

# CURRICULUM VITAE



## PERSONAL DETAILS

### Noredine GHAFFOUR

**Permanent Address**

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**Work Address**

Water Desalination and Reuse Center (WDRC)  
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44 years, French, Married with three children

## PROFESSIONAL SUMMARY AND KEY SKILLS

- Wide experience in *Process Engineering: Water Desalination Technologies* (Membrane & Thermal-based Processes, Economics, Environmental & Energy aspects), *Water treatment & Reuse technologies*.
- Extensive experience (Academic & Industry) in *Membrane Separation Technologies*.
- Wide experience in *Drinking Water Technologies* (R&D, Consultancy, Problem solving, Design, Optimisation and Marketing).
- Wide experience in *Teaching* (BSc, MSc, PhD Students) and delivering international *Intensive Courses/Workshops* for attendees of different levels (faculty, researchers, plant managers and decision makers, engineers, operators) in *Desalination, Potable Water Production* technologies & related topics.
- Extensive experience in *Water Projects Management, R&D & Capacity Building (research & education), Cost estimation, Budgeting and Financial analysis*.
- **Research interests:** Membrane fouling/scaling; Fouling indices; Innovative RO pretreatment & intake systems; Innovative membrane cleaning techniques, Innovative energy efficient technologies (e.g. MD, FO, AD); RO systems design & optimization; MF, UF, NF applications; Desalination economics; Hybridization; Renewable energy-driven desalination technologies.
- Broad range of engineering knowledge including numerical analysis of heat, mass transfer & fluid flow.
- Substantial experience in using analytical equipment and instruments. Membrane characterization and water quality analysis.
- **Computer skills with high level of proficiency:** Windows; Ms Office; Ms Project; RO Design, CORMIX, Scaling, Costing, and Normalization software packages of different membrane and chemicals manufacturers. Other computer skills.

## EDUCATIONAL BACKGROUND AND QUALIFICATIONS

- 1997**      **Associate Professor (MCF)**, Qualification Number: 9726264996-97, CNU (French Universities National Council), President: Prof. Michel Maurage, Ministry of Higher Education, Research & Technology, Section 62 "**Energy & Process Engineering**", University of Bordeaux, France.
- 1992-1995**      **PhD** in Process Engineering and Water Treatment, Thesis subject on Membrane Separation Technology, Materials and Membrane Processes Laboratory, University of Montpellier, France.
- 1991-1992**      **MSc** in Mechanics of Materials, Structures and Water Engineering, Water Treatment and Process Engineering Department, Membrane Separation Technology Laboratory, University of Montpellier.
- 1986-1991**      **Engineer** in Mechanical Engineering and Energy, Boumerdes National Institute of Mechanical Engineering (NIME).

## PROFESSIONAL EXPERIENCE

**July 2010 Present** **Research Professor**, Water Desalination & Reuse Center (WDRC), Environmental Science and Engineering (EnSE): *Center Director: Prof. Gary Amy & Prof. TorOve Leiknes (since 2014)*, King Abdullah University of Science and Technology (KAUST), KSA.

