

AMSIC Newsletter

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AMSIC 3rd Edition took place in Senegal, November 2021

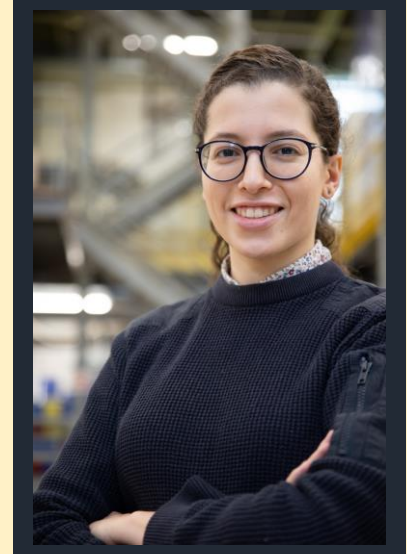


New AMSIC board led by

President Raja BEN AMAR and Vice-president Edward NXUMALO

Highlights

Editorial	2
New AMSIC board	4
AMSIC 3 rd Edition - Senegal.....	7
Special Issue in JMRS.....	12
Open Membrane Database.....	13
Desalination Symposium in Morocco.....	14
Announcements	16
AMSIC Young Talent.....	18
AMSIC Online Academy.....	21



Editorial by Sara Chergaoui

**Co-director of information, communication and social network
PhD candidate at Université Catholique de Louvain
Alumna of the Erasmus Mundus Master of Membrane Engineering EM3E-4SW**

If I am to choose one word to describe the African Membrane Society (AMSIC), it would be inclusive. I have joined AMSIC on the 25th July 2020, where I received a welcoming email from Dr. Abdoulaye Doucoure, the president of AMSIC at the time and the current co-Director Academy-Industry Relations & Professional Training. The reason why I've chosen the word inclusive is because from our first meeting I have felt welcomed, and I have felt heard. Our meetings can tell loudly the passion of the members bringing up thoughts, updates on ongoing projects, etc. It brought into me the desire to do more and participate in something I like, which is around writing, editing, communicating. Members are constantly active in and outside of the continent.



We're growing constantly every year, we've got members from all regions of the continent, and we're reaching out to include further countries like Mauritania, Kenya, Gabon, Guinea, Zambia among others.

The year 2021-2022, was quite special:

First, the AMSIC congress took place in Dakar Senegal from 2nd to 5th November 2021 comprising a workshop on membrane filtration. The congress gathered membranologists from around the globe to

speak of the role of membranes in promoting sustainability and providing efficient solutions to global matters and which concern Africa in particular such as water scarcity and water purification. The closing ceremony handed over the organization of the upcoming congress in 2024 to the Ethiopian team, representing the 4th region of the continent to carry out this event.

Second, a new AMSIC board was elected. Today, the AMSIC family is led by professor Raja Ben Amar from Tunisia as president, together with Prof. Edward Nxumalo from south Africa as vice president, Dr. Abaynesh Y. Gebreyohannes as general secretary from Ethiopia, and Prof. Mady Cisse as Treasurer from Senegal. They have all been committed to serve well the AMSIC society and we all have trust in strengthening our values and support the accomplishment of the different ongoing projects.

In this edition, an overview is given on both AMSIC-3 and the new board; plus, highlights on the special issue in the Journal of Membrane Science and Research that was coordinated by Dr. Abdoulaye Doucouré together with prof. Bart Van der Bruggen and Dr. Asim Khan. Besides, a synopsis on the open access database as fruit of collaborations from KU Leuven, Hong Kong University, Yale University, and Technion Israel Institute of Technology is presented besides a brief report on the Desalination symposium organized in Tangier Morocco. Finally, some announcements on some of the notable achievements by our members before concluding with survey results on the online courses that were held by the AMSIC academy.

Finally, I cannot stress enough how exciting it is to be part of the AMSIC and would like to give credit in particular to Ambu —Dr. Abaynesh Y. Gebreyohannes— who first introduced me to this incredible society, or in fact family. I vividly remember the dinner we had in Leuven, Belgium, where I first met her and perceived great positive energy that I was simply eager to get to know others passionate about membrane technology and ready to bring up their expertise into the field. It was indeed a beautiful encounter!

New AMSIC board

4

In compliance with its by-laws and statutes, the General Assembly of the African Membrane Society (AMSIC) elected its New Board of Directors, on Saturday, February 26th, 2022. Hence, the following delegates will be conducting a three-year term to lead our network:

Honorary President (1 delegate)

Prof. Courfia DIAWARA, from the University of Ziguinchor, SENEGAL

Executive Directors (4 delegates)

Position	Name	Affiliation
President (Northern Africa)	Prof. Raja BEN AMAR	Faculté des Sciences de Sfax Université de Sfax – TUNISIA
Vice President (Southern Africa)	Prof. Edward NXUMALO	University of South Africa – SOUTH AFRICA
General Secretary (Eastern Africa)	Dr. Abaynesh Y. GEBREYOHANNES	King Abdullah Univ. Science & Technology, SAUDI ARABIA
Treasurer (Western Africa)	Prof. Mady CISSE	Ecole Supérieure Polytechnique Univ. Cheikh Anta Diop, SENEGAL

