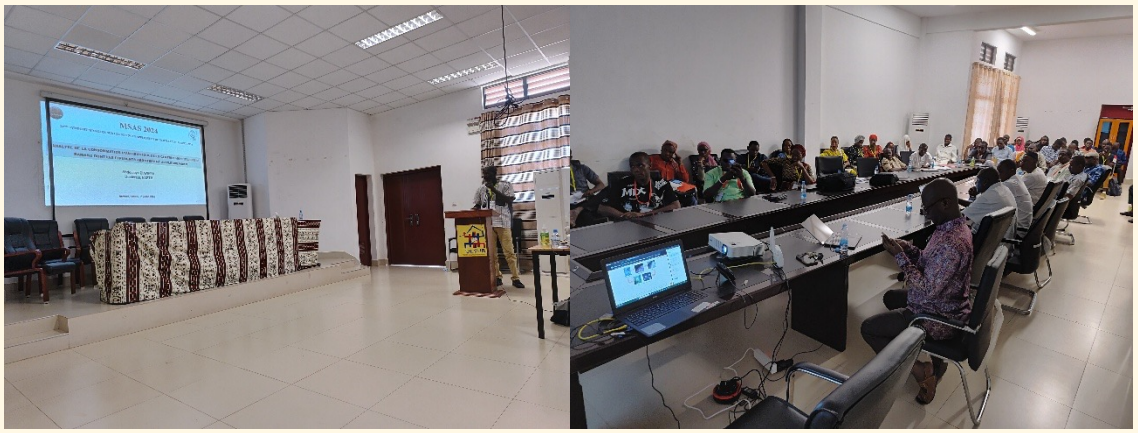
11 Regional Updates

WEST/ CENTRAL AFRICA

MSAS session on Env & Nature based solutions

Mini-symposium MS2-3
Environment and Water
(Emerging Contaminants and Nature-Based Solutions)

The special session on emerging contaminants (EC) and nature-based solutions (NBS) was held as planned on Tuesday, July 30, 2024, in Room 2 of the symposium site at the Kabala university campus in Bamako, Mali. The session was held in hybrid mode with participants present in the room and online. All fourteen scheduled communications (see details in the table below) during the session were presented. The room was full throughout the day of the session with an average of a dozen online participants. Attendees, including presenters, were registered from at least eight different countries (Algeria, Botswana, Canada, Denmark, Mali, South Africa, Spain, and the United States). Overall, the session was a great success. Looking forward to MSAS2026!



XPRIZE Water Scarcity, a competition is designed to increase widespread access to clean water by creating reliable, sustainable, and affordable seawater desalination systems, is pleased to collaborate with AMSIC to connect seawater desalination researchers and innovators across Africa with this historic $119 million competition - the largest water prize in history! XPRIZE Team and Partner Lead Elizabeth Guyman recently visited with AMSIC President Raja Ben Amar at the University of Sfax and had the opportunity to meet with researchers developing cutting-edge saltwater separation techniques from sustainable materials. XPRIZE also visited with Professor Saad Alami Younssi, Director of the Laboratory of Materials Membranes and Environment at Faculty of Sciences and Technologies of Mohammedia, University Hassan II Casablanca and had the opportunity to see the latest innovations in membrane technology.

How You Can Compete:
Track A - Desalination: System-Level Innovation challenges teams to rethink the desalination system; the winning team will reliably and most sustainably generate one million liters of potable water per day (1,000 m^3/d) from seawater at the lowest cost, below current industry benchmarks, over the course of 1 year. Don't have a complete team or system yet? No problem, we encourage collaboration amongst teams - join now to meet and network with other participating teams!

Track B - Desalination: Novel Materials and Methods, will demonstrate a novel material and/or method that can sustainably and cost-effectively treat seawater to potable water quality, using any salt-water separation technique, with an operational lifetime of 10 years or more.

Questions? Contact: waterscarcity@xprize.org.