- **Teaching EnSE325 Course** ‘Water Desalination Technologies’, for MSc & PhD students.
- **Research Team Leader (14 Directed Research, 7 MSc, 5 PhD, 4 Post-Docs, 2 Research Scientists)**  
*Research interest focuses on:* Membrane technology; Membrane Distillation (MD); Innovative low-energy desalination processes; Hybrid systems (e.g. FO-MD, MD-AD); Membrane fouling/scaling; Fouling indices; RO systems design & optimization; MF/UF for RO pretreatment; NF for scaling control in RO and MSF; Hazardous material removal (ex. boron, fluoride); Desalination economics; Renewable energy-driven desalination technologies; Industrial problem solving (performance evaluation).
- **Research projects grants** from industry (*Total: USD2.5m*)
  - KAUST Seed Fund 2012 Award: Project team: A. Alsaadi, L. Francis & N. Ghaffour, Project on novel MD module for seawater desalination application.
  - KAUST Seed Fund 2013 Award: Project team: N. Ghaffour, R. Rachman, M. Al Ghamdi, Project on ‘Development of a new membrane fouling index’.
  - KAUST Pre-Seed Fund 2014 Award: J. Saththasivam, Y. Singh, Y. Kim, N. Ghaffour, Project on ‘Rotary microbubbles generating device’.
  - Award: Cost effective RO concentrate treatment and brine management project, CH2M HILL-ConocoPhillips.
  - *Completed projects:* Dow (New methods for UF membrane cleaning in SWRO pretreatment)
  - *On-going projects:* Sabic (Biofouling control in cooling towers), Toyobo (Assessment of HFRO membranes fouling), Aramco (Membrane technology for produced water treatment).
  - *In progress/submitted proposals:* Sabic, SWCC, KA-CARE (collaboration with CH2MHill), NSF (USA).
  - *Submitted proposal:* CRG4 (3 projects) i) *Prof. TorOve Leiknes (Water-energt nexus in closed loop system)*, ii) *Dr. Lars Wegner (New RO biomimetic membrane for water desalination)*, iii) *Prof. Ying Sun (Water treatment monitoring and control)*.
  - *Under discussion:* Sabic, Veolia, CH2MHill, Nalco, Suez, Pall, GWSC-ConocoPhillips
- **Development of research projects in collaboration with local/international partners**
  - *Local collaborations*
    - On-going projects:*
      - *Prof Suzana Nunes:* MD membranes (for different applications: seawater, produced water)
      - *Prof Kim Choon Ng & team:* Hybrid AD-MD (Adsorption Desalination-Membrane Distillation)
      - *Prof Gary Amy & team:* Hybrid FO-MD (Forward Osmosis-Membrane Distillation)
      - *Prof Jean-Phillip Croue:* Deep membrane characterization and material transport in MD process
      - *Prof Hans Vrouwenvelder:* Biofouling (case study: SWRO plant in the Netherlands)
      - *Dr Harry Ridgway:* Understanding the mechanism of boron ions passage through RO membranes
      - *Profs Kim Choon Ng, Hans Vrouwenvelder, Dr. Shahnawaz Sinha (Sabic Project):* Biofouling and scaling control in cooling towers
    - Under development/discussion:*
      - *Prof Pascal Saikaly:* Integrating electrocoagulation (EC) process with microbial fuel cell (MFC)
      - *Prof Kim Choon Ng:* Integrating AD with DCMD/AGMD and MED
      - *Profs Gary Amy, Kim Choon Ng, Thomas Missimer, Mani Sarathy:* Life Cycle Analysis (LCA) of innovative desalination processes (FO, AD, MD)
      - *Prof Harvey Winters, Dr Shahnawaz Sinha:* Energy optimization in SWRO systems
      - *Profs KC. Ng, T. Missimer:* Combined Solar-Geothermal-driven AD-MD cycle
  - *International collaborations*
    - *Profs Stephen Gray, Jun-De Li,* Victoria University, Australia: MD modelling/simulation
    - *Profs Maria Kennedy, Jan Schippers, Dr. Sergio Salinas (IHE-UNESCO Water Institute, the Netherlands):* Development of the Modified Fouling Index (MFI-UF) at industrial scale
    - *Dr John Palmeri (INSA Toulouse, France):* NF modelling for scaling control in RO and MSF processes (under discussion)

➤ **Other Centre's responsibilities**

- Theme A Leader (Innovations in Desalination Processes and Systems)
- Member of the Center Management Committee (CMC): *Noredine Ghaffour, Pascal Saikaly, Suzana Nunes, Matt McCabe, TorOve Leiknes, Gary Amy*
- Attending faculty meetings (Center and Division)
- Participating in students' recruitment (interviews)
- Participate in preparing reports and presentations for: SAP, Centre's mid-cycle review, CIAP and KICP meetings

**2003-2010 Senior R&D and Capacity Building Project Manager (Director)**, Middle East Desalination Research Center (MEDRC): *Center Director: H.E. Ronald Mollinger*, International Institution registered in USA and supported by United States Bureau of Reclamation (USBR), headquartered in Muscat, Oman.

