

4th Congress of the African Membrane Society (AMSIC-4) (Addis Ababa, Ethiopia - November 2-8, 2024)



Program

SESSION	TIME	ACTIVITIES
PRE-SESSION & REGISTRATION		Nov 2-4 : AMSIC-4 Academy (Over 200 trainees are already registered)
	Nov 2 and 3	Hands-on membrane training for professional development
	Nov 4	Higher education membrane workshop
DAY 1- TUESDAY NOVEMBER 5		
OPENING	Starting at 07:00	REGISTRATION
	08:00-08:40	ETHIOPIA OFFICIALS (Government, Addis Ababa University, etc) Blue Nile Ballroom (2 nd floor)
		ASSOCIATIONS (AMSIC, ESCHE, ACEWM, SMMD, WAMS, EMS) Blue Nile Ballroom (2 nd floor)
Plenary lectures	Chair(s): Abdoulaye Doucouré & Ranil Wickramasinghe	
	08:40-9:25	Topic : Polymer membranes for sustainable separations Suzana P Nunes (King Abdullah University of Science and Technology (KAUST)) Blue Nile Ballroom (2 nd floor)
	09:25-10:10	Topic : Membrane from research to product with market value – connecting the dots Abaynesh Yihdego Gebreyohannes (OSMOSES, USA) Blue Nile Ballroom (2 nd floor)
	10:10-10:40	COFFEE BREAK & GROUP PHOTO

Keynote lectures		Membrane research/applications: Real-world perspectives	Membranes for gas and molecular separations	Photocatalytic membrane reactors and carbon nanostructured membranes for water treatment
		Chairs: Andrea Schaefer, Soumana Gagara & Imen Khouni	Chairs: Lakshmeesha Upadhyaya, Rhea Verbeke & Hern Kim	Chairs: Raja Ben Amar, Edward Nxumalo & Hajer Aloulou
		Room: Minlik (4 th floor)	Room: Tewodros (4 th floor)	Room: Yohannes (4 th floor)
	10:50-12:05	Membrane Technology for Fluoride Removal: Tanzania Experience (Andrea Schaefer)	Hollow fibers for Gas Dehydration (Lakshmeesha Upadhyaya)	Adsorption, Membrane separation, and Photocatalysis: Sustainable Water Treatment with Low-Cost Materials for addressing Organic Pollutants : Synthesis, Characterization and Application (Raja Ben Amar)
		An Application of Photovoltaic (PV) Solar-Assisted Membrane Systems for Potable Water Production in Africa (Fred Molelekwa)	Epoxide-based membranes: an emerging platform for liquid and gas separations (Rhea Verbeke)	Unique properties for carbon-based nanostructured membranes for diverse applications (Edward Nxumalo)
		Industrial Soap wastewater improvement for sustainable reuse and recovery using a hybrid process of coagulation/flocculation and membrane filtration (Imen Khouni)	Fabrication of high-performing double-ligand ZIF-8/cellulose acetate mixed matrix membranes for selective H ₂ /CH ₄ and CO ₂ /CH ₄ gas separation (Hern Kim)	Development of graphene oxide membrane on flat mud ceramic support for methylene blue dyes removal (Hajer Aloulou)
Oral presentations	12:05-12:50	Leachate Plumes: Effects on Water Quality and Public Health Risks in Ilorin, Kwara State, Nigeria (Abdulrahman Babatunde Ameen)	Highly water stable Ultrathin 2D Metal organic framework-based membrane for molecular separation (Haftu Gebrekiros)	Treatment of sugarcane industry wastewater by a novel membrane photobioreactor (Geoffroy Lesage)
		ULTRA-SEN: decentralised and gravity-driven ultrafiltration membranes for water potabilization (Gaetan Blandin)	Nanofiltration membrane with adsorptive effect for treatment of emerging organic pollutants (Pengrui Jin)	Zinc-montmorillonite intercalate- based polyethyleneiminenanocomposites : Preparation and photodegradation of BB41 dye under UV light (Afef Attia)
		Selective water and wastewater treatment in Africa-Role and Opportunities for Advanced Materials (Caroline Jegalat)		
	12:35-14:10	LUNCH		
Chair(s): Abaynesh Yihdego Gebreyohannes & Ivo Vankelecom				