XPRIZE WATER SCARCITY | مبـــادرة محمد بن زايد للـــماء THE MOHAMED BIN ZAYED WATER INITIATIVE

13 Partner Showcase

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THESIS, DISCTINCTIONS and AWARDS

PhD theses supervised by Prof. Raja Ben Amar

Sarra Ben Salah

Title: Treatment and Valorization of Textile Wastewater by Adsorption and Membrane Separation: A Techno-Economic Study

Joint Supervision: University of Montpellier / University of Sfax

Defense Date: June 4, 2025

Zouhaier Salah

Title: Graphene Synthesis for the Development of Multifunctional Membranes and Low-Cost Biosorbents: Application to the Removal of Pharmaceuticals and Dyes from Water

Institution: Faculty of Sciences of Sfax, University of Sfax

Defense Date: December 4, 2024

Jamila Bahrouni

Title: Development of Filtration Membranes and Adsorbents from Agricultural or Mineral Waste for Sustainable Technologies in Industrial Wastewater Treatment and Valorization

Joint Supervision: University of Paris Créteil / University of Sfax

Defense Date: December 18, 2025

Recent publications by Raja's group:

1. Afef Attia, Samia Mahouche-Chergui, Benjamin Carbonnier, Raja Ben Amar, Enhancing the Generation and Stabilization of ZnO Nanoparticles on Modified Clay with Polyethylenimine to Improve the Photodegradation of Dyes in Textile Wastewater (2025), Journal of Water Process Engineering. 73 (2025) 07711

2. Sarra Ben Salah, Afef Attia, Marc Heran, Raja Ben Amar, Eggshell Waste as a Sustainable Adsorbent for Effective Removal of Direct dyes from textile Wastewater (2025), DOI: 10.1002/slct.202500149, Chemistry Select

3. Zouhaier Salah, Hajer Aloulou, Catia Algeri, Raja Ben Amar, Development of graphene oxide membrane on flat mud ceramic support for methylene blue dyes removal, ChemistrySelect (2025), DOI: 10.1002/slct.202406142

4. Zouhaier Salah, Hajer Aloulou, Saurav Bhattacharyya, Catia Algeri, Raja Ben Amar, Potential elimination of diclofenac sodium (DCF) from aqueous solution by adsorption using orange peel waste-based activated carbon (2025), Euro-Mediterranean Journal for Environmental Integration https://doi.org/10.1007/s41207-025-00822-1

5. Khmiri, Y., Attia, A., Jallouli, N. Raja Ben Amar, Synthesis of a cost-effective ZnO/zeolite photocatalyst for paracetamol removal. Emergent mater. (2025). https://doi.org/10.1007/s42247-025-01218-1

6. Jamila Bahrouni, Afef Attia, Fatima Zohra Elberrichi, Lasâad Dammak, Lassaad Baklouti, Mohamed-Ali Ben Aissa, Raja Ben Amar and Andre Deratani. Green and Sustainable Clay Ceramic Membrane Preparation and Application to Textile Wastewater Treatment for Color Removal (2025), accepted in Membrane.

THESIS, DISCTINCTIONS and AWARDS

Dr. Sara Chergaoui| Thesis defense at UCLouvain

From Left to Right: Prof. Patricia Luis, Dr. Sara Chergaoui, Prof. Damien P. Debecker, Prof. Eric Deleersnijder, Prof. Tom Leyssens

On Sep. 6th, 2024, Sara defended her thesis at UCLouvain university in Belgium. The thesis is titled: "Supersaturation control in Membrane-assisted antisolvent crystallization of amino acids" The jury was composed of:

- Prof. Patricia Luis (UCLouvain, Belgium), supervisor
- Prof. Damien Debecker (UCLouvain, Belgium), supervisor
- Prof. Eric Deleersnijder (UCLouvain, Belgium), chairperson
- Prof. Tom Leyssens (UCLouvain, Belgium)
- Dr. Elena Tocci (CNR Institute on Membrane Technology in Rende, Italy)
- Prof. McAdam Ewan (Cranfield university, UK)

In her PhD thesis, Sara investigated methods to control antisolvent crystallization through porous membranes. She first studied the transmembrane mass transfer dynamics of antisolvent, analyzing the impact of activity differences across the membrane over time and evaluating the stability of the mass transfer coefficient, including potential reverse permeation. She then explored how operational conditions (temperature, solution composition, flow rates) and membrane properties (hydrophobicity, surface morphology,

porosity, thickness) influence antisolvent transfer and crystal characteristics. Lastly, molecular-level interactions between the membrane surface and the crystallization system were evaluated using molecular dynamics simulations.