**Responsibilities (Academic and industry)**

**Research activities (Total Portfolio Value: US\$11.57million) 50:50% sharing Center/Partners**

- **R&D Water Projects Management** (Topics: Membrane & thermal processes, Hybrid processes, Non traditional & alternative processes, Intake & outfalls, Energy & Environmental issues, Assessment studies, Certification programs, software packages).  
**My team:** Drs Klaus Genthner, Reddy Venkat, Mousa AbuArabi, and Lynne Stuart.
  - Coordinate and review R&D projects with Project Advisory Committee (PAC) members.
  - Co-supervise (**15 MSc, 16 PhD students**), review & evaluate projects' reports (**75 R&D projects**).
  - Monitor the progress and handle administrative and financial functions of the projects.
  - Participate in Research Advisory Council (RAC) and Executive Council (EC) meetings.
  - Prepare technical & administration documents/reports, including Annual Reports and RFPs.
- **Research team leader/External students' co-supervision (8 MSc and 5 PhD)**. Topics: Membrane fouling modeling, RO pretreatment using UF membranes, SWRO/BWRO performance evaluation, enhancement and optimization of existing plants, different raw water quality treatment.  
*PhD/MSc students' names and research topics are presented in Appendix and list of papers.*
- **In-house research facility** (Facilities for testing new ideas and technologies under climatic and water quality conditions of the region, pilot plants for testing new concepts, chemical additives, apparatus for fouling control, pre-treatment, renewable energy).
  - Coordinate and follow-up of research facility construction.
  - Member of the committee in charge to set up laboratories equipment and pilot plants, contribute to installation & equipment requirements planning/purchasing. *Committee includes eminent international experts (Drs Kevin Price, Jan Schippers, Oded Fixler, Zaher Al-Suleiman, Venkat Reddy, Shannon McCarthy, and Noredine Ghaffour).*
- **Expertise/Consulting & Technical assistance in water desalination industry:** field consultancy, general and technical inquiries: operation, design, costing, research initiatives, water quality, environment and energy issues, contracting types.

**Teaching/Training activities:** 200 hours/year shared with other internationally known instructors/experts

- **Capacity Building & Training Programs** (40 intensive courses on different topics of water desalination and reuse technologies in integrated water resources management were conducted in different countries). Attendees include: faculty, researchers, plant managers, decision makers, consultants, engineers and operators.

**Courses include:** Thermal-based and membrane-based desalination technologies; theory and practice of RO membrane desalination; Mass and material transfer mechanisms; Membrane fouling and scaling; RO conventional and low pressure membranes pretreatment; Different raw water qualities and options of intake systems; Treated water quality and adjustments; Energy consumption; Desalination and the environment.

- Prepare database and develop new relationship in water sector worldwide.
- Identify the targeted participants and training needs (academic and industry) and establish the courses programs according to their specific needs.

- Preparation of exhaustive reports on Capacity Building and Training Programs for Executive Council Members and Governments (Japan, Korea, Germany, USA, Oman).
- University awareness and assistance for development of new curricula (BSc/MSc programs) in desalination and related fields.
- E-learning, forum, information network.
- **Partnership and information networks**
  - Technology transfer and dissemination of technical information.
  - Write articles in MEDRC newsletter ‘*Watermark*’ and newspapers and update MEDRC website.
  - Promote partnership, design tools, data banks.