Plenary lectures	14:20-15:05	Topic : Reactive coating of desalination membranes in spiral-wound modules: Increasing antifouling properties and enabling “second life” application Mathias Ulbricht (University of Duisburg-Essen, Germany) Blue Nile Ballroom (2 nd floor)		
	15:05-15:50	Topic : Trends in Membranes and Processes for Biotechnology and Biorefinery Lidietta Giorno (Institute on Membrane Technology, CNR-ITM, Italy) Blue Nile Ballroom (2 nd floor)		
	15:50-16:10	COFFEE BREAK		
Keynote lectures	16:10-17:25	Nanofiltration membranes & machine learning	Membranes for crystallization and membrane distillation	Membranes for water treatment and desalination and fouling prevention
		Chairs: Gyorgy Szekely, Rita Namoe Tabi & Abi Taddesse Mengesha	Chairs: Elena Tocci, Sara Chergaoui & Noreddine Ghaffour	Chairs: João Crespo, Gideon Oron & Kibrom Alebel
		Room: Minlik (4 th floor)	Room: Tewodros (4 th floor)	Room: Yohannes (4 th floor)
		Machine learning for molecular sieving in organic solvents (Gyorgy Szekely)	Crystallization Mechanisms in Lithium Salt Membranes: Insights from Molecular Dynamics (Elena Tocci)	Ion-exchange membrane processes: Perspectives in water treatment and desalination (João Crespo)
		Incorporation of artificial water channels into a thin film composite membrane for nanofiltration (Rita Namoe Tabi)	Membranes for Solution Crystallization (Sara Chergaoui)	Ultra-Filtration Membrane Flushing in Hybrid Systems of Wastewater Reclamation for Unrestricted Reuse (Gideon Oron)
		Fe-Al nanocomposite filled dialysis membrane tubes (DMT-HFAO): a modified method for assessment of phosphate sorption-desorption from aqueous and soil solutions (Abi Taddesse Mengesha)	Scaling-up the membrane distillation process: challenges and contributions (Noreddine Ghaffour)	Desalination membrane modification toward improving antifouling performance: From lab to pilot scale (Kibrom Alebel Gebru)
Oral presentations	17:25-18:10	Separation of alcoholic biofuel with two-dimensional MXene nanocomposite membrane using Pervaporation process by CFD analysis (Fred Molelekwa)	Fluoride Removal and Recovery from Water Using Reverse Osmosis and Osmotic Membrane Crystallization (Wuhib Zeine Ousman)	Study of a novel electrochemical membrane bioreactor (E-MBR): reduction of membrane fouling and electro-oxidation of poorly biodegradable organic matter (Máxim Gibert-Vilas)
		Biopolymer Based Hydrogel for Adsorption of Heavy Metal Ions from Aqueous Solution: Experimental and Theoretical Investigation (Leta Lemma)	(Khona Maziya) Could a new ultra-thin coated membrane compete with a microporous membrane in VMD? (Indira Chimanlal)	High performance TFN membranes with modified CNCs for improved dye/salt removal from water (Khona Maziya)