Sara conducted 3 research stays during her PhD:

Massachusetts Institute of Technology, Cambridge, USA *(Feb. 1st - Jul. 31st, 2024). Supervised by Prof. Allan S. Myerson.* Continuous antisolvent crystallization of Glycine using MSMPR.

Essen-Duisburg University, Essen, Germany *(Jul. 17th - Aug. 18th, 2023). Supervised by Prof. Mathias Ulbricht.* Influence of membrane surface morphology on antisolvent crystallization.

Institute of Membrane Technology, Rende, Italy *(Sep. 10th, 2022 - Feb. 27th, 2023). Supervised by Dr. Elena Tocci.* Interactions of solution-solute in antisolvent crystallization through Molecular Dynamics simulations.

Key papers under the PhD framework

Chergaoui, S., Debecker, D. P., Leyssens, T., & Luis, P. (**2024**). Tuning membrane properties to control supersaturation of antisolvent crystallization. Journal of Membrane Science, 122415.

Chergaoui, S., Debecker, D. P., Leyssens, T., & Luis, P. (**2023**). Control of antisolvent mass transfer through porous membranes for the crystallization of organic compounds. Crystal Growth and Design, 23(9), 6418-6430.

Chergaoui, S., Debecker, D. P., Leyssens, T., & Luis, P. (**2023**). Key Parameters Impacting the Crystal Formation in Antisolvent Membrane-Assisted Crystallization. Membranes, 13(2), 140.

Key awards under the PhD framework

Runner-up Best Poster Award by the Royal Society of Chemistry at RSCPoster 2023 poster competition

Best poster award at Network Young Membrains by the European Membrane Society (EMS) in Lund, Sweden.

European Membrane Society Young Scholar (EMS) to participate in Euromembrane 2021, Copenhagen, Danmark.

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Prof. Noreddine Ghaffour| COP16

Professor Noreddine Ghaffour recognized by RDIA for advancing sustainable solutions at COP16's Sustainability Innovation Week, for addressing the critical need for sustainable water solutions. He is developing innovative, low energy desalination processes.

Prof. Sidy Ba| African Academy of Sciences

Professor Sidy Ba, Associate Professor at ENI-ABT in Mali, has been honored by the African Academy of Sciences for his groundbreaking work in environmental biotechnology. Through the ARISE programme, Prof. Ba leads the ENZYREP project, which uses enzyme-based, nature-inspired solutions to remove pharmaceutical pollutants from wastewater and soil. His innovative approach addresses a critical yet often overlooked issue in Africa, pharmaceutical contamination of water sources. By harnessing oxidative enzymes like laccase and tyrosinase, his work paves the way for sustainable water treatment solutions across the continent.

A news article was shared by the AAS at: AAS Article Link.

Prof. Heidi Richards| Smart Water Solutions Podcast

Dr. Abdelhakim Fadil and Dr. Rhea Verbeke host podcasts on smart water solutions. In their 109th episode, they hosted Professor Heidi Richards (Link to Podcast).

In this episode, Professor Heidi Richards:

- Reflects on her diverse scientific journey, moving from biochemistry to electrochemistry, plastics, and ultimately water treatment, while candidly sharing the challenges of balancing research and family life during her PhD.
- Highlights the significant environmental and social issues caused by acid mine drainage (AMD).
- Explores how membrane distillation could offer promising solutions for AMD treatment.
- Presents her latest findings, including the intriguing discovery of lithium in AMD.

Discusses the complexities of treating landfill leachate, emphasizing the difficulties posed by its high organic load, flammable compounds, and unknown contaminants.

This episode is a must-listen for anyone seeking inspiration or motivation! The far-reaching impacts of AMD and landfill leachate on our ecosystems call for innovative minds and dedicated efforts to address these pressing challenges.