**2002-2003 Consultant & Trainer**, FiltraTech, France.

**Activities**

- Research and lab application, design and realisation, optimisation, development and marketing of industrial filtration units (effluents and industrial waste liquid), desalination and water treatment plants.
- Teaching engineering students (water treatment and membrane separation technologies)

**1998-2002 Asst. Professor**, Mechanical Engineering Department, Jeddah College of Technology, KSA.

**Research** activity was done in collaboration with *The European Membrane Institute (IEM)*, Montpellier, France (Director: Prof. Louis Cot).

**Responsibilities**

- **Research Team Manager:** Topics include: Heat and mass transfer, Desalination, Water treatment, Membrane separation technologies, Oil refinery wastewater treatment.
- **Teaching subjects:** Water treatment technologies, Fluid mechanics, Thermodynamics, Mass and heat transfer, Principles of refrigeration and air conditioning (R&A/C), A/C systems and equipments. All these courses were prepared in official documents “**Teaching Books**” and placed in the College’s Library.
- **Final year projects supervisor** (Over 40 students)
  - Supervisor on implementing practical projects in the division.
  - Responsible for interaction between the division and industrial partners.
- **Member of the Department Scientific Council and Assistant to the Head of Mechanical Engineering Department**
- **Managerial activities**
  - Member of the Council of the College and handled several administration activities.
  - Overseeing set up of the department laboratories and workshops equipments/instruments.
  - Member of the Department Scientific Committee.
  - Member of the National Committee in charge of Curriculum Development (new syllabi were prepared).
  - Member of the College Advisory Committee.
  - Responsible for the student registration and staff time tables.
  - Member of the Committee responsible for implementing the ISO 9002 rules (with Canadian consultants).

**1995-1998 R&D Scientist (Post-Doc)**, Collaboration between Montpellier University and TOTAL Refinery Company, France, & Candidate for **Associate Professor** (Maître de Conférences) at CNU (French Universities National Council), Ministry of Higher Education, Research & Technology, Section 62 “*Energy & Process Engineering*”, University of Bordeaux (1997), France.

The **research** project focused on investigating and resolving an industrial wastewater discharge problem. Membrane processes (MF and UF) were used to meet the European environmental standards. A conventional treatment process (biological treatment) was used as pretreatment.

**Teaching:** Process engineering (Membrane technologies), Fluid mechanics.

**1992-1995 PhD student/researcher**, Laboratory of Process Engineering (Montpellier University) and Settler of Activated Sludge Plant of Montpellier City, France.  
Project’s Supervisor: *Prof. Dr.-Ing. Samuel Elmaleh*.

**Research project:** Cross-flow Ultrafiltration of Hydrocarbon and Biological Solid Mixed Suspensions. The aim of the project was to find a solution for an industrial wastewater discharge problem which contains variable concentrations of hydrocarbons, suspended solids and biological matter. Different inorganic membranes were tested to treat these effluents in order to meet the local/European discharge standards. A severe membrane fouling was resolved by developing an appropriate conventional pretreatment and in-situ membrane cleaning system. A fouling model was also developed in this study.

The other experience that was gained during this period can be summarized as follows:

- **Teaching subjects:** Thermodynamics and Fluid mechanics to engineering students.
- **Final year project co-supervisor** for 6 BSc and 2 Master's students.
- **Laboratory technical supervisor.**

**1991-1992 Master's Research Project,** Cross-flow ultrafiltration of hydrocarbon emulsions, settler of activated sludge plant of Montpellier, France.

### **Jury and Committee Memberships**

- Jury member for several PhD, MSc (DEA) and BSc (Eng.) defenses in different countries.
- Frequent participation in Scientific Committees and as Session Chairman in International Conferences.
- Member: Desalination & Water Treatment (**DWT**); Scientific Research Committee in different Universities and Research Centers; International Desalination Association (**IDA**), European Desalination Society (**EDS**), Global Water Intelligence/Water Desalination Report (**GWI/WDR**), American Water Intelligence (**AWI**), American Water Works Association (**AWWA**), International Water Association (**IWA**), Water Science & Technology Association (**WSTA**).
- Frequent reviewer for many international Journals/Magazines, such as JMS, WR, Desalination, WS&T, MSEC, IDA/AWWA, D&WR, D&WT, IJEE, and CAMS. Reviewer of several books and book chapters.
- Editorial Board member of: i) **Mediterranean Journal of Chemistry** & ii) **International Journal of Water Sciences**.
- Advisory editorial board member of the book series **Sustainable Energy Developments** published by CRC Press.

