

Dr. Jain Maria Thomas M.Sc, Ph.D.

Department of Chemistry

PROFILE

Assistant Professor in the Research and Postgraduate Department of Chemistry with teaching experience at both undergraduate and postgraduate levels. Research interests include membrane technology, nanomaterials, photocatalysis, environmental remediation, and graph-theoretical approaches, with a focus on developing sustainable materials and innovative solutions for water purification and the degradation of environmental pollutants.

APPOINTMENT

Joined 01 June 2022 · **Teaching** 4 years · **Research** 10 years

SPECIALISATION

Membrane technology · Semiconductor Photocatalysis

RESEARCH INTERESTS

Photocatalysis · Nanomaterials · Metal-Organic Frameworks · Graph theoretical approaches

COURSES HANDLED

Spectroscopy · Thermodynamics · Electrochemistry · Analytical Chemistry · Organic Chemistry

LABORATORIES

Physical Chemistry · Organic Chemistry

QUALIFICATIONS

Ph.D. — Chemistry

2018

School of Chemical Sciences, Mahatma Gandhi University, Kottayam

Thesis: Microfiltration membrane with polyelectrolyte functional layers for the separation of emerging contaminants and protein adsorption

EXPERIENCE

Assistant Professor

June 2022 – Present

St. George's College, Aruvithura · Teaching

Guest Lecturer

St. Joseph's College, Moolamattom · Teaching

Research Fellow

Central Coir Research Institute · Research

RESPONSIBILITIES

Member

2022 – 2024

NAAC - Criteria 7

Member

Research Promotion Cell, Science Club, Institutional values and Best practices, Infrastructure and learning resources, Purchase Committee

RESEARCH GUIDANCE

Postgraduate dissertations

M.Sc. / PG · Supervisor

JOURNAL PAPERS

- [1] Aji Joseph, Jain Maria Thomas, Jesty Thomas, "A smart multifunctional solar photocatalyst., Separation and Purification Technology,," *Separation and Purification Technology*, Elsevier, vol. 395, pp. 137900, 2026. ISSN 1383-5866. doi: 10.1016/j.seppur.2026.137900. SCI IF 9.1
- [2] Sahaya Vijay Jeyaraj, Roy Santiago, Chandra Sekar Ponnusamy, Jain Maria Thomas, Mohamad Nazri Husin and Abdelli Fathi, "Efficient Generation of Specific Counting Polynomials and their Subsequent Indices of Complex Boric Acid Structure,," *Current Organic Synthesis*, vol. 22, no. 7, pp. 821-828, 2025. ISSN 1570-1794. doi: 10.2174/0115701794366590250414051549. SCI IF 2.6
- [3] Abdelli Fathi, Tony Augustine, Mohamad Nazri Husina, J. Sahaya Vijay, Jain Maria Thomas, S. Roy., "Graph Theoretical Approach to Topological Features of Zeolitic Tetrahedral Imidazolate Framework-3,," *MJFAS*, vol. 21, pp. 1823-1831, 2025. ISSN 2289-5981. doi: 10.11113/mjfas.v21n2.4127. SCOPUS IF 0.9
- [4] S. Sonadevi, D. Rajaraman, M. Saritha, A. Dhandapani, Peter Solo, Tony Augustine, Jain Maria Thomas and L. Athishu Anthony, "Computational investigation of hydrazine derivatives as potential COVID-19 receptor inhibitors: DFT analysis, molecular docking, dynamics simulations, topological indices and ADMET profiling,," *Molecular physics*, Taylor & Francis, vol. 123, no. 11, 2024. ISSN 0026-8976. doi: 10.1080/00268976.2024.2407538. SCI IF 1.8
- [5] M. Saritha, D. Rajaraman, S. Sonadevi, Jain Maria Thomas and L. Athishu Anthony, "Rational design of novel potential EGFR inhibitors: molecular docking, molecular descriptor and pharmacokinetics studies of piperidin-4-one derivatives,," *Molecular physics*, Taylor & Francis, vol. 123, no. 14, 2024. ISSN 0026-8976. doi: 10.1080/00268976.2024.2436095. SCI IF 1.8
- [6] Akhil Gopalakrishnan, Jissy Mathew, Jain Maria Thomas, Greeshma Thankachan, Charuvila T. Aravindakumar, Usha K. Aravind., "Spectro-kinetic investigations on the release mechanism of lysozyme from layer-by-layer reservoirs,," *Colloids and Surfaces B: Biointerfaces*, Elsevier, vol. 222, pp. 113135, 2023. ISSN 0927-7765. doi: 10.1016/j.colsurfb.2023.113135. SCI IF 5.9
- [7] Tony Augustine, S. Roy, J. Sahaya Vijay, Jain Maria Thomas and P. Shanmugam, "Topological study on degree based molecular descriptors of fullerene cages,," *Molecular physics*, Taylor & Francis, vol. 121, no. 4, pp. e2179858, 2023. ISSN 0026-8976. doi: 10.1080/00268976.2023.2179858. SCI IF 1.8
- [8] Jain Maria Thomas, C.T. Aravindakumar and U.K. Aravind, "Surface functionalized monolayered membrane for the removal of beta blockers,," *Journal of Industrial and Engineering Chemistry*, Elsevier, vol. 87, pp. 222-233, 2020. ISSN 1226-086X. doi: 10.1016/j.jiec.2020.04.005. SCI IF 7.1