Raja Ben Amar| Distinction at University of Sfax

“I am truly honored to receive this distinction as **Best Female Researcher of the University of Sfax**. I would like to thank the university, my colleagues, and my students, without whom my work would not have the same impact. This recognition motivates me to pursue my research with even greater passion, and I hope it will encourage other young women to believe in their scientific potential. Thank you!" –Prof. Raja Ben Amar

AMSIC Association

Congratulations to Abdoulaye Doucouré for his 2023 induction into *Marquis Who's Who in America – He was formally* added to Marquis' registry in July 2024. This recognition acknowledges his scientific and technological accomplishments as an industrial researcher and his leadership role among professionals specialized in membrane and sustainable energy technologies. He's also praised for his commitment to strengthening

capacity building in education and advancing academe-industry cooperation across Africa. He is co-founder of **Donyatek**, a company established in 2018 in Mali and delivering filtration solutions for clean water supply in the region. Abdoulaye is also connected with **Tergys** (France), an engineering firm expert in the design and commercialization of self-powered systems for drinking water and renewable energy supply. He joined **ITA International** in 2023/24 liaising with Virginia Tech faculty and other institutional partners to test disruptive ideas in air and liquid treatment, and energy savings. Before his involvement with small businesses, Abdoulaye directed major research and development programs at **Hollingsworth & Vose** (Virginia, 11 years) and **Pall Corporation** (New York, 11 years), top-tier global manufacturers of engineered materials and filtration technologies. With his colleagues, he pioneered new technologies for fabricating advanced materials such as

- nonwoven filter media for automotive cabin air, face masks and room air purifiers,
- nano-webs for water, food service and power generation sectors,
- wettable fluoropolymer membranes for the semiconductor industry,
- UF polymeric membranes for bio-separation- sterilization and virus clearance.

Throughout his career, he has helped develop trademarked filtration products, authored 20 international patents and applications (intellectual property for the above items), and written about 50 scientific papers. Moreover, Abdoulaye is a guest editor for Frontiers in Membrane Science and Technology and a committee member of organizations such as the World Association of Membrane Societies (WA-MS) and US Association of the Nonwoven Fabrics Industry (INDA-Filtration).

Abdoulaye serves as 1st president and co-founder of the African Membrane Society (AMSIC). He has been working closely with President Raja Ben Amar to secure AMSIC's enrollment in the World Filtration Congress selection committee, INDEFI, in July 2025.

Abdoulaye Doucouré's academic journey

- PhD in Materials Chemistry from Ecole Nationale Supérieure de Chimie, Montpellier-2, FRANCE | scope: RF plasma-polymerized membrane composites for gas permeation
- Post-doctoral fellowship from Chemical Engineering Department, University of Minnesota, USA | scope: PVDF/Al bonding strength (architectural paints; batteries)

Recent distinctions (2014-2024)

- Donyatek received DUPC grant for BECATMA, "*Best Practices for Water Preservation and Cross-Cultural Exchanges in Artisanal Textile Work between Mali and Algeria*", with partners from **Algeria, Mali and the Netherlands**; https://www.un-ihe.org/news/water-and-development-partnership-programme-projects-selected-funding (2024).

- Donyatek received DAAD grant for OASIS, Water and Heath open innovation platform (dialogue with the Muslim world), led by **Germany and with partners from Egypt and Mali,** https://www.tu-chemnitz.de/etit/messtech/DAAD_OASIS.php (2024)

- Donyatek received DEFIS award, *"Développons Ensemble une Fabrique à Innovation Solidaire",* with partners from **France and Mali** (2022).

- A. Doucouré received *MEET Africa/INCO grant*, as (co)founder of Donyatek (2022).

- A. Doucouré received the *Hollingsworth & Vose Presidential Award in Technology* (2014).

R. BEN AMAR (lower left corner), with Chair of upcoming WFC-15, K-H CHOO* (South Korea) on her right, and next to him WFC-14 Chair P.Y PONTALIER from France (white shirt). A.DOUCOURE stands in the central rear section. AMSIC leaders joined WFC-INDEFI on July 3rd – as committee members!