General Directors (14 delegates)

	Name	Country of Residence
Directors of Science & Technology	Prof. Rachida CHEMINI	Algeria
	Prof. Sidy BA	Mali
Directors of Information, Communication & Social Networks	Sara CHERGAOUI (Grad student)	Belgium
	Prof. Soraya MALINGA (Prof)	South Africa
Director of Visual Content & Webmaster	Prof. Jim BARRY	USA
Directors of New Talent and Leadership Committee	Rita Namoe TABI	Ghana
	Ayman Taha EL-GENDI	Egypt
	Dr. KIBROM ALEBEL GEBRU	Germany
Directors of External Relations	Dr. Heidi RICHARDS	South Africa
	Prof. Saad ALAMI YOUNSSI	Morocco
Directors of Fundraising	Prof. Noredine GHAF FOUR	Saudi Arabia
	Dr. Fred MOLELEKWA	South Africa
Directors of Academy-Industry and Professional Training	Dr. Boukary SAWADOGO	Burkina Faso
	Dr. Abdoulaye DOUCOURE	USA

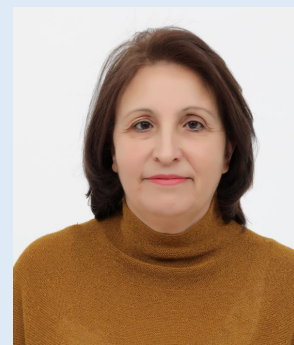
About the new board:

- First woman elected President of the African Membrane Society: Prof. Raja BEN AMAR;
- Executive directors (4) originate from four zones with strong economic influence: Tunisia (Northern Africa), South Africa (Southern Africa), Ethiopia (Eastern Africa), and Senegal (Western Africa);
- 40% female delegates elected among AMSIC directors (versus 20% in previous boards);
- Thirteen citizenships are represented including Algeria, Burkina Faso, Egypt, Eswatini, Ethiopia, Ghana, Mali, Morocco, Senegal, South Africa, Tunisia, also France and USA;
- Two graduate students and five early-career professionals are directors, while youth groups had no Board representation before;
- One new board position: New Talent and Leadership Committee;
- Industrial presence: 1 Director versus 3 Directors in previous Boards;
- 18 Board members and 1 Honorary President versus 15 directors previously;

AMSIC new President, Prof. Raja BEN AMAR

Raja Ben Amar is currently working as full Professor in the chemistry department of the Faculty of Science of Sfax, University of Sfax (Tunisia) and Director of the Research unit 'Advanced Technologies for Environment and Smart Cities'. Her main research interests are wastewater treatment using hybrid processes, water desalination, wastewater treatment, development of new porous ceramic membranes from natural and hybrid materials.

Pr. Raja Ben Amar has supervised to completion several masters (56 candidates) and doctoral candidates (27 PhD candidates). She has also mentored 5 postdoctoral fellows. Currently she supervises more than 10 postgraduate students in her areas of interest.



She is involved in many projects framed by joint cooperation programs involving several countries (India, France, Morocco, Algeria, Turkey, Spain, Poland...), and European projects (ERANETMED, PRIMA). She is also a Principal Investigator for a variety of national projects supported by the Tunisian Ministry of Higher Education and the Tunisian Ministry of Industry - partnering with the industrial sector through the 'Valorisation des Résultats de la Recherche (VRR)' program and 'Programme National de Recherche et d'Innovation (PNRI)', related to integration of membranes processes in water treatment and reuse.

She was Chairperson of the first African Membrane Society International Congress, held in the city of Sfax (2016, Tunisia), and also chaired Francofilt-2 organized in Hammamet (2019, Tunisia). Raja actively supported all AMSIC events (Tunisia, South Africa, and Senegal) and lectured as Plenary/Keynote speaker.

In 2021, she received a national award allowing top women researchers in Tunisia to form a startup company with the support of 'Senior Women in business' – a body that encourages highly accomplished women motivated by research & technology to put in practice their entrepreneurial ideas.

AMSIC new Vice President, Prof. Edward NXUMALO

Edward Nxumalo is a full professor at the Institute for Nanotechnology and Water Sustainability from the University of South Africa (UNISA) in the city of Johannesburg (South Africa). He works largely under the thematic area of Membrane Science and Technology and leads various research on advanced nanomaterials including nanostructured flat sheet and hollow fibre membranes and their application in various fields including energy, water treatment, desalination and ultra- and nano-filtration, etc.



He is a mentor of staff members and supervisor of a wide range of masters and doctoral students and postdoctoral fellows at institutions of higher learning in South Africa and abroad. He collaborates with many academics based in institutions in Africa, Asia, Australia, Europe and the USA. He is also the main investigator for many research projects and has secured funding from the Water Research Commission, National Research Foundation and SASOL in South Africa.