- [9] Jain Maria Thomas, C.T. Aravindakumar and U.K. Aravind, "Protein loading studies using polyelectrolyte microcapsules," *International Journal of Polymeric Materials and Polymeric Biomaterials*, Taylor & Francis, vol. 69, no. 18, pp. 1149-1156, 2019. ISSN 0091-4037. doi: 10.1080/00914037.2019.1667803. SCI IF 3.14
- [10] Jain Maria Thomas, V. N. Radhakrishnan, C.T. Aravindakumar and U.K. Aravind, "Polyelectrolyte functional bilayers for the removal of model emerging contaminants," *Industrial & Engineering Chemistry Research*, ACS, vol. 56, no. 46, pp. 13874-13884, 2017. ISSN 0888-5885. doi: 10.1021/acs.iecr.7b02915. SCI IF 3.9

CONFERENCE PAPERS

- [1] Jain Maria Thomass, "Degree based molecular descriptors of C30D5h fullerene cage," in *International conference on medelling, simultion and optimization of energy systems*, Canadian Univesity, Dubai, UAE, 2023.
- [2] Jain Maria Thomas, "Environmental Education and National Education Policy," in *Incorporation of NEP 2020 parameters into the NAAC Reaccreditation Framework (with special emphasis on FYUGP)*, Kuriakose Elias College in association with NAAC and Kerala State Higher Education Council, Mannanam, 2023.
- [3] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Removal of a model drug from water using surface modified membrane," in *5th National Seminar*, St. Joseph's College, Moolamattom, 2020.
- [4] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Polystyrene sulfonate (PSS) functional layer membrane for the removal of pharmaceutical drugs from water under low pressure conditions.," in *International Conference on Separation Science and Technology*, Kottayam, 2019.
- [5] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "CHI/PSS functional layers for the removal of model emerging contaminants.," in *International Conference on Separation Science and Technology*, Kottayam, 2019.
- [6] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Surface modified low pressure membrane for the removal of model emerging contaminants.," in *4th National Seminar*, St. Joseph's College, Moolamattom, 2019.
- [7] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Polyelectrolyte monolayer microfiltration membrane for the removal of pharmaceutical compounds from aqueous medium.," in *International Conference on Water*, kottayam, 2018.
- [8] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Monolayered polyelectrolyte membrane for the removal of beta blockers.," in *Fourth International Conference on Membranes*, Alleppy, 2017. BEST PAPER AWARD
- [9] Jain Maria Thomas, Vishnu N. R, C. T. Aravindakumar, and Usha. K. Aravind, "CRM and XRPD Analysis of Ibuprofen Filtered Membrane Surface.," in *Fourth International Conference on Membranes*, Alleppy, 2017.
- [10] Jain Maria Thomas, Vishnu N. R, C. T. Aravindakumar, and Usha. K. Aravind, "Polyelectrolyte functional bilayers for the removal of model emerging contaminants.," in *Proceedings of International Conference on Water*, Kottayam, 2016.