		Development of Cellulose Nanofiber-Scaffolded Composite Wound Dressing Film from Medicinal Plant Extract (Anteneh Merasha)	Investigating the impact of hexagonal-Boron Nitride Nanosheets (h-BNNS) on the structural characteristics and the efficacy of polyvinylidene (PVDF) membranes for water-oil separation (Karabo Concious Mashiloane)	Biocatalytic Hollow Fiber Membrane Reactor for the Degradation and Filtration of Natural Organic Matter from Surface Water (Phumlile Mamba)
END OF SESSION				
DAY 2- WEDNESDAY NOVEMBER 6				
Plenary lectures	Chairs: Raja Ben Amar & Esayas Alemayehu			
	8:30 – 09:15	Topic: Membrane Distillation Crystallization in the African Context Heidi Richards (University of the Witwatersrand, South Africa) Blue Nile Ballroom (2 nd floor)		
	09:15–10:00	Topic : New ways to improve the scaling behaviour of dense membranes Stefan Panglisch (University of Duisburg-Essen, Germany) Blue Nile Ballroom (2 nd floor)		
WOMEN PANEL SESSION	10:10 – 11:10	Topic : Women's excellence in membrane science & technology Chairs: Lidietta Giorno, Sara Chergaoui Blue Nile Ballroom (2 nd floor)		
	11:10-11:30	COFFEE BREAK		
		Membranes for electrochemical applications and green energy transition	Sustainable membrane fabrication for water treatment	Advanced materials, nanofibers and nonwoven media in filtration
Keynote lectures	11:30-12:45	Chairs: Ramato Ashu, Misgina Tilahun & Geoffroy Lesage	Chairs: Michael Daramola, Adel Zrelli & Saad Alami Younssi	Chairs: Abdoulaye Doucoure, Ludovic Dumeé & Ngonye Keroletswe
		Room: Minlik (4 th floor)	Room: Tewodros (4 th floor)	Room: Yohannes (4 th floor)
		Role of membranes in advanced electrochemical energy systems (Ramato Ashu Tufa)	Sodalite-based Membranes for Water and Wastewater Treatment (Michael Daramola)	Adopting nanotextile fabrication processes for filtration applications (Abdoulaye Doucoure)
		Membranes for alkaline water electrolyzer (Misgina Tilahun Tsehaye)	Valorizing waste bricks in geopolymer membrane preparation for treating oily wastewater: effects of curing temperature and liquid/solid ratio	Cellulose-functionalized electrospun membrane as a potential membrane filter for water decontamination (Ngonye Keroletswe)

			(Adel Zrelli)	
		Integrating Electrochemical Systems in a Granular Anaerobic Membrane Bioreactor (Geoffroy Lesage)	Valorization of natural materials in development of new ceramic composite membranes (Saad Alami Younssi)	Engineering functional nanofiber based membranes for air and water treatment (Ludovic Dumeé)
Oral presentations	12:45-13:15	Stabilization of aqueous hibiscus extract in a membrane-separated two-compartment electrochemical cell (Khady Ndiaye)	Blended Polysulfone/Polyethersulfone Infused with Sodalite nanoparticles for carbamazepine removal from pharmaceutical wastewater (Purity Langa)	The fabrication of PES/Fe ₃ O ₄ /ZnO membranes for the efficient removal of contaminants from wastewater (Nompumelelo Sharol Mbali)
		Electrochemical membrane technology for future applications: Zn-MOF/g-C ₃ N ₄ photoelectrochemical system for real-time sensors and naproxen removal in wastewater (Abera D. Ambaye)	Enabling improved Lithium/Magnesium Separation using Polyamide Nanofiltration Membranes Functionalized with Clustered Multination side chains (Faizal Soyekwo)	Fabrication of the pvdf/pan electrospun nanofibrous membranes incorporated with tio ₂ /cu@nh ₂ -mil-125 nanocomposite for water remediation (Njabulo Sondezi)
	13:15-14:45	LUNCH (Hotel)		
Plenary lectures	Chairs: Soraya Malinga & Imen Khouni			
	14:50-15:35	Topic : Polymer-based membranes: from fundamental understanding to upscaling Ivo Vankelecom (KU Leuven, Belgium) Blue Nile Ballroom (2 nd floor)		
	15:35-16:20	Topic : 3D printing functional nanoporous membranes and separation materials Ludovic Dumeé (Khalifa University of Science and Technology, UAE) Blue Nile Ballroom (2 nd floor)		
Poster session	Chairs: Ramato Tufa, Noredine Ghaffour, & Heidi Richards			
	16:30-18:30	<ol style="list-style-type: none"> 1) Comprehensive review on the use of zeolite in the filtration and purification of water (Wondimagegne Mamo). 2) Removal of toxic metal ions from surface water using biopolymer chitosan/ZIF-8 mixed-matrix membranes (Sara Chergaoui). 3) Mild temperature regulated highly stable graphene oxide membrane for molecular separation (Haftu Alemayehu). 4) Advancements in membrane technology for decentralized and autonomous water treatment systems (Remedan Ahmed). 	<ol style="list-style-type: none"> 12) Membrane modifications for Redox flow batteries. (Kibrom Alebel). 13) Removal of Synthesis Methylene Blue Dye using Bottom Ash and Sewage Sludge Mixed Adsorbent Collected from Reppie Waste-to-Energy Facilities and the Kality Wastewater Treatment Plant (Yosef Hagos Abrha) 14) Response surface statistical modeling for optimization of methylene blue adsorption from 	

