



**Name** : Dr. N. MUTHULAKSHMI ANDAL

**Designation** : Associate Professor

**Department** : Chemistry

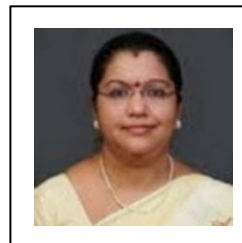
**Qualification** : MSc. Ph.D

**Experience** : Teaching - 22 Years

**Research** : 30 Years

**Area of Specialization(s):** Environmental / Physical Chemistry

**Email (Official ID)** : muthulakshmiandal@psgrkcw.ac.in



### Academic Qualifications

| Degree | Branch    | Institution/University Name                | Year of Graduation |
|--------|-----------|--|--------------------|
| Ph.D.  | Chemistry | The Gandhigram Rural Institute, Gandhigram | 2004               |
| M. Sc. | Chemistry | The Gandhigram Rural Institute, Gandhigram | 1996               |
| B.Sc.  | Chemistry | Fatima College, Madurai                    | 1994               |

### Additional Qualifications

| Certification | Area of Specialization      | Institution/University/AgencyName  | Year |
|---------------|-----------------------------|--|------|
| Certification | Coursera                    | Introduction to Molecular Spectroscopy, The University of Manchester, England  | 2025 |
| Certification | Coursera                    | “Introduction to Forensic Science”- Nanyang Technological University, Singapore  | 2022 |
| Certification | Coursera                    | “Organic Solar Cells - Theory and Practice” Denmark Technical University, Denmark  | 2022 |
| Certification | NPTEL - Swayam ARPIT (MHRD) | Refresher Course in Chemistry for Higher Education” - Sri Guru Tech Bahadur Khalsa College, University of Delhi, New Delhi | 2019 |

### Research Guidance

| Programme | No. of Scholars |          |
|-----------|-----------------|----------|
|           | Completed       | Pursuing |
| M.Phil.   | 12              | -        |
| Ph.D      | 12              | 1        |

## Research Publications (Indexed) -25

**International -22, Scopus – 14, Scopus and Web of Science – 2, Scopus and SCIE – 6, Web of Science – 3**

1. S. Dharani and N. Muthulakshmi Andal, “Potential Utilization of Eco Benign Material as Effective Divalent Ions Encapsulant from Aqueous Matrix and Industrial Effluent”, *Oriental Journal of Chemistry*, 41(2), 675-688, **2025, Web of Science**
2. S. Dharani and N. Muthulakshmi Andal, “Discernment of Eco Benign Material as Potent Pops’ Encapsulant and Exploration in the Deployment of Secondary Pollution”, *Indian Journal of Environmental Protection*, 45(11), 967-981, **2025, Scopus**
3. “Targeted elimination of heavy metals from industrial wastewater: synergistic effect of nano metal oxides”, *Journal of Taiwan Institute of Chemical Engineers*, 166, (2), 105485, **2025, Elsevier**
4. “Graph theoretical descriptors differentiate D-Mannose isomers in the principal component proposed feature space: A computational approach”, *Carbohydrate Research*, 541, 109147, **2024, Elsevier**
5. “The artificial neural network selects saccharides from natural sources a promise for potential FimH inhibitor to prevent UTI infections”, *In Silico Pharmacology*, 12 (37), 1-13, **2024, Springer**
6. “Continuous Column Performance in Lead Removal from Aquatic Environment Using Fixed Bed of Goat Hoofs”, *Journal of Propulsion Technology*, 44 (5) 113-118, **2023, Scopus**
7. “Surface Functionalized Eco-friendly Plant Seeds in the Confiscating Process of Toxic Metal ions from Aqueous Environment”, *Research Journal of Chemistry and Environment*, Vol. 27 (12), 35-43, **2023, Scopus**
8. "Mannose: A Potential Saccharide Candidate in Disease Management, *Medicinal Chemistry Research*, 32(3), 391-408 (**2023**), **Scopus and SCIE**
9. “Organophosphorus Pesticide Chelation by Modified Pod Shells – Batch Equilibration and Isothermal Studies”, *Indian Journal of Environmental Protection*. 42(2), 243-248, **2022, Scopus**
10. “Pulp and Paper Industrial Discharges on Soil Environs in Crop Nutrients’ Management”, *Annals of R.S.C.B*, 25(6), 14644 – 14652, **2021, Scopus**
11. “Sequestration of Zinc Ion using Sugar Industry Residue: An Avenue to Envirosafe”, *Pollution Research*. 40 (3) : 766-771, **2021, Scopus**
12. “A Study on the Bioaccumulation and Screening of Toxic Metal Ions in Effluents, Fodder and Milk Samples Collected from Erode, Tirupur, Coimbatore Districts”, *Research Journal of Chemistry and Environment* 24(3), 88-93, **2020, Scopus and SCIE**