- [11] Jain Maria Thomas, C. T. Aravindakumar and Usha. K. Aravind, "Layer by Layer Assembled Polyelectrolyte Multilayer Membranes for the Removal of Pharmaceuticals from Water," in *Third International Conference on Membranes*, Kochi, 2015.
- [12] Jain Maria Thomas, C. T. Aravindakumar, and Usha. K. Aravind, "Effect of PSS monolayer on removal of a model beta blocker from water," in *International Conference on Water*, kottayam, 2015.
- [13] Jain Maria Thomas, C. T. Aravindakumar and Usha. K. Aravind, "Lysozyme loading studies using different polyelectrolyte microcapsules," in *Swadeshi Science congress*, Kottayam, 2013.
- [14] Jain Maria Thomas, C. T. Aravindakumar and Usha. K. Aravind, "Lysozyme loaded CHI/PMA polyelectrolyte microcapsule," in *Second International Conference on Membranes*, Kottayam, 2013.

BOOKS & CHAPTERS

- [1] K.S. Ambili, Jain Maria Thomas and Jesty Thomas, "Properties of MXene-polymer composites," in *Advances in MXene-Polymer Composites Synthesis, Structural Analysis, and Applications*, Elsevier, 2026, pp. 81-98. ISBN 978-0-443-27620-0.
- [2] Jain Maria Thomas, "Methods of synthesis for metal halide perovskite photocatalysts," in *Photocatalytic Perovskite Materials*, Elsevier, 2025, pp. 113-133. ISBN 978-0-443-23616-7.
- [3] A. John, Jain Maria Thomas, J. Thomas,, "Metal ion incorporated metal oxides for water splitting," in *Photochemical Splitting of Water*, Elsevier, 2025, pp. 217-242. ISBN 978-0-443-29064-0.
- [4] S. George, Jain Maria Thomas, "Role of cocatalyst in water splitting," in *Photochemical Splitting of Water*, Elsevier, 2025, pp. 395-426. ISBN 978-0-443-29064-0.
- [5] Jain Maria Thomas, "A Review on Nanomaterial Coated Polymeric Membranes," in *Josephine Researcher Volume III*, 2020, ISBN 978-93-87709-33-1.
- [6] Jain Maria Thomas, C. T. Aravindakumar and Usha. K. Aravind, "Surface modification of polymeric membranes by layer by layer assembly of polyelectrolytes," in *Josephine Researcher Volume II*, 2019, ISBN 978-93-87709-11-9.

TRAINING & FDPS

Nanomaterial Characterization Methods	11/07/22-15/07/22, 1 week
FDP · Center for Nanobiotechnology, Vellore Institute of Technology · Vellore · Online	
Density Functional Theory Modelling of Materials: Crystals, Thin Films and Nanomaterials (DFT-M)	19/04/24-25/04/24, 1 week
FDP · Centre for Advanced Computational Research · Delhi · Online	
Emerging Trends in Advanced Materials and Applications	27/08/24-02/09/24, 1 week
FDP · Prathyusha Engineering College · Tamilnadu · Online	
Faculty Induction Program	18/11/24-17/12/24, 4 weeks
Orientation programme · UGC-Malaviya Mission Teachers Training Centre (MMTTC), Bhagat Phool Singh Mahila Vishwavidyalaya · Haryana · Online	
NEP 2020 Orientation & Sensitization Programme	20/09/25-30/09/25, 2 weeks
UGC-MMTTC, University of Kerala · Thiruvananthapuram · Online	

Environment and Sustainable Development

Short-term course · Deen Dayal Upadhyaya Gorakhpur University · Gorakhpur · Online

07/01/26–13/01/26, 1 week

Role of AI in Higher Education: Enhancing Teaching, Learning and Research

STTP · Department of Computer Science, Assam University · Silchar · Online

09/03/26–14/03/26, 1 week

Smart and Sustainable Materials: Advances in Material Chemistry for Global Changes

FDP · Department of Chemistry, SRM Institute of Science and Technology · Chennai · Online

21/07/25–26/07/25, 1 week

Molecular Docking with MzDOCK

Workshop · Nirmala College · Muvattupuzha · Offline

09/05/25, 1 day

AWARDS & HONOURS**Qualified UGC-JRF**

UGC-CSIR

Qualified Graduate Aptitude Test in Engineering (GATE)

IIT

Best Paper Award

International Conference on Membranes

EDITORIAL & REVIEW**International Journal of Polymeric Materials and Polymeric Biomaterials**

Reviewer · Taylor and Francis

International Journal Of Quantum Chemistry

Reviewer · Wiley

LANGUAGES

Malayalam · English · Hindi

INSTRUMENTATION AND SOFTWARE

UV-Visible spectrometer, FTIR spectrometer, HPLC, Fluorescence Spectrophotometer, ChemDraw, Origin, C++