### **Awards**

- Seed Fund award, US\$200K, KAUST, 2013. Project: Reverse Osmosis Fouling Index (ROFix)
- Seed Fund award, US\$200K, KAUST, 2012. Project: Multi-Stage Membrane Distillation Module Design
- Pre-Seed Fund, US\$30K, 2014. Project: Innovative Membrane Cleaning Technique Using Microbubbles
- Granted US\$5.5m from industry/research centers for several R&D projects
- Granted US\$1.2m from different private/government institutions to develop capacity building programs
- Desalination costing paper selected as *Top Hottest Article* in 2007, Desalination economics paper, most downloadable paper in 2013, Desalination Journal. Best conference paper, EDS 2014, Cyprus
- Awarded the 'Youngest Engineer Degree Holder', 1991, and PhD Degree Holder, 1995

### **OTHER SKILLS/ACTIVITIES**

- Fluent in French, English and Arabic
- Strong international network in desalination community worldwide
- Industrial and scientific contacts, scientific activities
- Initiative, fast learner and team player
- Fast adaptability to new situations/changes in the work environment, good communicator
- Co-founder of 2 Start-ups (GreenDesal and ROFix)
- Frequent speaker in International Conferences/Workshops/Seminars (including in Plenary Sessions)
- Consultant/expert in Desalination: A2E-Group (France), MEDRC, West Asia & North Africa (WANA) Water Forum/Experts
- Co-founder/Board member of regional/local water related associations in different countries

## PEER-REVIEWED RESEARCH PAPERS/BOOK CHAPTERS

**Published 189 manuscripts distributed, as follows: as of March 2015 (based on Scopus/Web of Science/Google Scholar). h-index: 23**

- 69 journal papers published in different Journals
- 92 Conference proceeding papers
- 23 Plenary/Keynote Session Presentations
- 6 Book Chapters and 3 submitted/under preparation
- 8 Patents/IP

### **Patents/IP (under preparation/filing to KAUST-PTSA)**

- Spiral-Shaped Disinfection Reactor, *U.S. Provisional Application No. 61/942,357*, Feb. 2014.
- Vacuumed Gap Membrane Distillation (VAGMED) Module, Multi-Stage VAGMED Systems, and VAGMED processes, *U.S. Provisional Application No. 62/095,136*, Dec. 2014.
- Osmotically and thermally isolated forward osmosis-membrane distillation (FO-MD) integrated module for water treatment applications, *U.S. Provisional Application No. 62/121,026*, Feb. 2015.
- Submerged membrane distillation for desalination of water, *U.S. Provisional Application No. 62/152,061*, Apr. 2015.
- Method for Hybridized Desalination System Using Membrane Distillation and Adsorption Desalination Cycles (KAUST-NUS Singapore), *Revised*
- Rotary Microbubbles Generating Device, *submitted*
- Reverse Osmosis Fouling Index (ROFix)
- On-line DO Membranes Cleaning