## Other Publications: International/National - 58

**International – 38**

**National – 20**

**Conference Proceedings – 15**

1. “Efficacy of Modified Magnolia Champacca Bark Powder in Sequestration of Divalent Ions from Aqueous Matrices”, *Current World Environment*, 19(1), 57-66, **2024, UGC Care list**
2. “A Characteristic Approach on the Synthesis of Agro-based Nanomaterials and their Ability as Metal Sorbents”, *Sustainability Agri Food Environmental Research (SAFER)*. (ISSN: 0719-3726), 12(2), **UGC**
3. “Recovery of Reusable Water and Sludge from Various Wastewater Sources: A Review”, *MuktShabd Journal*, 11 (7), 1064 – 1077, **2022, UGC Care list**
4. “Sequestration of Cu(II) Ions from Aqueous Media using Natant Magnetite-Chitosan Composite”, *Journal of Materials and Environmental Science*, 12(7) 804-813, **2021, SciFinder**
5. “Investigation on Physico – Chemical Characteristics of Pulp and Paper Industrial Discharges into the Environs”, *Asian Journal of Research in Chemistry* 14(2), 115-119, **2021, Google Scholar**
6. “Utilization of a Material derived from Animal Waste in the Biosorption of Pb (II) Ions – Isothermal/ Thermodynamic, Kinetics and Statistical Studies”, *Current World Environment*, 12(2), 44-455, **2017, NAAS, Google Scholar**
7. “Removal of Reactive Dye using Activated Carbon Prepared from *Prosopis juliflora* bark: Isothermal, Thermodynamics and Kinetic Studies”, *Chemical Science Reviews and Letters*, 5(20), 182-191, **2016, NAAS, SciFinder**
8. “Experimental Optimization of an Agricultural Waste in the Uptake of Cu (II) Ions”, *Chemical Science Review and Letters* 2(8), 615-619, **2016, NAAS and SciFinder**
9. “A Comparative Study on the Sorption of Divalent Ions by Bivalves Shells; Equilibrium and Statistical Studies”, *Chemical Science Reviews and Letters*, 5(19), 214-223, **2016, NAAS, SciFinder**
10. “Assessment of Physicochemical Characteristics and the Level of Nutrient Contents as Well as Heavy Metal Ions in Waters of Three Lakes at Coimbatore, Tamil Nadu, India”, *Journal of Material and Environmental Science.*, 7(7), 2259-2266, **2016, Google Scholar and SciFinder**

#### Patent -1

| S.No | Name of the Faculty       | Title of the Invention  | Application No. | Date of Filing | Publication Date |
|------|---------------------------|---|-----------------|----------------|------------------|
| 1.   | Dr. N. Muthulakshmi Andal | A method for production of flyash bricks incorporating chromium loaded acid-modified attapulgite clay | 202541017104    | 26- 02- 2025   | 07-03-2025       |

#### Book Published - 1

“Employment of Functionalized Natant Bio-Materials as Potential Adsorbents for Industrial Liquid Litters - Scaleup of Plausible Solutions Through Greener Approach”, Eliva Press, Mauritius (**2023**)

**Eliva Press catalog:** <https://www.elivapress.com/en/book/book-4239093625/>

**Author's Profile:** <https://www.elivapress.com/en/authors/author-8979907317/>

AmazonUSA- <https://www.amazon.com/dp/9994984446/>

Amazon Germany- <https://www.amazon.de/dp/9994984446/>

Amazon France <https://www.amazon.fr/dp/9994984446/>

### **E-Manual Author -1**

Life Sciences Protocol Manual, DBT Star College Scheme- Biochemistry Section, “**Qualitative Analysis of Sugars**”, 219- 225(2018)

### **Book Chapter Published - 7**

1. "Investigation on the Sequestration of Divalent Metal Ions Employing Animal Waste", Challenges and Advances in Chemical Sciences (Volume - 3), Page No: 1 - 13(2021)
2. "Study on Virtual Screening of Treated Pistachio vera Shell Powder as a Potential Sorbent in Sequestering Ubiquitous Divalent Metal Ions from Aqueous Matrices", Challenges and Advances in Chemical Sciences (Volume -3), Page No: 14 - 26(2021)
3. "Study on Biosorption of Divalent ion onto Treated Prosopis juliflora Bark from Aqueous Solutions: An Approach towards Isothermal and Statistical Analysis", Challenges and Advances in Chemical Sciences (Volume - 3), Page No: 27 – 39 (2021)
4. “Assessment of Agricultural Wastes in the removal of Hexavalent Chromium”, Novel Aspects on Chemistry and Biochemistry (Volume - 1), Page No: 30-39 (2023)
5. “Sequestration of Cadmium Ions from Aqueous / Electroplating Wastewaters using Chitosan: A Review” - Novel Aspects on Chemistry and Biochemistry (Volume - 1), Page No: 40-51 (2023)
6. “Terminalia Catappa as a Novel Biosorbent for the Removal of Divalent ion from Aqueous Solutions: Experimental Investigation” - Novel Aspects on Chemistry and Biochemistry (Volume - 1), Page No: 108 – 120 (2023)
7. “Utilization of Modified Elephas maximus Dung as Oxyfluorfen Sequesterant: Adsorption and Kinetic Modeling Studies”- Novel Aspects on Chemistry and Biochemistry (Volume - 1), Page No: 161 – 178 (2023)

