

Dr. Rahma Tamime
Lahore School of Economics
Barki Road, Lahore Pakistan
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Academic Positions

01/2012 --- **Assistant Professor**

Department of Environmental Sciences and Policy
Lahore School of Economics, Pakistan

Teaching: Analytical Research Methods (M.Phil), Environmental Chemistry (M.Phil), Solid and Hazardous Waste Management (MPhil), Ecology of Water (MPhil), Introduction to Environmental Science (BS), Environmental Issues (BBA)

2008-2011 **Research Engineer**

Suez Environment, France

Education

2008-2011 **PhD in Environmental Sciences**

Specialization: Membrane Technology in Water Treatment
Université de Paul Cézanne, Aix-Marseille University, France.

Thesis title: Microscopic and optical characterization of organic membranes: An application to the production of drinking water. At M2P2 UMR7340, Centrale Marseille, France.

2006-2007 **Master of Science in Geosciences and Civil Engineering (M2)**

Specialization: Science and management of soil and water.
Université Henri Poincaré, Nancy, France.

Thesis title: Coagulation/flocculation/ultrafiltration for natural organic matter removal in potable water production. At Le Laboratoire environnement et minéralurgie (LEM) UMR 7569, Nancy

2005-2006 **Master of Science in Biology (Environmental Engineering; M1)**

Specialization: Environmental Engineering (urban and industrial)
Université Henri Poincaré, Nancy, France.

Thesis title: Effect of exudates and surfactants on Rhizodegradation of PAHs in soil.

2004-2005 **Bachelor of Science in Biology (Cellular biology and physiology)**

Université Henri Poincaré, Nancy, France.

Research interests

Membrane technology; Membrane characterization; Mixed Matrix Membranes; Micro & ultra-filtration, Reverse Osmosis; Forward Osmosis; Water treatment; Gas separation; Pervaporation.

Journal Publications

- Rational design of sustainable thin-film composite membranes: Computational and experimental investigation of deep eutectic solvents as a green alternative to hexane for enhanced desalination performance. **Results in Chemistry**, 2025. Joint with Rana, Hassan, Khan, Bazmi, Yasin, Gilani, Akhtar, Aslam, Niazi, AlMohamadi, and Khan.
- Tailoring Thin Film Composite Membranes for Enhanced Removal of Heavy Metals from Water. **Journal of Applied Polymer Science**, 2024. Joint with T. Sahar, M. Usman, H. AlMohamadi, R. Nawaz, T. Anjum, AL Khan
- Synergistic CO₂ capture using PANI-polymerized UiO-66 embedded in PEBAX mixed matrix membranes. **Carbon Capture Science & Technology**, 2024. Joint with T. Ishaq, S. Bano, F. Akhtar and AL. Khan
- Enhanced gas separation performance of PIM-1 blend membranes incorporating ionic liquid (3-(trimethoxysilyl) propan-1-aminium acetate ([APTMS][Ac])) as filler: Investigation of morphology, compatibility and transport properties. **Fuel**, 2023. Joint with H. Amir, Z. Shamair, AL. Khan, H. AlMohamadi, R Nawaz.
- Enhancing the organophilic separations with mixed matrix membranes of PIM-1 and bimetallic Zn/Co-ZIF filler. **Separation and Purification Technology**, 2022. 283, 120216. Joint with Butt, T. H., Budd, P. M., Harrison, W. J., Shamair, Z., & Khan, A. L.
- Mixed-Matrix Membranes Comprising of Polysulfone and Porous UiO-66, Zeolite 4A, and Their Combination: Preparation, Removal of Humic Acid, and Antifouling Properties. **Membranes**, 2020, 10(12), 393. Joint with Anjum, T & Khan, A. L.
- Mixed matrix membranes comprising of polysulfone and microporous Bio-MOF-1: Preparation and gas separation properties. **Separation and Purification Technology**, 2019. 210, 442-451. Joint with Ishaq, S., Bilad, M. R., & Khan, A. L.
- Morphological analysis of flat and hollow fiber membranes by optical and microscopic methods as a function of the fouling. **Journal of Membrane Science**, 2014. Vol. 472. Joint with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin.
- Chemical Characterization by Microscopic and Scattering Methods: Multiscale structure. **Membranes**, 2011 Vol. 1(2), pp 91-97. Joint with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin,

Papers with completed experiments/under review

- *Sustainable Synthesis of Thin-film Composite Membranes using Deep Eutectic Solvents and Green Alternative to Hexane for Enhanced Desalination Performance*. **Brief description:** This study introduces a novel approach for fabricating thin-film composite (TFC) membranes by replacing hexane with deep eutectic solvents (DES) as the organic phase in interfacial polymerization.
- Novel Polydopamine and MIL-100 thin film nanocomposite reverse osmosis membrane for