### **Published/in press peer-reviewed journal papers**

1. A. Alsaadi, L. Francis, H. Maab, G. Amy, N. Ghaffour, Evaluation of air gap membrane distillation process running under sub-atmospheric conditions: Experimental and simulation studies, *Journal of Membrane Science* 489 (2015) 73-80.
2. Z. Li, R. Valladares Linares, S. Bucs, C. Aubry, N. Ghaffour, J.S. Vrouwenvelder, G. Amy, Calcium carbonate scaling in seawater desalination by ammonia-carbon dioxide forward osmosis: Mechanism and implications, *Journal of Membrane Science* 481 (2015) 36-43.
3. J.-G. Lee, Y.D. Kim, W.S. Kim; L. Francis, G. Amy, N. Ghaffour, Performance modeling of direct contact membrane distillation (DCMD) seawater desalination process using a commercial composite membrane, *Journal of Membrane Science* 478 (2015) 85-95.
4. J. Bundschuh, N. Ghaffour, H. Mahmoudi, M. Goosen, S. Mushtaq, J. Hoinkis, Low-cost low-enthalpy geothermal heat for freshwater production: Innovative applications using thermal desalination processes, *Renewable and Sustainable Energy Reviews*, 43 (2015) 196-206.
5. N. Ghaffour, J. Bundschuh, H. Mahmoudi, M.F.A. Goosen, Renewable energy-driven desalination technologies: A comprehensive review on challenges and potential applications of integrated systems, *Desalination* 356 (2015) 94-114.
6. L. Francis, N. Ghaffour, A. Al-Saadi, G. Amy, Submerged membrane distillation for seawater desalination, *in press, Desalination and Water Treatment*, <http://dx.doi.org/10.1080/19443994.2014.946716>.
7. L. Francis, N. Ghaffour, A. Al-Saadi, G. Amy, Performance of different hollow fiber membranes for seawater desalination using membrane distillation, *in press, Desalination and Water Treatment*, <http://dx.doi.org/10.1080/19443994.2014.946723>.
8. A. Ramdani, S. Taleb, A. Benghalem, A. Deratani, N. Ghaffour, Enhancement of Saharan groundwater quality by reducing its fluoride concentration using different materials, *in press, Desalination and Water Treatment*, <http://dx.doi.org/10.1080/19443994.2014.910838>.
9. T.M. Missimer, P.M. Mai, N. Ghaffour, A new assessment of combined geothermal electric generation and desalination in western Saudi Arabia: targeted hot spot development, *in press, Desalination and Water Treatment*, <http://dx.doi.org/10.1080/19443994.2014.939868>.