		<p>5) Low-cost membrane characterization setup developed in open-science for broad dissemination of membrane evaluation and research (Nicolas Saganias).</p> <p>6) Evaluation of carbon nanomaterial and titanium dioxide leaching from ultrafiltration membranes in water treatment systems (Bveledzani Pertunia).</p> <p>7) Advanced process monitoring using online fluorescence in solvent resistant nanofiltration applied in olefin metathesis (Solomon Hailu Tela).</p> <p>8) Microporous activated carbon derived from peach stones: optimized synthesis by response surface methodology (Souha Harabi).</p> <p>9) Plasmon-enhanced photo/electrocatalysis in hetero-nanostructures for sustainable energy applications (Lemma Teshome Tufa).</p> <p>10) Enhancing oil-water separation efficiency using nano-engineered PVDF membranes incorporated with exfoliated boron nitride nanosheets (Karabo Mashiloane).</p> <p>11) Membrane technology for water & wastewater treatment and energy generation in Ethiopia (Abreham Tesfaye).</p>	<p>aqueous solution using chitosan/graphite composites: Isotherm and kinetics studies (Soliyana Teshome)</p> <p>15) Studies on the preparation of oleo-resinous wood varnish by utilizing Jatropha seed oil (Tizita Desalegn)</p> <p>16) Micropollutants removal from membrane bioreactor permeate using TiO_x reactive electrochemical membranes (REM) and prospects for the integration of REMs as anodes in membrane bioreactors (Màxim Gibert-Vilas)</p> <p>17) Impact of Activated Carbon on Ceramic Flat Membrane Performance (Imane Abbou)</p> <p>18) WE-Africa: Membrane Knowledge Hub: A University-Industry Platform Towards Sustainable Water and Energy Management in Africa (Stefan P)</p> <p>19) Perspectives on Opportunities and Challenges of Membrane-Based Renewable Energy Production in Ethiopia (Girum Ayalneh)</p> <p>20) Sustainable lignin-based membrane fabricated with deep eutectic solvent (Abaynesh Y.)</p>
	18:30:19:30	PROFESSIONAL SOCIETIES (AMSIC, others)	
END OF SESSION			
DAY 3 - THURSDAY NOVEMBER 7			
	Chairs: João Crespo & Stefan Panglich		
Plenary lecture	8:30-9:15	Topic : Advances in multifunctional membrane systems for biomedical applications Loredana De Bartolo (National Research Council of Italy, Institute on Membrane Technology, CNR-ITM, Rende (CS)) Blue Nile Ballroom (2 nd floor)	
	9:15-10:00	Topic : Ethiopian Higher Education and Industrial Institutes: Opportunities for international networking (Speakers: TBA) Blue Nile Ballroom (2 nd floor)	
	Chairs: Walid Khoury & Abdoulaye Doucouré		
INDUSTRIAL SESSION	10:00- 11:00	Topic: How to build a resilient membrane entrepreneurial ecosystem in Africa and improve people's life? Participants : Small & Medium Enterprises and Large Groups interested in Africa's water, healthcare, sanitation, power generation, chemicals, membrane and textiles industries Blue Nile Ballroom (2 nd floor)	