- enhanced water flux and salt rejection. **Brief description:** A novel polydopamine/MIL-100 thin film nanocomposite (PDA/MIL-100-TFN) reverse osmosis (RO) membrane was developed by using layer-by-layer technique for improved water flux and salt rejection.
- *Studying the Effect Hydrophilic Deep Eutectic Solvent on the Performance and Antifouling Properties of Polysulfone Membrane. Brief description:* Addition of DES in PSf membrane resulted in higher flux and better antifouling properties without compromising on rejection of humic acid.
 - *Chlorine Resistant Thin Film Nanocomposite Membranes Containing –NH₂ Functionalized UiO-66. Brief description:* Lower loading 0.01% and 0.1% of both fillers UiO-66 and NH₂-UiO-66 showed better chlorine resistance as well an improved performance.
 - *ZIF-7/PSF Mixed matrix membrane: Synthesis ad performance for removal of chromium from water. Brief description:* MMMs were prepared by incorporating ZIF-7 nanoparticles into the PSF for the removal of chromium ions Cr(VI) from aqueous solution. Overall, the fabricated ZIF-7/PSF MMMs showed very high levels of rejection for a number of combinations of ZIF-7 loading and chromium feed concentration.

Conference Proceedings

- “Membrane characterization by microscopic and optical methods: powerful tool to control fouling, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *AWWA Membrane 2012, 27 Feb-1 Mars 2012, Glendale, Arizona, USA.*
- “Membrane characterization by microscopic and scattering methods: multiscale structure”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *IMSTEC 2010, Sydney, Australia, 22-26 November 2010.*
- “Morphologie de membrane et mécanismes de colmatage”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *Congrès MEMPRO 4, Marseille, France 6-8 Octobre 2010.*
- “Caractérisation microscopique de membranes organiques - Application à la production d’eau potable”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *Congrès EDSE, 29-30 Avril 2010, Cassis, France.*
- “Caractérisation de membranes organiques par techniques optiques”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *12ème Congrès SFGP, Marseille, France, 14-16 Octobre 2009.*
- “A study on membrane morphology by optical and microscopic methods”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *IWA 2009, Beijing, China, 1-3 September 2009.*
- “Organic membrane characterizations by optical and microscopic methods: drinking water application”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *Euromembrane 2009, University of Montpellier, France, 6-10 September 2009.*
- “High Resolution SEM to determine the pore size distribution of filtration membranes”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin *Euromembrane 2009, University of Montpellier, France, 6-10 September 2009.*
- “Morphological analyses of organic UF membranes: surface morphology and pore size

distribution”, with Y. Wyart, L. Siozade, I. Baudin, C. Deumié, K. Glucina, P. Moulin AWWA 2009 Pittsburg, USA, 5-7 May 2009.

Other academic activities

Theses supervision (MPhil Environmental Sciences)

Saba Khan (2017); Sudeeha Chaudhry (2018); Tanzila Anjum (2019); Tahreem Butt (2019); Hadiya (2019); Kiran Javed (2020); Mahreen (2021); Tayyaba (2021); Maimoona (2022); Farwa (2022); Tooba (2023); Faiqa (2023).

Communications in Conferences and Seminars

- International conference on Separation Processes. COMSATS, Lahore 2017.
- Energy Systems for sustainable development. COMSATS, Lahore 2014
- AMS6/IMSTEC10, The 6th conference of the Asian Membrane Society
In conjunction with 7th International Membrane Science and Technology Conference, Sydney, Australia, 22-26 November 2010.
- MEMPRO IV Intégration des membranes dans les procédés, Marseille, France, 6-8 Octobre 2010.
- 12^{ème} Congrès de la Société Française de Génie des Procédés (SFGP), Marseille, France, 14-16 Octobre 2009.
- 5th IWA Specialized Membrane Technology Conference for Water & Wastewater Treatment, Beijing, China, September 1-3 2009.
- Euromembrane (2009), September 6-10 2009, Montpellier, France.
- AWWA 10th Biennial Membrane Technology Conference & Exposition, Memphis, USA, March 15-18 2009.
- CMOI 2008, 9^{ème} colloque international francophone du Club Contrôles et Mesures Optiques pour l'Industrie, 17-21 Novembre 2008, Nantes, France.
- International Congress on Membranes and Membrane Processes (2008), Honolulu, USA.