

**Dr. Muthumareeswaran. M.R**  
King Abdullah Institute for Nanotechnology  
King Saud University  
Kingdom of Saudi Arabia  
**Email:** mramamoorthy@ksu.edu.sa;  
pharmapearl@gmail.com  
**Mobile:** +966531234160;

---

An enthusiastic self-disciplined and flexible individual highly motivated to take up a challenging and creative role in water management.

## **WORK EXPERIENCE**

**Since Dec'14, King Abdullah Institute for Nanotechnology, King Saud University – as Researcher.**

- Developing thin film nanocomposite (TFC) membranes for ultrafiltration, reverse osmosis, forward osmosis and vacuum membrane distillation applications.
- Optimize the operating conditions for forward osmosis, vacuum membrane distillation as well reverse osmosis system.
- Characterize the membrane morphological properties via atomic force microscopy, scanning electron microscopy, electro-kinetic analyzer, etc.,
- Characterization of different membranes and find its suitability for water purification process.
- Process design and optimization of flat sheet, hollow fiber membrane for antifouling performance, salt rejection and desalination.
- Designing and optimization of hybrid membrane pilot scale system for desalination process.
- Study the engineering operating conditions via chemical process simulation and designing software such as Comsol Multiphysics, Matlab, AutoCad, etc.,

**Jan '09 – Nov '14, Deptt. of Biochemical Engineering and Biotechnology , Indian Institute of Technology Delhi, India– Research Scholar (Doctoral Student).**

- Worked on doctoral thesis entitled “Study of rejection mechanism for arsenate, chromate and phosphate ions from water via polyacrylonitrile ultrafiltration membrane”.
- Successfully completed the research project entitled “Ultrafiltration membrane for arsenic, chromium and nitrate rejection and remediation of arsenic using sulphate reducing bacterial (SRB) consortia” and submitted to MINISTRY OF DRINKING WATER SUPPLY, Government of INDIA (GOI).

**June 05 – Dec' 09, with Indian Institute of Technology Delhi – Senior Project Associate.**

- Engineering parameters were used to characterize and optimize different type of polymeric membrane samples; the following research projects were successfully completed and submitted to DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST), GOI.
  - i. Pilot scale demonstration plant for defluoridation of the underground water by membrane technology.
  - ii. Removal of Arsenic from potable water using novel polymeric membranes and different membrane processing.

## **ACADEMIC CREDENTIAL**

2009-2015	Ph.D (Chemical Engg.), Indian Institute of Technology Delhi, first class, New Delhi, India.
2003-2005	M.Tech (Biotechnology), Sathyabama Institute of Science and Technology, first class (77.73%), Tamil Nadu, India.
1999-2003	B.Tech (Pharmaceutical technology specialization in Chemical technology) Bharathidasan University, first class (69.5%), Tamil Nadu, India.
2001-2002	DISM (Diploma in Software Management) Aptech Computer Education, Trichy, Tamil Nadu, India.

## PATENTS

- Gopal P. Agarwal, **Muthumareeswaran M.R**, Ulhas Kharul, Harshada Lohokare, Arun Kumar Shukla, Luka Thuyavan, "A Polyacrylonitrile ultrafiltration membrane for removal of arsenic and chromium", Patent No. IN201502470-I1, 2017.
- Gopal P. Agarwal, **Muthumareeswaran M.R**, Satyendra Singh, "A cross flow flexible membrane filtration assembly for small processing volume", Patent No. IN201203771-I1, 2013.

## INTERNATIONAL JOURNAL PUBLICATIONS

- Alam J, Alhoshan M, Shukla AK, Aldalbahi A, Ali FAA, Dass, L A, **Muthumareeswaran M R**, "kappa-Carrageenan as a promising pore-former for the preparation of a highly porous polyphenylsulfone membrane", *Materials Letters* 204 (2017) 108-111.
- A K Shukla, J Alam, M Alhoshan, L A Dass, **Muthumareeswaran M.R** "Development of a nanocomposite ultrafiltration membrane based on polyphenylsulfone blended with graphene oxide", *Sci. Rep.* 7, 41976; doi: 10.1038/srep41976 (2017).
- **Muthumareeswaran M.R**, Mansour Alhoshan, Gopal Agarwal "Ultrafiltration membrane for effective removal of chromium ions from potable water", *Sci. Rep.* 7, 41423; doi: 10.1038/srep41423 (2017).
- L A Dass, M Alhoshan, J Alam, **Muthumareeswaran M.R**, A Figoli, A K Shukla, "Separation of proteins and antifouling properties of polyphenylsulfone based mixed matrix hollow fiber membranes" *Separation and Purification Technology* 174 (2017) 529-543.
- J Alam, M Alhoshan, L A Dass, A K Shukla, **M. R. Muthumareeswaran**, M Hussain, A S. Aldwayyan, "Atomic layer deposition of TiO<sub>2</sub> film on a polyethersulfone membrane: separation applications", *Journal of Polymer Research* 23 (9) (2016).
- **M.R. Muthumareeswaran**, Gopal P. Agarwal, "Feed concentration and pH effect on Arsenate and Phosphate rejection via Polyacrylonitrile ultrafiltration membrane", *Journal of Membrane Science* 468 (2014) 11–19
- H.R. Lohokare, **M.R. Muthu**, G.P. Agarwal, U.K. Kharul, "Effective arsenic removal using polyacrylonitrile ultrafiltration (UF) membrane", *Journal of Membrane Science* 320 (2008) 159-166