Prof Nxumalo is a C2 rated NRF researcher as defined by the National Research Foundation and has authored and co-authored over 100 peer-reviewed scientific journal papers including book chapters and conference proceedings.

In addition, he seats on boards for various national and international bodies and is a member of various scientific and editorial committees. He speaks in national, international, government, community and scientific meetings about the merits of nanotechnology, membrane technology and water treatment systems. Edward currently leads the South African Nanotechnology Initiative (SANi), a nanotechnology association mandated under the Department of Science and Innovation as its incumbent Chairperson and Board member.

He was a Keynote Lecturer at AMSIC-1 (2016, Tunisia), chaired AMSIC-2 (2018, South Africa) and currently serves as the Vice President for this network.

By Dr. Abdoulaye Doucouré



Plenary speaker Dr Mihail BARBOIU introducing Honorary Guest Prof. Enrico DRIOLI

The African Membrane Society organized its third congress in Dakar, Senegal from 2nd to 5th November 2021. The congress comprised 8 plenary and 20 keynote sessions presented by experts from various backgrounds promoting the role of membrane technology in sustainability. All attendees had the opportunity to share their knowledge and to comment on implementing membrane and sustainable energy technologies in the following areas:

- Sustainable water production via membrane and filtration technologies;
- Clean air, environmental protection and sustainable filtration strategies;
- Wastewater reuse, recycling via membrane & filtration treatment;
- Industrials applications for membranes (bioseparation, treatment of chemical ...);
- Synergistic use of filtration and renewable energies;
- Novel membranes and fiberwebs - Sustainable fabrication methods;
- Novel characterization/analytical techniques and instrumentation;
- Modeling and theoretical tools in filtration and membrane science.

Acknowledging this congress was sponsored by many local partners, AMSIC also wishes to extend its special thanks to these early supporters :

[Golden] Université Assane SECK, Ecole Supérieure Polytechnique Dakar and Université Cheikh Anta DIOP;

[Silver] European Membrane Society and Institut Européen des Membranes (France) ;

[Bronze] Dr. Cheikh Mbacké DIOP, particle physics specialist, France.

Key take-aways from AMSIC-3 (Nov'21) in Dakar and future steps

The 3rd African Membrane Society International Congress was one of the first global filtration events to be held in-person, following the emergence of SARS-CoV2 pandemic in early 2020. In retrospect, it's a fortune that we were able to bring world-class filtration experts to Senegal for this conference and to propose hands-on training sessions for grad students. Hence, it's a good example showing that institutions in Africa do not have to systematically mimic decisions adopted by others in a remote environment, but they can draw their own conclusions, consistent with the local circumstances. We are fully indebted to the plenary and keynote speakers as their contributions made a significant impact on participants (sometimes leading to new collaborations). A few remote sessions were squeezed in the program with colleagues and friends joining from Australia, the United States, Saudi Arabia, and South Africa, thereby creating a more substantive content - also further stretching the conference spatial boundaries! Other AMSIC-3 upsides and encouraging outcomes can be summed up as follows :

- Over 20 countries were represented at AMSIC-3, which is the highest level of diversity achieved for our biannual congress. The overall African presence still needs improvement but there is tangible progress on the dissemination of filtration science and technologies across the continent; also, the reach beyond Africa's borders keeps expanding.
- Compelling presentations argued for leveraging local resources to synthesize and manufacture membranes in Africa, also for harnessing abundant renewable energy sources for powering (filtration) equipment.
- Women have played an instrumental role in strengthening this organization and supporting the 3rd congress. They are outnumbered within AMSIC and underrepresented within the Board of Directors but corrective measures are underway to fix these gaps.
- AMSIC-3 junior editorial team effectively mobilized delegates committed to publishing their research work after the congress: a special edition of Journal of Membrane Science & Research was released in January 2022 outlining new studies from AMSIC attendees with joint contributions from South Asia academic teams.

- Africa campuses for technicians” panel was well attended, mobilizing a dozen higher education schools who expressed interest in developing hands-on membrane curricula for technicians. The aim is to expand Africa’s youth competencies and to consolidate the local entrepreneurial eco-systems.
- Several Senegalese water/sanitation/filtration companies (ONAS, SONES, SEN’EAU, Casamancaise des Eaux) were active stakeholders, some of them signing Memorandum of Understanding with AMSIC , contributing to the exhibition, sending conference speakers, attending training workshops, etc.