	11:00-11:15	COFFEE BREAK		
Keynote lectures		Integrated/Hybrid membrane processes and membranes for bioseparation processes	New concepts in water treatment, RO desalination and membrane recycling	Raw materials, membranes & textiles for humanitarian relief and resilient growth
	11:20-12:35	Chairs: Efrem Curcio, Rosalinda Mazzei & Ranil Wickramasinghe	Chairs: Frank Lipnizki, Elizabeth Guyman & Gaetan Blandin	Chairs: Abdoulaye Doucoure, Stephan Rehlen & Soumana Gagara
		Room: Minlik (4 th floor)	Room: Tewodros (4 th floor)	Room: Yohannes (4 th floor)
		Membranes in mining raw materials from brine (Efrem Curcio)	New concepts for water treatment with membrane technology: From ideas to large pilot scale tests (Frank Lipnizki)	Impact of Armed Conflicts on Highly Vulnerable Communities: what role for resiliency tactics, membrane technologies and networks in highly volatile environments? (Abdoulaye Doucouré)
		Mimicking nature to improve membrane bioreactors: towards process intensification (Rosalinda Mazzei)	The XPRIZE Challenge: In Search of Breakthrough Seawater RO Desalination Technologies to Tackle Water Scarcity (Elizabeth Guyman)	Organic Cotton in the Global market and in Africa: raw materials and textile finished goods for resilient growth (Stephan Rehlen)
		Development of Membrane Based Operations for Emerging Separations Challenges (Ranil Wickramasinghe)	Towards membrane recycling : OSMO4LIVES (Gaetan Blandin)	Contribution to the quality assessment of purified water: a case study of the methods used by UN field operations mission in the province of South Kivu in the DRC (Soumana Gagara)
Oral presentations	13:05- 13:20	Integrated coagulation-flocculation and nanofiltration or reverse osmosis membrane system for treating sugar cane industry effluent from a membrane bioreactor outlet (Yacouba Konaté)	Occurrence of Antibiotics in Wastewater Effluents and Their Treatment by a Pilot Scale Nanofiltration Unit (Solomon Hailu Tela)	Enhancement of mechanical property of clay ceramic water filter using 1-D TiO ₂ nanoparticles for water purification (Tewodros Taddese Tiruneh)
	13:20-14:40	LUNCH		
TOURIST SITE-SEEING EVENTS	14:50-19:30	<ul style="list-style-type: none"> <li style="text-align: center;">❖ Adwa Museum (https://adwamuseum.org/) <li style="text-align: center;">❖ Addis Ababa University Museum <li style="text-align: center;">❖ Entoto Park 		
	20:00 – 23:00	GALA DINNER (Location: TBA)		
		End of Session		

DAY 4 - FRIDAY NOVEMBER 8		
Plenary lectures	Chairs: Saad Alami Younssi & Ludovic Dumez	
	8:30-9:15	Topic : Selenium and silver based antibacterial membranes: Synthesis, characterization and application Soraya P Malinga (University of Johannesburg, South Africa) Blue Nile Ballroom (2 nd floor)
	9:15-10:00	Topic : Non-linear problem solving approaches: Integrated water treatment technologies for efficient water purification and wastewater reuse Esayas Alemayehu (Jimma University, Ethiopia) Blue Nile Ballroom (2 nd floor)
Closing Session	10:00-12:00	CLOSING SPEECH & AMSIC-5 ANNOUNCEMENT Blue Nile Ballroom (2 nd floor)
		AWARD CEREMONY & GROUP PHOTO
	12:10-13:40	LUNCH (Hotel)
SITE TOUR	14:00-17:20	Technical/Industrial facility: ❖ Addis Ababa Water & Sewerage Authority - Membrane treatment plant
	17:30-19:00	AMSIC ALL-MEMBER MEETING
		End of Session

Allotted Time Schedule for Conference Sessions (November 5-8)

	Allotted Time/min		DAY 1- TUESDAY NOVEMBER 5	DAY 2- WEDNESDAY NOVEMBER 6	DAY 3 - THURSDAY NOVEMBER 7	DAY 4 - FRIDAY NOVEMBER 8	Total
	Presentation	Q&A					
Plenary Lecture	40	5	4	4	1	2	11
Keynote lecture	20	5	18	9	9	-	36
Oral presentation	10	5	15	6	3	-	24
Poster presentations	120		-	Yes	-	-	>20
Special sessions				Women's Excellence in Membrane Science & Technology	<ul style="list-style-type: none"> • Industrial session • Ethiopian Higher Education and Industrial Institutes • Tourist site-seeing 	Technical/Industrial facility tour	

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<https://www.amsic-africa.com/amsic4>

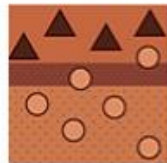


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Frontiers in Membrane Science and Technology



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