10. L. Francis, N. Ghaffour, A.S. Alsaadi, G.L. Amy, Fabrication and characterization of functionally graded Poly(vinylidene fluoride)-silver nanocomposite hollow fibers for sustainable water recovery, *Science of Advanced Materials* 6 (2014) 2659-2665.
11. N. Ghaffour, S. Lattemann, T.M. Missimer, K.C. Ng, S. Sinha, G. Amy, Renewable energy-driven innovative energy-efficient desalination technologies, *Applied Energy* 136 (2014) 1155-1165.
12. A. Alsaadi, L. Francis, H. Maab, G. Amy, N. Ghaffour, Experimental and theoretical analyses of temperature polarization effect in vacuum membrane distillation, *Journal of Membrane Science* 471 (2014) 138-148.
13. T. Missimer, R. Maliva, N. Ghaffour, T. Leiknes, G. Amy, Managed aquifer recharge (MAR) economics for wastewater reuse in low population Wadi Communities, Kingdom of Saudi Arabia, *Water* 6 (2014) 2322-2338.
14. T.M. Missimer, N. Ghaffour, G. L. Amy, Groundwater management using spatial and temporal aquifer zoning, *Journal of the American Water Works Association (AWWA)* 106 (6) (2014) E278-288.
15. M. Goosen, H. Mahmoudi, N. Ghaffour, Today's and future challenges in applications of renewable energy technologies for desalination, *Critical Reviews in Environmental Science & Technology* 44 (2014) 929-999.
16. S. Zekri, M. Ahmed, R. Chaieb, N. Ghaffour, Managed aquifer recharge using quaternary-treated wastewater: an economic perspective, *International Journal of Water Resources Development* 30 (2014) 246-261.
17. I. Feddal, A. Ramdani, S. Taleb, E.M. Gaigneaux, N. Batis, N. Ghaffour, Adsorption capacity of methylene blue, an organic pollutant, by montmorillonite clay, *Desalination and Water Treatment* 52 (2014) 2654-2661.
18. L. Francis, N. Ghaffour, A. AlSaadi, S. Nunes, G. Amy, PVDF hollow fiber and nanofiber membranes for fresh water reclamation using membrane distillation, *Journal of Materials Science* 49 (2014) 2045-2053.
19. L. Francis, N. Ghaffour, A. Al-Saadi, S.P. Nunes, G. L. Amy, Performance evaluation of the DCMD desalination process under bench scale and large scale module operating conditions, *Journal of Membrane Science* 455 (2014) 103-112.
20. L. Francis, N. Ghaffour, A. Alsaadi, G. Amy, Material gap membrane distillation: A new design for water vapor flux enhancement, *Journal of Membrane Science* 448 (2013) 240-247.
21. G. Amy, N. Ghaffour, K.C. Ng, Z. Li, Recent developments in low-energy desalination technologies: forward osmosis, membrane distillation, and adsorption desalination, Water Environment Federation (WEF), *World Water: Water Reuse & Desalination*, Autumn issue 4 (2013) 12-13.
22. H. Maab, A. Alsaadi, L. Francis, S. Livazovic, N. Ghaffour, G.L. Amy, S.P. Nunes, Polyazole hollow fiber membranes for direct contact membrane distillation, *Industrial & Engineering Chemistry Research* 52 (2013) 10425-10429.
23. A. Alsaadi, N. Ghaffour, J.D. Li, S. Gray, L. Francis, H. Maab, S. Nunes, G. Amy, Modeling of air-gap membrane distillation process: A theoretical and experimental study, *Journal of Membrane Science* 445 (2013) 53-65.
24. T.M. Missimer, N. Ghaffour, A.H.A. Dehwah, R. Rachman, R.G. Maliva, G. Amy, Subsurface intakes for seawater reverse osmosis facilities: Capacity limitation, water quality improvement, and economics, *Desalination* 322 (2013) 37-51.
25. B. Zeboudji, N. Drouiche, H. Lounici, N. Mameri, N. Ghaffour, The influence of parameters affecting boron removal by electrocoagulation process, *Separation Science and Technology* 48:8 (2013) 1280-1288.
26. Y. Zarag, H. Beb Boubaker, N. Ghaffour, H. Elfil, Study of calcium carbonate and sulfate co-precipitation, *Chemical Engineering Science* 96 (2013) 33-41.
27. K.J. Loveless, A. Farooq, N. Ghaffour, Collection of condensate water: Global potential and water quality impacts, *Water Resources Management* 27 (2013) 1351-1361.
28. N. Ghaffour, T.M. Missimer, G.L. Amy, Technical review and evaluation of the economics of water desalination: Current and future challenges for better water supply sustainability, *Desalination* 309 (2013) 197-207. **Ranked No 1 on the most downloaded papers in 2013** (<http://www.journals.elsevier.com/desalination/>)
29. Y.D. Kim, K. Thu, N. Ghaffour, K.C. Ng, Performance investigation of solar-assisted hollow fiber DCMD desalination system, *Journal of Membrane Science* 427 (2013) 345-364.
30. N. Ghaffour, T. Missimer, G.L. Amy, Combined desalination, water reuse and aquifer storage and recovery to meet water supply demands in the GCC/MENA region, *Desalination & Water Treatment* 51 (2013) 38-43.
31. S.K. Al-Mashharawi, N. Ghaffour, M. Al-Ghamdi, G.L. Amy, Evaluating the efficiency of different MF and UF membranes used as pretreatment for RO Red Sea water desalination, *Desalination & Water Treatment* 51 (2013) 617-626.