As for AMSIC-3 shortcomings and areas of improvements, the following matters have caught our attention:

- The application scope of AMSIC3 events is too “water-centric”; and the organization needs to lay out a plan for exploring other essential fields such as membranes for bio-separation sciences, fuels and chemical filtration, microelectronic fluid processing, gas separation and air purification, battery and fuel cell technologies.
- The congress local attendance was lower than expected, with an affluence below 150 delegates. Given the high-quality content of the whole meeting, it’s a miss that most lectures and talks involved a limited audience.
- Very few students and early career scientists presented their research findings: membrane and filtration research programs in Western Africa are still limited in scope/size/number, a situation that calls for more events and partnerships in the region.
- Even though more than 20 countries were engaged in AMSIC-3, Eastern Africa and Southern Africa zones counted very few contributors – COVID preventive measures were still strong in South Africa. Participants from Asia could not attend either because of similar sanitary constraints. The access to virtual communication ought to be made more widely available in the next AMSIC venues.
- Commercial exhibitors’ participation was limited. Global health restrictions have undoubtedly played a role in this outcome. However, the organization still needs to outline a robust plan for establishing a more substantive commercial exhibition.

These observations highlighted some contrasted outcomes of Dakar’s AMSIC-3 meeting. We hope this information will help improving the experience of delegates seeking to attend our next activities, and for rendering the African Membrane Society more relevant to its members and partners.

From left to right, Dr. Abdoulaye Doucouré, previous AMSIC president and the current co-director of Academy-Industry and Professional Training. Next is prof. Courfia Keba DIAWARA, the general director ESP which hosted the training session and was the official host of AMSIC3. Next, is prof. Falilou Mbacke SAMBE the director of ESP/UCAD school. Next, is ONAS General Director Ababakar MBAYE. Finally, Mr Amadou Gallo Diop, the general director of research and innovation in the ministry of higher education.





Site-seeing events: National Sanitation Office of Senegal (ONAS)/ National Office of Senegalese Water (SONES).

About 15 attendees composed of professors, students, industrial experts attended the two-day hands on training on:

- i) Brackish water treatment via low pressure RO
- ii) Treatment of a local fruit juice by a crossflow MF/UF unit.

The training was given by Prof. Mady CISSE, Senegal, Prof. Marc HERAN, France and Prof. Geoffroy LESAGE, France



Fruit juice clarification.

AMSIC congress was preceded by two days hands-on training on membrane operation for engineers co-organized by ESP/UCAD (host), IEM-Montpellier and Univ. Ziguinchor. The training encompassed two experimental studies – i.e., RO brackish water desalination; UF clarification of juice concentrates.

A field trip to a drinking water treatment facility (Dakar) and municipal wastewater treatment facilities also took place, in the city of Thies.



AMSIC3 saw some social events as well in Dakar, Senegal.



During the dinner Gala, AMSIC organized an honorary session for Professor Enrico DRIOLI, in honor of his great service to the membrane society in general and to his advocacy and many other contributions to AMSIC in particular. The honorary certificate was delivered by Senegalese Minister of Higher Education, Research and Innovation, Dr Cheikh Oumar ANNE, and filmed by the national TV network.



Dinner Gala Left Dr Cheikh Oumar ANNE (Senegal Ministry of Higher Education & Research)), Middle Prof. Enrico DRIOLI (CNR-ITM, Italy-Honorary Guest), right Dr. Abdoulaye DOUCOURE (AMSIC past-president).

Dr. Abaynesh Y. GEBREYOHANNES, the current general secretary of AMSIC society, with prof. Enrico DRIOLI.

At the end of the conference, Prizes for Best Oral and Poster presentation were given by the AMSIC president Dr. A. Doucoure and the European Membrane Society (EMS) president Prof. Anthony Szymczyk.

Finally, the chair of AMSIC3, Prof. Courfia Diawara handed over the duties for organizing **AMSIC4** to **Dr. Abaynesh Y. Gebreyohannes** of Ethiopia.

By Dr. Abdoulaye Doucouré and Dr. Abaynesh Y. Gebreyohannes

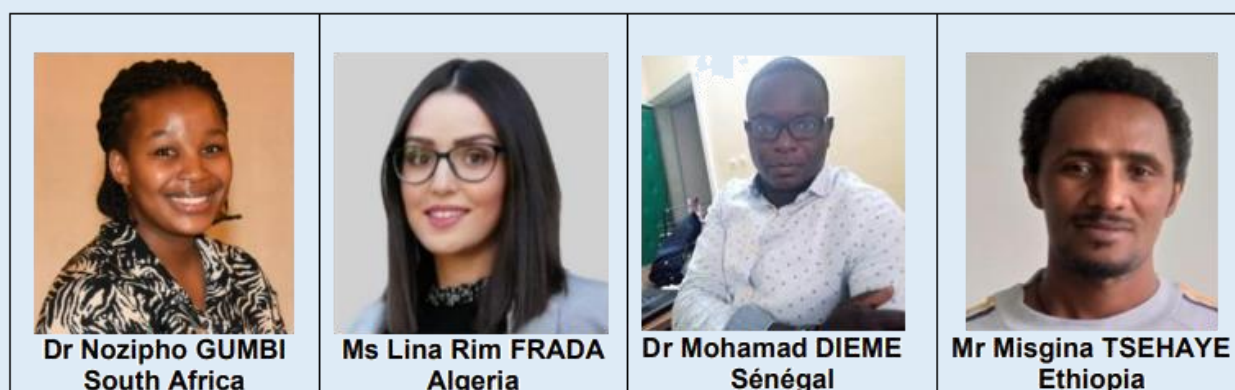


Abaynesh (left), Courfia (middle), Abdoulaye (right).