AMSIC'er Spotlight

Prof. Adel Zrelli

Dr. Adel ZRELLI is an Associate Professor, Vice-Director, and Director of Internships at the Higher Institute of Applied Sciences and Technology of Gabes, under the University of Gabes in Tunisia. With a robust career spanning several years, he has made significant contributions to academia and research, particularly during his tenure as Director of the Department of Industrial Chemistry and Processes at the same institute from September 2013 to December 2020. Dr. Adel ZRELLI's expertise lies in the fields of membrane distillation, membrane preparation, biomass valorization, and solar energy. His extensive experience includes working on membrane fabrication and its applications through various projects and training programs, focusing on integrated membrane processes, water treatment, and waste valorization. His work has been instrumental in developing innovative solutions for wastewater treatment using advanced membranes. As a researcher, Dr. Adel ZRELLI has authored over 25 peer-reviewed research papers, contributed to two book chapters, and holds one patent in his area of expertise. He has also mentored 26 postgraduate students, including those pursuing PhD, research master's, and professional master's degrees, showcasing his commitment to nurturing the next generation of scholars and professionals in chemical engineering and related fields.

In his teaching career, Dr. Adel ZRELLI has delivered courses on refrigeration and air conditioning techniques as well as industrial thermal processes. Beyond this, he has significantly contributed to curriculum development, designing and introducing specialized graduate-level courses such as "Membrane Separations" and "Membrane Processes," tailored for research and professional master's students. His dedication to education is complemented by his leadership roles and active participation in the broader academic community. Dr. Adel ZRELLI has been a member of the International Program Committee for the International Renewable Energy Congress (IREC) since

2014 and a member of the Scientific Committee for the Euro-Mediterranean Conference for Environmental Integration since 2022. In addition to these roles, he has served as the President of the Tunisian Association for Environment and Development since 2023 and has been a member of the African Membrane Society (AMSIC) since 2021. He also contributes as the AMSIC Publishing Coordinator for Solar Compass and serves on the Editorial Board of the Engineering and Technology Journal (ETJ), bringing his expertise to enhance the quality and scope of academic publishing in his field.

Dr. Adel ZRELLI's reputation as a leading expert is further solidified by his contributions as a peer reviewer for high-impact journals such as the Chemical Engineering Journal, Water Research, Desalination and Water Treatment Journal, Journal of Membrane Science and Research, Royal Society of Chemistry Advances, Periodica Polytechnica Chemical Engineering, etc. His ability to bridge theoretical research with practical applications has positioned him as a key figure in advancing sustainable technologies. Through his leadership, innovative research, and active involvement in academic and professional organizations, Dr. Adel ZRELLI continues to push the boundaries of chemical engineering, fostering solutions to pressing environmental and industrial challenges. His unwavering dedication to excellence in teaching , research, and professional service reflects his profound impact on the global academic and scientific community.

Selected publications:

1. **Adel Zrelli**, Samir Ismaili, Qusay Alsalhy, Valorization of waste plastics and waste oases of Gabes-Tunisia to prepare polymeric membrane for oily wastewater treatment. **Euro-Mediterranean Journal of Environmental Integration** 8:907–918, **2023**.
2. Yakine Abed, **Adel Zrelli**, Bechir Chaouachi, Investigation of TiO2 Concentration and Calcination Temperature Effects on Hybrid Membrane Properties for Wastewater Treatment. **Iranian Journal of Chemistry and Chemical Engineering**, **2023.**
3. **Adel Zrelli**, Elhem Metoui, Abdoulaye Doucouré, Studying the effect of phosphogypsum addition on ceramic membrane properties. **Engineering and Technology Journal** 41:1130–1138, **2023.**
4. Younis Rasheed Taha, **Adel Zrelli**, Nejib Hajji, Qusay Alsalhy, Mohammed Ahmed Shehab, Zoltán Németh and Klara Hernadi, Optimum content of incorporated nanomaterials: Characterizations and performance of mixed matrix membranes for environmental application: a review, **Desalination and Water Treatment** Volume 317, **2024.**
5. Amani Boushila, Rahil ElBeji, **Adel Zrelli**, Souad Souissi-Najar,Valorizing waste bricks in geopolymer membrane for treating oily wastewater:effects of curing temperature and liquid/solid ratio, **Arabian Journal for Science and Engineering 2024**
6. Samir Ismaili, **Adel Zrelli**, Walid Elfalleh, Achraf Ghorbal Batch Single-Stage Co-Digestion of Olive Mill Wastewater with Cattle Manure: Modeling, Simulation, and Validation. **Engineering, Technology & Applied Science Research** 14 (5), 16411-16418, **2024.**
7. Yonuus Rashid Taha, **Adel Zrelli**, Nejib Hajji, RA Al-Juboori, Q Alsalhy, Impact of PCLNPG Nanopolymeric Additive on the Surface and Structural Properties of PPSU Ultrafiltration Membranes for Enhanced Protein Rejection, **Processes** 12 (9), 1930, **2024.**
8. Samir Ismaili, **Adel Zrelli**, Achraf Ghorbal, Experimental study on the inhibition of glucose and olive mill wastewater degradation by volatile fatty acids in anaerobic digestion, **Euro-Mediterranean Journal for Environmental Integration** 9 (2), 637-651, **2024.**
9. Younis Rasheed Taha, **Adel Zrelli**, Nejib Hajji, Qusay Alsalhy, Mohammed Ahmed Shehab, Zoltán Németh, Klara Hernadi, Optimum content of incorporated nanomaterials: Characterizations and performance of mixed matrix membranes a review, **Desalination and Water Treatment**, 100088, **2024.**

AMSIC'er Spotlight

Dr. Ramato Tufa

Dr. Ramato Ashu Tufa is currently a researcher at the University of Calabria (Italy), exploring novel membrane methods for the extraction of critical raw materials from seawater. He holds a distinguished career marked by prestigious Marie Skłodowska-Curie Fellowships, including both Individual and Co-fund postdoctoral positions at the Technical University of Denmark and the University of Chemistry and Technology Prague (Czech Republic). Dr. Ramato earned his Erasmus Mundus joint PhD in 2016 from a consortium including the University of Calabria, the University of Twente (Netherlands), and the University of Chemistry and Technology Prague, under the "Erasmus Mundus Doctorate in Membrane Engineering" program. His research focuses on the development of membrane materials and processes for sustainable water and energy solutions, with expertise in electrochemical energy systems including (reverse) electrodialysis and water/CO_2 electrolysis. As a dedicated innovator in the fields of chemistry and chemical engineering, Dr. Ramato specializes in designing ion exchange membranes and electrochemical energy conversion systems. Moreover, his work integrates electrochemically assisted membrane processes to create advanced solutions for clean water and energy production.

Dr. Ramato has demonstrated strong leadership and a deep commitment to advancing education and fostering collaboration in membrane science. Recently, he played a pivotal role in coordinating the AMSIC-4 Membrane Workshop within the framework of the AMSIC-4 conference in Addis Ababa, Ethiopia, while also serving as part of the organizing committee. In this capacity, he led efforts to engage and mobilize students and educators by organizing the workshop aimed at building foundational knowledge and spark interest in membrane science and technology. The workshop achieved notable success, attracting over 90 participants from more than 25 diverse institutions, with attendees represented from a wide range of academic backgrounds and professional experiences.