32. L. Francis, H. Maab, A. Alsaadi, S. Nunes, N. Ghaffour, G.L. Amy, Fabrication of electrospun nanofibrous membranes for membrane distillation application, *Desalination & Water Treatment* 51 (2013) 1337-1343.
33. R.M. Rachman, N. Ghaffour, F. Waly, G.L. Amy, Assessment of silt density index (SDI) as fouling propensity parameter in reverse osmosis (RO) desalination systems, *Desalination & Water Treatment* 51 (2013) 1091-1103.
34. K. Rahmawati, N. Ghaffour, C. Aubry, G.L. Amy, Boron removal efficiency from Red Sea water using different SWRO/BWRO membranes, *Journal of Membrane Science* 423-424 (2012) 522-529.
35. N. Drouiche, N. Ghaffour, M.W. Naceur, H. Lounici, Towards sustainable water management in Algeria, *Desalination & Water Treatment* 50 (2012) 272-284.
36. H. Maab, L. Francis, A. Alsaadi, C. Aubry, N. Ghaffour, G.L. Amy and S.P. Nunes, Synthesis and fabrication of nanostructured hydrophobic polyazole membranes for low-energy water recovery, *Journal of Membrane Science* 423-424 (2012) 11-19.
37. T.M. Missimer, S. Sinha, N. Ghaffour, Strategic aquifer storage and recovery of desalinated water to achieve water security in the GCC/MENA region, *International Journal of Environment and Sustainability* Vol. 1 No.3 (2012) 87-99.
38. Y. Gacem, S. Taleb, A. Ramdani, S. Senadjki, N. Ghaffour, Physical and chemical assessment of MSF distillate and SWRO product for drinking purpose, *Desalination* 290 (2012) 107-114.
39. J. El Kharraz, A. El-Sadek, N. Ghaffour, E. Mino, Water scarcity and drought in WANA countries, *Procedia Engineering* 33 (2012) 14-29.
40. N. Drouiche, S. Aoudj, H. Lounici, M. Drouiche, T. Ouslimane, N. Ghaffour, Fluoride removal from pretreated photovoltaic wastewater by electrocoagulation: An investigation of the effect of operational parameters, *Procedia Engineering* 33 (2012) 385-391.
41. N. Ghaffour, V.K. Reddy, M. Abu-Arabi, Technology development and application of solar energy in desalination: MEDRC contribution, *Renewable and Sustainable Energy Reviews* 15 (2011) 4410-4415.
42. N. Drouiche, N. Ghaffour, M.W. Naceur, H. Mahmoudi, T. Ouslimane, Reasons for the fast growing seawater desalination capacity in Algeria, *Water Resources Management* (2011) 25:2743-2754.
43. N. Drouiche, S. Aoudj, H. Lounici, H. Mahmoudi, N. Ghaffour and M.F.A. Goosen, Development of an empirical model for fluoride removal from photovoltaic wastewater by electrocoagulation process, *Desalination & Water Treatment* 29 (2011) 96-102.
44. O. Yahiaoui, H. Lounici, N. Abdi, N. Drouiche, N. Ghaffour, A. Pauss, N. Mameri, Treatment of olive mill wastewater by the combination of ultrafiltration and bipolar electrochemical reactor processes, *Chemical Engineering and Processing* 50 (2011) 37-41.
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1. *N. Ghaffour*, Title, *invited Keynote talk, International Conference on the Challenges in Environmental Science and Engineering, CESE-2015*, UTS, Sydney, Australia, 27 Sep. - 2 Oct. 2015.
2. *N. Ghaffour*, Comparative assessment of membrane distillation configurations and modules, *invited Keynote talk, International Conference on Emerging Water Desalination Technologies in Municipal and Industrial Applications (NWRI, NCEDA, WDRC)*, San Diego, CA, USA, Aug. 27-28, 2015.
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**Enclosed** (in separate files):

Research & teaching statements and future plans

Cover letter

R&D MEDRC Projects including MSc/PhD Students' details

Capacity Building program (conducted intensive courses / seminars / workshops).