

---

# Saif Al Aani, Ph.D., M.Tech.

♦ Baghdad, Iraq ♦ (+964) 7817677738 ♦ saif06\_chemeng@yahoo.com

---

## MANUFACTURING, PURIFICATION LEAD

---

**Process Development ▪ Filtration ▪ Nanomaterials Synthesis ▪ Membrane Fabrication ▪ Membrane Modification ▪ Desalination ▪ Adsorption ▪ Enhanced Distillation ▪ Biotechnology ▪ Wastewater Treatment ▪ Particle & Surface Characterization ▪ Microscopy ▪ Equipment Design ▪ Equipment and Pipeline Flushing ▪ Surface Coating & Finishing ▪ Safety and Inspection ▪ Training**

---

**H**ighly motivated and driven chemical engineer and membranologist with over ten-years of international experience related to advanced filtration, membrane separation, water treatment and desalination, biotechnology, machinery inspection and power generation with industrial, academic and external partners. Expert level ability in membrane fabrication and modification techniques. Highly experienced in nanoscale material synthesis and functionalization, turning of nanomaterial surface characteristics, and hybridization. Solid knowledge regarding purification of various wastewater streams and developing membrane cleaning protocols. Expert in particle and surface zeta potential characterization, as well as additional prominent material and membrane characterization techniques. Solid understanding of wastewater purification and desalination using membrane technology through participation within a world-renowned research laboratory. Solid practical experience in water quality control. Well-versed in experimental design, problem solving, and data acquisition. Able to effectively document, analyze, and interpret scientific data. Proficient in developing and implementing batch records and standard operating procedures. Responsible for laboratory supervision, leadership of junior researchers, and equipment calibration/maintenance.

---

### Technical Skills

- Polymeric Membrane Fabrication (Phase Inversion)
- Nanocomposite, TFC and TFN membrane fabrication
- Carbon Nanotube Purification and Functionalization
- Metal/Metal Oxide Nanoparticle Fabrication
- Coating and Decoration of Nanomaterials.
- Biological Fouling Analysis
- Depth Filtration
- Tangential Flow Filtration
- Surface wettability measurements
- SEM and EDX
- Thermogravimetric Analysis (TGA)
- Raman Spectroscopy (Renishaw)
- Mechanical Tester (Instron 1162)
- Fourier Transform Infrared Spectrophotometry (FT-IR)
- Atomic Absorption Spectrophotometry (Perkin Elmer)
- Centrifugation
- X-ray Photoelectron Spectroscopy (XPS)
- SOP Generation
- Particle Sizing and Charge (Zetasizer, Mastersizer)
- Surface Area and Pore Size Determination
- Total Organic Carbon Analysis (Shimadzu TOC-L)
- Surface Zeta Potential (DLS/EKA)
- Microsoft Office
- MATLAB
- CASA XPS

---

## Experience

**Chemical Engineer—** (Division of mechanical and chemical activities) **2018 — Present**  
Ministry of Electricity, General directorate of Energy Production Projects, Iraq.

**Research Assistant —** Al-Rafidain University College, Iraq **2018 — Present**  
Sustainable Energy Research Centre

**Research Assistant —** Swansea University, UK **2014 — 2018**  
Centre for Water Advanced Technologies and Environmental Research (CWATER)

- Conducted ground-breaking research within the CWATER culminating in peer-reviewed publications within world-renowned journals and books
- Reviewer for Desalination – a world leading publication related to advancements in desalination and membrane science technology (**Impact factor 6.603**).
- Reviewer for journal of Membrane science — a world leading publication related to advancements in membrane science technology; fabrication, modification and application (**Impact factor 6.578**).
- Reviewer for journal of Membrane science and Research – a world leading journal related to membrane processes, smart membranes, process modeling and optimization, fouling and modules.
- Areas of expertise include fabrication and characterization of membranes and nanomaterials, desalination, water and wastewater treatment, adsorption and process development.
- Supervised two M. Eng. graduate research projects.

Teaching:

EGCM38: Membrane Technology module

- Respond to student inquiries and concerns regarding the course and assignments
- Train students to properly use pilot-scale filtration equipment, develop efficient cleaning protocols, and perform relevant process performance calculations
- Grade student assignments and exams

EGA119: Excel/Bloodhound Project — Computational Lab

- Respond to student inquiries and concerns regarding the course and assignments
- Grade student assignments and exams

**Chemical Engineer—** (Zubaidia Thermal power plant, Iraq) **2011 – 2014**  
Ministry of Electricity, in collaboration with Shanghai Electric Group Co., Ltd.