Dr. Abdoulaye Doucouré (USA) together with prof. Bart Van der Bruggen (Belgium) and Dr. Asim Khan (Pakistan) coordinated a special issue covering the superior role of membranes and membrane processes in different aspects of people's life, in the Journal of Membrane Science and Research.

The main theme of this special issue was "Membranes for Development and Sustainable Future." This special issue was oriented to cover the recent progresses and prospects of membrane technologies for development and sustainable future in a wide range of applications, most preferably in developing countries.

The African Membrane Society gathered the African JMSR Editorial Committee (AJEC) who was in charge of collecting and screening articles that are deemed to be published in this special issue. The four AMSIC members engaged in the AJEC were:

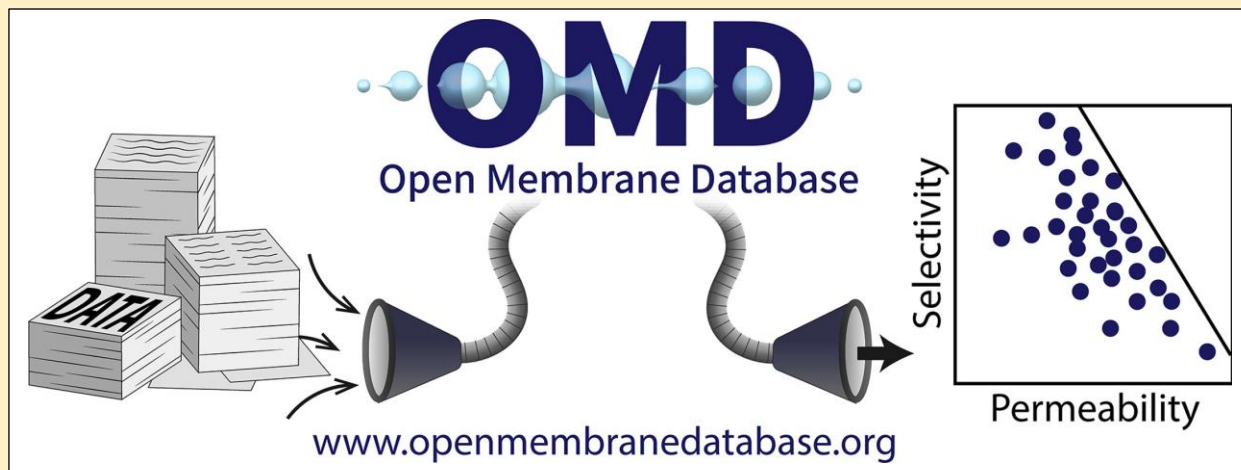


- **Dr. Nozipho GUMBI**, lecturer at University of South Africa, South Africa. She managed contributions from authors located in Southern Africa. Email: noziphongumbi@gmail.com;
- **Ms. Lina Rim FRADA**, PhD student at USTHB, Algeria. She managed contributions from authors located in Northern Africa. Email: fradalina04@gmail.com;
- **Dr. Mohamad DIEME**, lecturer at University of Ziguinchor, Sénégal. He managed contributions from authors located in Western Africa. Email: mohadieme@gmail.com;
- **Dr. Misgina Tilahun TSEHAYE**, Post-doc researcher in VITO, Belgium. He managed contributions from authors located in Eastern Africa. Email: misginabcen@gmail.com.

This special issue covers both original research papers and critical/comprehensive review papers on all aspects of membrane technology but biological membranes, and can be found in the following link: http://www.msjournal.com/issue_33980_33981.html.

By Sara Chergaoui

The Open Membrane Database (OMD) is a new crowd-sourced, open-access archive for membrane performance and characterization data of over 600 water purification and desalination membranes. It was founded by an international team of researchers from KU Leuven, Hong Kong University, Yale University, and Technion Israel Institute of Technology.



The database contains only data from peer-reviewed journals, patents, or commercial product datasheets to provide quality control. The user-friendly membrane submission tool allows researchers to upload their latest peer-reviewed membrane performance data and benchmark them against the state of the art. Thus, the OMD is a new platform for developing next-generation membranes with improved performance and disseminating results to the research community. Currently, the OMD contains only desalination membranes, although the goal is to incorporate nanofiltration, ion exchange and other membrane-based separations technologies in the future. For more details, or to explore the database, visit openmembranedatabase.org. If you want to get involved, please get in touch via info@openmembranedatabase.org.

By Dr. Rhea Verbeke



The symposium was organized by the Moroccan Membrane and Desalination Society (MMDS), the Laboratory of Materials, Membranes, and Environment - Hassan II University of Casablanca, and the Laboratory of Advanced Materials and Process Engineering - Ibn Tofail University of Kenitra. This symposium aimed at bringing together academics, researchers, and stakeholders from all activities sectors, in the fields of nanomaterials and membrane science.