## INTERNATIONAL CONFERENCES

- **Muthu M.R.**, Gopal P. Agarwal, "Removal of heavy metals and organic pollutant from drinking water using Novel Ultrafiltration (UF) membranes", 10th International congress on membranes and membrane processes (ICOM2014) 2014, Page No. 647, Abstract No. OR-701239.
- **M.R. Muthumareeswaran**, Gopal P. Agarwal, "Feed concentration effect on Arsenate and Phosphate rejection via ultrafiltration membrane", 8th International Membrane Science & Technology Conference (IMSTEC2013), 2013, abstract No: 33034.
- **Muthu M.R.**, Gopal P. Agarwal, "Charged Ultrafiltration membrane for Arsenic and other Ions (Phosphate, Nitrate) removal from potable water", Indo-Europe Workshop on Recent developments on membrane technology for Industrial applications, 2011 Page No. 76
- H.R. Lohokare, **M.R. Muthu**, G.P. Agarwal, U.K. Kharul "Charged Ultrafiltration membranes for arsenic rejection", 8th International conference on Catalysis in Membrane Reactors, 2007, abstract No: OP29

## AREAS OF EXPERTISE

### Engineering Skills

- Worked in different membrane operation like ultrafiltration using plate and frame, stirred, thin channel flow and spiral module, Nanofiltration, RO via pilot scale, forward osmosis and vacuum membrane distillation (flat sheet as well hollow fiber).
- Water purification process for secondary level using membrane process
- Preparing general process arrangement and developing equipment layout
- Preparing production and consumption figures.
- Process Calculation and Preparation of Process Data Sheets.
- Safety, environmental and operability reviews (HAZOP, HAZAN).
- Developing Installation and Operation Manual (Startup /Normal and Emergency Shutdown)
- Pre-commissioning, Commissioning and Stabilization

### Project Management Skills

- Defining the scope and Coordinating with the Reviewer Committee.
- Preparing and evaluating the upcoming projects
- Sending enquiries, getting quotations, technical bid analysis, negotiation, placing of purchase order for Equipment's.
- Execution of projects through lab work.

## INSTRUMENTS HANDLED

- Phase inversion method – flat sheet membranes; Hollow fiber spinning Unit; different modules of ultrafiltration, nanofiltration, reverse osmosis unit (dead end flow, tangential flow); forward osmosis and vacuum membrane distillation unit
- Atomic Force Microscopy (AFM), Ion Chromatography (IC), Atomic Absorption Spectroscopy (AAS), Fourier transform infrared spectroscopy (FTIR), Tangential Gravimetric Analysis (TGA), Differential Scanning Calorimetry (DSC), Electro-kinetic Analyzer - solid surface analysis (SurPASS), High Performance/Pressure liquid chromatography (HPLC), Gas Chromatography (GC), Scanning Electron Microscope (SEM), UV-Visible spectrophotometer, fermenter, cell disruption unit (Bio neb, French press & Sonicator).

## PROFESSIONAL TRAINING

- Worked as a trainee in Laboratoire de Génie Chimique, under the guidance of **Prof. Patrice Bacchin**, Department of chemical Engineering, **Université Paul Sabatier, Toulouse**, France.
- Worked as a trainee in Membrane technology division, under the guidance of **Dr.U.K Karul**, Scientist, Polymer Science Division, **National Chemical Laboratory Pune**, INDIA.
- Worked as a Production Trainee in Apex Laboratories Pvt. Limited, Alathur, Chennai, INDIA.

## AWARDS

- **Travel award** from European membrane society (EMS), to attend International congress on membranes and membrane processes (ICOM14), China.
- **Young Scientist** International travel grant for award from "Department of Biotechnology", Government of India.
- **Young Scientist** International travel grant award from "Department of Science and Technology", Government of India.
- Award from "**France Government**" for Internship program of doctoral research at University of Toulouse, Toulouse, France.
- **Senior Research Fellow (SRF)** from "Council of Scientific and Industrial Research (CSIR)", Government of India.

## PROFESSIONAL MEMBERSHIP

- European membrane society, Member
- Institute of chemical engineer (IChemE), Member.

## PERSONAL PORTRAIT

Father's Name : Muthu Ramamoorthy  
Date of Birth : 07/02/1982  
Sex : Male  
Marital Status : Married  
Passport No. : J 4962819  
Permanent Address : #3/280, Surveyar Colony,  
K. Pudur, Madurai-625 007,  
Tamil Nadu, INDIA  
Language Known : Tamil, English, Hindi

## PROFESSIONAL REFERENCES

**Prof. Gopal P. Agarwal**,  
Department of Biochemical Engineering and Biotechnology,  
Indian Institute of Technology Delhi, Hauz Khas,  
New Delhi, INDIA. Phone: +911126591005  
Email: gopal@dbeb.iitd.ac.in, gopalpa@hotmail.com

**Dr. Mansour Alhoshan**,  
Professor  
College of Engineering, Chemical Engineering Department  
King Saud University  
PO Box 800, Riyadh 11421, KSA  
Email: mhoshan@ksu.edu.sa.

**Dr. U.K. Karul**,  
Scientist,  
Polymer science and Engineering Division,  
National Chemical Laboratory, Pune, INDIA  
Phone: +912025902180; Email: uk.kharul@ncl.res.in

**Dr. Shaikh Ziauddin Ahammad**,  
Department of Biochemical Engg & Biotech.,  
Indian Institute of Technology Delhi, Hauz Khas,  
New Delhi, INDIA. Phone: +911126591006  
Email: zia@dbeb.iitd.ac.in, zia.iitd@gmail.com.

I declare that the above-mentioned particulars are true.

Sincerely

**Dr. Muthumareeswaran MR**