- Responsible for the installation, operation, and maintenance of water treatment units
- Ensured all mechanical equipment was flushed and primed for optimal process performance
- Conducted quality control and analysis for boiler units

**Chemical Engineer—** (Al Jadiriah Diesel power plant, Iraq) **2008 – 2011**  
Ministry of Electricity, in collaboration with Hyundai Heavy Industries Co., Ltd

- Installation, operation and periodical maintenance of advanced water treatment units.
- Installation, operation and maintenance of HFO purifiers and oily water separators
- Maintenance and control analysis of cooling system water.
- Boiler's water quality control and analysis.
- Hydrostatic test for pipelines.
- Flushing process for engines and mechanical equipment.
- Flushing of diesel oil, heavy fuel oil, water, steam, lubes oil and air pipelines.

- Visual test, radiography test, settlement test and vacuum test for storage tanks.

---

### Education

<b>Doctor of Philosophy (Ph.D.), Chemical Engineering</b> Swansea University — Wales, United Kingdom	<b>2018</b>
<b>Master of Technology, Chemical Engineering</b> Guru Gobind Singh Indraprastha University — New Delhi, India	<b>2008</b>
<b>Bachelor of Science (B.Sc.), Chemical Engineering</b> University of Baghdad — Baghdad, Iraq	<b>2005</b>

---

### Honors and Awards

<b>Talented Researchers Medal</b> Iraqi cultural attaché, UK	<b>2018</b>
<b>Acknowledgments award</b> Minister of Higher Education and Scientific Research, Iraq	<b>2018</b>
<b>Certificate of appreciation</b> Hyundai Heavy Industries CO. LTD	<b>2012</b>

---

### Service and Community Activities

<b>Member</b> The Association of Iraqi Academics in the UK	<b>Since 2018</b>
<b>Volunteer</b> Books Donation Campaign in the UK for Supporting University of Mosul Library	<b>2018</b>

---

### Peer Reviewed Publications and Books

- Al Aani, S.,** Wright, C. J., Atieh, M. A., & Hilal, N. (2017). Engineering nanocomposite membranes: Addressing current challenges and future opportunities. *Desalination*, 401, 1-15.
- Thomas, T. E., **Al Aani, S.,** Oatley-Radcliffe, D. L., Williams, P. M. & Hilal, N. 2017. Laser Doppler Electrophoresis and electro-osmotic flow mapping: A novel methodology for the determination of membrane surface zeta potential. *Journal of Membrane Science*, 523, 524-532.
- Al Aani, S.,** Gomez, V., Wright, C. J., & Hilal, N. (2017). Fabrication of antibacterial mixed matrix nanocomposite membranes using hybrid nanostructure of silver coated multi-walled carbon nanotubes. *Chemical Engineering Journal*, 326, 721-736.
- Al Aani, S.,** Haroutounian, A., Wright, C. J., & Hilal, N. (2018). Thin Film Nanocomposite (TFN) membranes modified with polydopamine coated metals/carbon-nanostructures for desalination applications. *Desalination*, 427, 60-74.
- Al Aani, S.,** Wright, C. J., & Hilal, N. (2018). Investigation of UF membrane fouling and potentials as a pre-treatment step in desalination and surface water applications. *Desalination*, in press.
- Al Aani, S.,** Bonny, T., Hasan, S. W., & Hilal, N. (2019). Can machine language and artificial intelligence revolutionize process automation for water treatment and desalination?. *Desalination*, 458, 84-96.

---

<b>Relevant Training</b>	
<b>ISO 9001: 2008</b>	<b>2013</b>
<b>High Resolution Scanning Electron Microscope</b>	<b>2014</b>
<b>Liquid Nitrogen Handling</b>	<b>2014</b>
<b>Gas Cylinders Handling</b>	<b>2015</b>
<b>Biosafety Level I and II</b>	<b>2015</b>
<b>Essential Lab Skills and Biosafety in Bacteriology</b>	<b>2015</b>
<b>Malvern Instruments Surface Characterization</b>	<b>2016</b>
<b>X-ray Diffraction</b>	<b>2016</b>
<b>Membrane Separation</b>	<b>2016</b>

---