Selected Publications

1. Chanda D., Lee S., **Tufa R. A.**, Kim Y. J., Xing R., Meshesha M. M., Demissie T. B., Liu S., Pant D., Santoro S., Kim K., Yang B. L., Gas-phase CO2 electrolysis using carbon-derived bismuth nanospheres on porous nickel foam gas diffusion electrode, 2024, International Journal of Hydrogen Energy, 56, 1020-1031.
2. Blommaert M., Aili D., **Tufa R. A.**, Li Q., Smith W. A., Vermaas D., Insights and Challenges for Applying Bipolar Membranes in Advanced Electrochemical Energy Systems, ACS Energy Letters, 6(7), 2021, 2539-2548.
3. **Tufa R. A.**, Piallat T., Hnát J., Fontananova E., Paidar M., Chanda D., Curcio E., Di Profio G., K. Bouzek, Salinity gradient power reverse electrodialysis: Cation exchange membrane design based on polypyrrole-chitosan composites for enhanced monovalent selectivity. Chemical Engineering Journal, 380, 2020, 122461.
4. **Tufa R. A.**, Noviello Y., Di Profio G., Macedonio F., Ali A., Drioli E., Fontananova E., Bouzek K., Curcio E., Integrated membrane distillation-reverse electrodialysis system for energy-efficient seawater desalination. Applied Energy, 253, 2019, 113551.
5. **Tufa R. A.**, Rugiero E., Chanda D., Hnàt J., Van Baak W., Veerman J., E. Fontananova, Di Profio G., Drioli E., Bouzek K., Salinity gradient power-reverse electrodialysis and alkaline polymer electrolyte water electrolysis for hydrogen production. Journal of Membrane Science, 514, 2016, 155 - 164.

Dr. Arouna Dolo

Dr. Arouna Dolo is an assistant researcher at the Higher Teacher Training School of Bamako, Mali, specializing in environmental sciences and sustainable water treatment technologies. Born in Ivory Coast in 1978, he has dedicated his career to developing innovative solutions for wastewater treatment, particularly in sub-Saharan Africa. His research focuses on using nano and environmentally friendly materials, as well as integrating artificial intelligence into water treatment systems to enhance efficiency and minimize environmental impact. Through interdisciplinary collaborations with international research institutions and industry partners, he has worked to address water scarcity and promote sustainable development.

Dr. Dolo's current project focuses on improving the environmental safety of artisanal dyeing factories in Mali and Algeria, addressing pollution from untreated wastewater. This initiative aims to promote sustainable dyeing practices, identify safer dyes, and improve economic opportunities for dyers, particularly women and ethnic minorities. His academic journey includes a Ph.D. in Water and Environment from the University of Sciences, Techniques and Technologies of Bamako (2024) and an M.Sc. in Inorganic Chemistry from Northeast Normal University in China (2015). His Ph.D. research explored electrocoagulation for treating heavy metals and textile dyes in wastewater, building upon his earlier work on fuel desulfurization.

With extensive experience as a researcher and educator, Dr. Dolo has taught chemistry at both high school and university levels, mentored young scientists, and contributed to global initiatives for clean water access. His publications cover topics such as electrocoagulation for heavy metal removal and deep desulfurization of fuels. Looking ahead, he aims to develop scalable wastewater management systems that integrate renewable energy, ensuring cleaner water resources for underserved communities.

Publications

1. *A novel organotin carboxylate containing a penta-nuclear long ladder*. *Journal of Organometallic Chemistry*, 2014.
2. *An amphiphilic catalyst for deep desulfurization of fuels in ionic liquid*. *RSC Advances*, 2016.
3. *Optimizing copper removal using electrocoagulation*. *International Journal of Biological and Chemical Sciences*, 2023.

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AMSIC'er Spotlight

Dr. Lebea Nathnael Nthunya

Dr. Lebea Nathnael Nthunya is a Postdoctoral Fellow at the Institute of Nanotechnology and Water Sustainability (iNanoWS), University of South Africa (UNISA). He holds a dual PhD in Bioscience Engineering (Environmental Technology) and Chemistry, which was jointly supervised by Ghent University (Belgium) (2016-2019). Dr. Nthunya received several awards, including the NRF Y2 rating, Royal Society of Chemistry best presenter awards in the PhD and MSC categories in 2023, 2016 and 2015, respectively.

Dr. Nthunya has published over 60 peer-reviewed papers, with an H-index of 27. He serves as a reviewer in leading research journals such as Water Research, Chemical Engineering Journal, Separation and Purification Technology and Journal of Membrane Science.

His research is motivated by the urgent need to address the global challenges of water scarcity, wastewater pollution and mineral depletion. His work is focused on membrane crystallisation (MCr) for sustainable water treatment and mineral recovery. Through integration of Environmental Analytical Chemistry and Membrane Science, he does not only design projects targeting recovery of freshwater from complex feed waters such as acid mine drainage (AMD), leachates, and industrial brines, but also extracts vital resources such as lithium, magnesium and bioactive compounds which are critical components in various industries. His recent interests are extended to the application of membrane distillation crystallisation (MDCr) in the nutraceutical industries, including sugar crystallization, enrichment of phytochemicals such as those from moringa *oleifera* and protein extraction.