Topics included:

- Nanomaterials and Membrane for Water
- Nanomaterials and Membrane for Energy
- Nanomaterials and Membrane for Environment
- Desalination and membranes technologies
- Innovative wastewater treatment and reuse
- Desalination and Agriculture

The problem of water, energy and climate change are among the most urgent priorities of our societies because they are essential to their socio-economic development. Efforts should be made to improve the quantity but also the quality of water directly linked to the consequences on health. The techniques used are highly energy-dependent, some regions lack the energy necessary to allow the population to have sustainable access to water.

Additionally, nanomaterials and membranes grow rapidly and affect many aspects. Hundreds of products already use nanomaterials and membranes. Membrane technologies offer new opportunities for technological innovation and are widely used in water treatment, environmental protection, and desalination.

Plenary Speakers (Profs):

- Menachem ELIMELECH, Yale University, USA
- Murielle RABILLER - BAUDRY, ISCR - Rennes, France
- Andrea Iris SCHÄFER, KIT, IAMT, Germany
- Philippe MIELE, IEM, ENSCM, Montpellier, France
- Alberto FIGOLI, ITM - CNR, Rende, Italy
- Mahmoud HAFSI, MMDS, Morocco
- Mohamed TAKY, MMDS - Ibn Tofail University, Morocco
- Mihail BARBOIU, IEM, UM - CNRS, Montpellier, France
- Raja BEN AMAR, University of Sfax – Tunisia
- Sudip CHAKRABORTY, University of Calabria, Italy

By Prof. Saad Alami Younsi



Dr. Alexander Anim-Mensah received recognition of

Dr. Alexander Anim-Mensah was present at the Ghana Diaspora Public Affairs Collective (GHPAC) inaugural Golden Gala Awards and Symposium on Saturday September 24th, at the Renaissance Hotel Downtown Washington, D.C., during which he was honored for his contributions made in the field of membrane science and technology.

The 2022 GHPAC Golden Gala and Awards Symposium will be held ahead of the United



States 51st Annual Legislative Conferences (ALC) of the Congressional Black Caucus (CBC) Convention and will also honor members of Congress who are committed to focusing on policies that advance U.S.-Ghana diplomatic and bilateral trade relations as members of the inaugural Congressional Ghana Caucus.

Learn more about Dr. Anim-Mensah at: https://en.m.wikipedia.org/wiki/Alexander_Anim-Mensah



Prof. Nouredine Ghaffour joins the editorial board of Desalination

Noredine Ghaffour is a Professor at KAUST. He has over 27 years of experience in the field of drinking water treatment technologies, and has specialized in the area of membrane and thermal desalination processes. Over the years, he has made major contributions becoming an internationally recognized expert in desalination technologies and its related fields. He obtained his PhD from Montpellier University, France, in 1995.

Dr Eng. Ghofrane LOUHICHI, from Tunisia, defended her thesis under the scientific supervision of Prof. Ahmed GHRABI and Dr Eng. Imen KHOUNI.

Ghofrane defended her thesis on Wednesday October 20, 2021 at the Faculty of Sciences of Bizerte (Université de Carthage–Tunisia). Her doctoral research work is entitled

“Treatment of vegetable oil refinery waste water for recycling and/or reuse. Application of its valorization in the saponification process”

The jury committee members were as follows:



- Mr. Ezzedine MAHMOUDI, Professor at the Faculty of Sciences of Bizerte (FSB), President of the jury.
- Mr. Abdelwaheb CHATTI, Associate Professor at the Faculty of Sciences of Bizerte (FSB), Referee.
- Mrs. Dorra JELLOULI, Associate Professor at the National Center for Research in Materials Sciences (CNRSM), Referee.
- Mr. Ahmed LANDOLSI, Professor at the Faculty of Sciences of Bizerte (FSB), Examiner.
- Mr. Ahmed GHRABI, Professor and General Director of the Water Research and Technologies Center (CERTE) at Technopôle de BorjCedria, Supervisor.
- Mrs. Imen KHOUNI, Associate Professor the Wastewater and Environment Laboratory (LabEaue) of CERTE, Supervisor.

With the presence and oral intervention of national and international renowned experts:

- Dr. Abdoulaye DOUCOURE, Chief Scientist at Hollingsworth & Vose, Virginia (USA), then President of the African Membrane Society
- Pr Philippe MOULIN, Director of « Laboratoire de Mécanique, Modélisation et Procédés Propres », Aix-Marseille University , Aix-En Provence (France) ;
- Mr Haithem MANSOUR, Head of Energy Department at the ‘Société Mutuelle Centrale de Services Agricoles et Industriels (ZOUILA company), Mahdia, (Tunisia).



Dr. Ghofrane LOUHICHI also won the prize of the best Ph.D. thesis of the year 2021 in Tunisia 🏆 Congratulations !!



My name is Rita Namoe TABI. I am a Ghanaian, born in the northern part of Ghana in a town called Nyankpala. However, my hometown is Chereponi, also located in the northern part of Ghana.