Beyond research, Dr. Nthunya is committed to capacity building and mentorship, where he officially supervised and co-supervised a total of 1 PhD and 3 MSc graduates from the University of the Witwatersrand. His projects are funded by both local and international agencies such as the National Research Foundation of South Africa and the Danish International Development Agency (DANIDA), where he served as Principal Investigator (PI) and co-investigator, respectively. This reflects on his ability to establish impactful collaborations. With a career driven by the mission to develop technologies for water and mineral abstraction, Dr. Nthunya forms an integral part of the community which shapes Membrane Research in Africa and continues to inspire the emerging generation of Scientists in the Environmental landscape.

Dr. Nthunya is an active member of various professional organisations such as South African Nanotechnology Initiatives (SANi), South African Chemical Institute (SACI) and African Membrane Society (AMSiC). His current established collaborative research network spans from Africa and Europe, particularly Aalborg University (Denmark) and the University of the Witwatersrand. He is eager to expand further into research collaborations and is open to long-term academic opportunities.

World Filtration Congress

World Filtration Congress is taking place in Bordeaux, France from June 30th to July 4th, 2025.

Some of the AMSIC'ers who could be attending:

- ANIM-MENSAH, Alexander
- ANYAKORA, Chimezie
- BEN AMAR, Raja
- DIAWARA, COURFIA
- DOUCOURE, Abdoulaye
- ELJADDI, Tarik
- GAGARA, Soumana
- GHAFFOUR, Noreddine
- MBACKE, Myriam
- YOUNSSI ALAMI, Saad

It will be an opportunity to discuss AMSIC affairs (AMSIC-5 in Morocco; contribution to WFC future events; etc.) and visit the Southwestern French region.

27 International Events

There have been a series of events backed by AMSIC:

1- **North American Membrane Society Meeting**, in USA, May 2025
Contacts Abaynesh and Ablo
Website : https://www.membranes.org/nams-2025

2- **MTAIC Conference** (6th conf.), in EGYPT, August 2025 (contacts Ayman and Heba)

3- **Institut Européen des Membranes & University of Arusha**, in TANZANIA, October 21-23, 2025
Contacts Francois Zaviska: francois.zaviska@umontpellier.fr and Geoffroy Lesage: geoffroy.lesage@umontpellier.fr

4- **ICAST**, Bahir Dar Inst. of Tech, ETHIOPIA, November 2025
Contact: Abaynesh

5- **Third Symp on Nanomaterials & Membranes for WEE**, MOROCCO, December 2025
Contact: Saad Alami Younssi

6- **Membrane and Textile Conference**, TUNISIA, in March-April 2026
Sustainable solutions for Tunisian textile industries
Contact Raja: raja.benamar@fss.usf.tn

7- **Mali Symposium on Applied Sciences** in MALI (15th edition), August 2-8, 2026
Theme: Artificial Intelligence and Circular Economy in Africa for Sustainable and Inclusive Development
https://msasmali.org/wp-content/uploads/2025/09/Annonce-MSAS-2026-Call-for-papers1.pdf
Deadline (paper submission): December 31, 2025

I) FRONTIERS IN MEMBRANE SCIENCE & TECHNOLOGY

Research topic: Advancing sustainability: Membranes solutions in the circular economy

Link

Details:

- Fully waived short articles (at least four)

Fields of interest:

- Membrane Formation and Structure
- Membrane Applications - Gas and Vapor
- Membrane Modules and Processes
- Membrane Applications - Liquid

II) MEMBRANES

Link

Guest Editors: R. BEN AMAR - A. YIHDEGO GEBREYHOANNES - I. VANKELECOM

AMSIC-5 annoncement

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AMSIC Newsletter Submissions

Feel free to share news, announcements, and other contributions for AMSIC newsletter to the Editors:

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Your contribution shall be included in the next issue of the newsletter.