I serve on the current AMSIC board of directors as a co-director of New Talent and Leadership Committee. I am also a member of the Ghana Institution of Engineering.



I had my undergraduate studies at the Kwame Nkrumah University of Science and Technology (KNUST) Ghana, from 2012 to 2016 (<https://virtualtour.knust.edu.gh/>). I studied Materials Engineering and worked on the Extraction and Characterisation of Plantain and Banana Fiber, for my final year thesis.

After my undergraduate studies, I served at the Technology Consultancy Centre (TCC) as a Research Assistant. TCC is one of the research centres under the College of Engineering at KNUST, but currently being made a United Nations Educational, Scientific and Cultural Organisation (UNESCO) Centre of Excellence in Engineering Innovation, Manufacturing and Technology Transfer in Ghana.

During the period I served at the TCC, I managed the Cookstove Testing and Expertise Laboratory (C-Lab) of the Centre and co-authored a paper on improved institutional cookstoves.

In 2018, I gained admission to pursue a Master of Philosophy in Materials Engineering at KNUST. Over the period of the program, I worked as a Graduate Assistant and saw to the day to day activities of the Materials Engineering Laboratory together with another Graduate Assistant. Also, I helped to moderate laboratory sessions for third year students and assisting final year students with their project works. I specifically worked with three final year students to develop a polymeric nanofiber membrane for the removal of inorganic micropollutants from water. I co-authored two review papers on Graphene for Flexible Photovoltaic Devices and MoS₂ for Hydrogen Evolution Reactions as well.

My thesis was based on the synthesis of zeolite from kaolin for defluorination, a portion of this has been published. A large proportion of the inhabitants in the northern part of Ghana use groundwater for their everyday needs. Most of the communities have groundwater that contains fluoride in concentration beyond the acceptable limits. The water tends to impact their lives negatively, mostly in the form of dental and skeletal fluorosis. The goal of the project was to develop a defluorination tool with most of its components from readily available local materials.



Currently, I am a PhD candidate of Water Supply and Treatment Technology, at the Regional Water and Environmental Sanitation Centre, Kumasi (RWESCK), at KNUST. I am being funded through the ACE-Partner project, which is sponsored by Institut de Recherche pour le Développement (IRD), French Development Agency (AFD) and the world bank. My thesis is based on artificial water channels, embedded in polyamide membranes. The overall aim of the project is to develop a spiral wound membrane module system, that will be incorporated in groundwater supply systems of small communities of Ghana.

I had the opportunity to attend the AMSIC-3 which was held in Dakar, Senegal. At the congress, I received a practical hands-on training on membrane system installations and application through a 2-day workshop. It was a great experience for me, as it was my first physical contact with membrane systems. We used a ceramic tubular membrane system to filter some fruit juice and also used a plate and frame membrane system to filter some water and worked out the mass balances. The presentation that got my attention highly and peaked my interest in filtration sciences was delivered by one of the plenary speakers, Dr Mihail Barboiu of the European Institute of Membranes at University of Montpellier, France. His presentation was titled "Artificial Water Channels - Toward Biomimetic Membranes for Desalination". I had already been reviewing literature for my thesis and had not come across biomimetic membranes. So it was really fascinating and after his presentation, I did a lot of reading on these membranes and decided to work on it for the thesis. I have since been in contact with Dr Barboiu and hope to work with him on the thesis.

My research interests are smart materials, nanotechnology, membrane technology and groundwater treatment.



Publications

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AMSIC Membrane Education Group:

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Dr. Abaynesh Yihdego Gebreyohannes, AMSIC general secretary
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Dr. Abdoulaye Doucoure, AMSIC co-director Academy-Industry and professional training –
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Courses delivered in 2021:

Instructor	Course contents
Prof Raja Ben Amar	Low cost membranes preparation and applications
Prof Michael Daramola	Membrane gas separation
R. Vijayakumar, PhD	Non-woven fibrous filtration/ solid capture in air filtration
Prof Ludovic Dumée	Materials for separation, desalination processes, material characterization and academic writing
Prof Noredine Ghaffour	Water desalination technologies (membrane technology for desalination, pretreatment for seawater desalination membranes, desalination thermal processes)

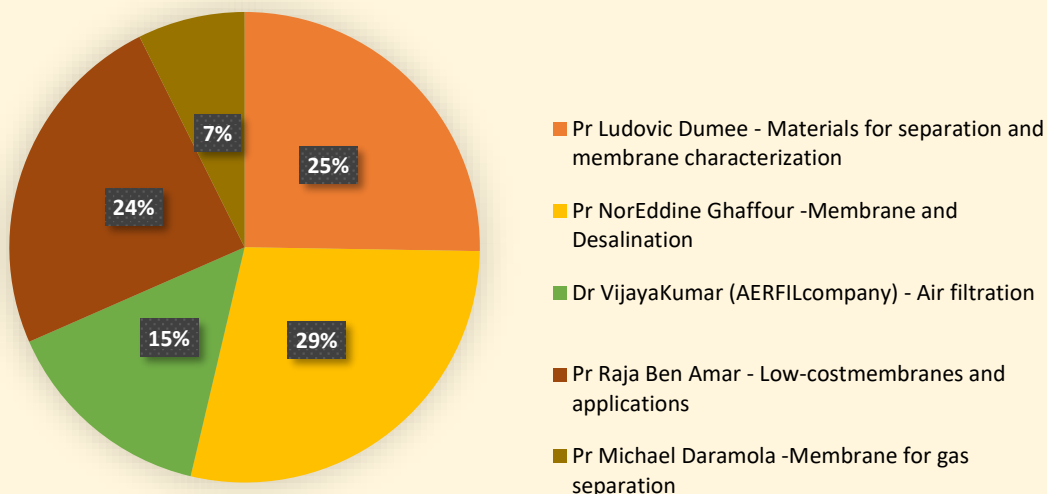
Participation

- Number of students who registered for AMSIC 2021 courses: 58
- Number of students who completed the survey: 31

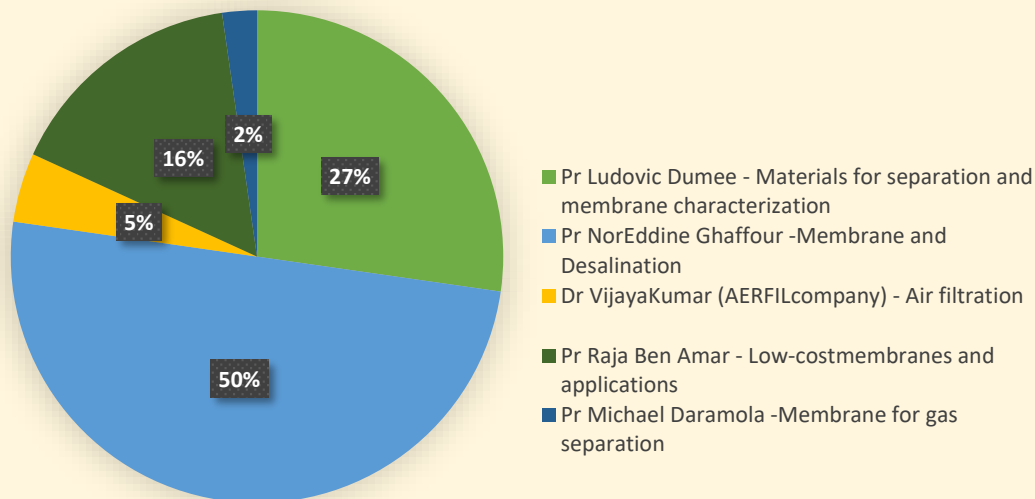
Survey summary

- 58% of participants were experienced in the membrane field, while the remaining 42% were beginners;
- 58% preferred the 60-minute class sessions while 32 and 10% and 45 and 90 minute-class ones;
- 62% follow the course sessions using a desk computer or a laptop, while the rest use their phones;
- 84% did not face difficulty with English as the language of instruction, 31% though would prefer to have French as an alternative language;
- 71% did not face difficulty in fitting the courses into their schedule;
- 77% could dedicate at least 2 hours a week for homework per course;
- It was important for 94% of the participants to receive a certificate upon completion of the course;
- 49% of participants found the course “Membrane and Desalination,” by prof. NorEddine Ghaffour, the course with best teaching strategy;
- 28% of participants found the course “Air filtration,” by Dr. VijayaKumar the most difficult one;
- 81% had no difficulty having internet access;
- 71% are still interested in learning about membrane technology;
- The highest populations were from Algeria, Morocco and Nigeria;
- 46% of participants prefer 14:00 – 18:00 time slots;

- Most courses that were attended were:



- Attendees found the course “Materials for separation and membrane characterization,” the most informative:



Survey conducted by

Salé Diallo (Mali): Chemical Process Engineer, graduate student, Ecole Nationale d'Ingénieurs Abderhamane Baba Toure, ENI-ABT – BP242, Bamako – Mali (2salediallo@gmail.com).

Dr. Sara Ouali (Algeria): Obtained her PhD from USTHB (Bab-Ezzouar, Algiers) and Université de Rennes, Ecole Nationale Supérieure de Chimie de Rennes, CNRS, ISCR - UMR6226, F-35000 Rennes – France (sarah-kivoke@hotmail.fr).

Want to learn about AMSIC?

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Become AMSIC member?

Send applications to both contacts:

- ✓ AMSIC President, Pr Raja Ben Amar:
benamar.raja@yahoo.com
 - ✓ AMSIC General Secretary Dr. Abaynesh Y.
Gebreyohannes: abayneshy@yahoo.com
-

AMSIC Newsletter Submissions

Please send news, announcements, and other contributions for the newsletter to the editor, Ms. Sara Chergaoui:

chergaouisara@gmail.com

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