### **Short Term Course - 2**

1. GIAN (Global Initiative of Academic Networks - MHRD) Course on, “Environment and its Sustainability” - National Institute of Technology, Warangal
2. “Advanced Material Characterization” in association with Ministry of Textiles, Government of India, PSGTECHS COE INDUTECH, PSG College of Technology, Coimbatore

### **Letter of Appreciation - 28**

1. Recognition for Installation of Fibre Reinforced Polymer Devices at Industrial belts towards confiscation of toxicants (heavy metals, anions, dye molecules, pesticides) from effluent discharges
2. Appreciation for disseminating knowledge and sharing expertise on Abatement of Environmental Pollution, Functionalization of Materials and Outcome Based Education (OBE)

### **Acted as a Resource Person -31**

1. Four-Day online workshop on Shaping Tomorrow: “Cutting-Edge Tools for Research & Innovation organized by the Department of Chemistry, KPR Institute of Engineering and Technology Coimbatore, (19.8.2025 - 22.8.2025)

2. “Spread the Spark’24 Celebrating Teachers” at Confederation of Indian Industry (CII), Coimbatore. (20.09.2024)
3. “A Comprehensive implication of OBE in fostering Curriculum Enrichment” in “Curriculum Enhancement Programme”, at, Providence College for Women, Coonoor, The Nilgiris (21.02.2023)
4. Significance of Water – Quality, Pollution Abatement Projects and Career Opportunities” - Hands on Training Programme at Jamal Mohamed College (Autonomous), Trichy (25.03.2022)
5. “Assessment Methodology and Evaluation Pattern in the Attainment of Outcome Based Education – A Formative Component” in, “Need and Scope of Outcome Based Education towards Transformative Education”, at Bharathiar University, College Development Council and IQAC, Coimbatore (11.03.2021)
6. “A Characteristic Approach on the Synthesis of Agro Based Nanomaterials” in, “Innovative Science, Engineering, and Technology”, Knowvel Journals, London (03.07.2020)
7. “Mitigation of Ecological Effluence in view of initiation and Restoration Stratagems” at Nazareth Margoschis College, Pillaiyanmanai, Nazareth (17.06.2020)
8. OBE – Course Mapping” in “Golden Jubilee Webinar Series” at Vellalar College for Women, Erode (04.05.2020)
9. “Methodology and Attainment of OBE in CIA and SE” in “LOCF Approach to Curriculum Planning and Development for Faculty Members” at St. Joseph’s College, Tiruchirapalli (04.01.2020)
10. “Bioaccumulation and Noxious Effects of Engineered Nanoparticles – An Overview” in “Current Trends and Advances in Chemical Sciences” at Government Arts College for Women, Salem. (19.09.2019)
11. “Perspective Pioneering Fields of Chemistry” in National Seminar on “Fascinating Fields of Chemistry” at Vellalar College for Women, Erode (04.02.2019)
12. “Plausible Pursuits of Chemistry and Attenuation Approaches in Environmental Pollution” at Vivekanandha Arts and Science College for Women, Tiruchengodu (19.12. 2018)
13. “Traditional to Transformative Education – Outcome Based Education”, in “Generation and Validation of Learning Outcomes” at Shree M& N Virani Science College, Rajkot, Gujarat (09.01.2018)
14. “Valorization of Agro Derived Nano Materials: Characteristics and Sustainability”, AICTE sponsored Faculty Development Programme at IFET College of Engineering, Villupuram (18.11.2017)
15. “Construction of Ion Exchangers Using Rechargeable Resins in the Water Softening Process – A Working Model”, in, “Recent Advances in Water and Wastewater Treatment”, at Department of Chemistry, Gandhigram Rural Institute-Deemed University, Dindigul (21.03.2014 & 22.03.2014)
16. “Project/ Seminar Grant Proposals: Planning and Funding Agencies” in “Orientation and Retraining of Teachers” sponsored by UGC, at Arulmigu Palaniandavar Arts College for Women, Palani (01.02.2013)

#### **Reviewer in Journal - 14**

1. Asian Journal of Biotechnology and Bioresource Technology (2023)
2. Asian Journal of Chemical Science (2024)
3. Oriental Journal of Chemistry (2023)
4. International Journal of Environment and Climate Changes (2023) (2025)
5. B P International (2024)
6. Asian Journal of Geological Research [2 articles] (2024)

7. Asian Journal of Biotechnology and Genetic Engineering (2024)
8. Journal of Materials Science Research and Reviews (2024)
9. European Journal of Nutrition & Food Safety (2024)
10. Asian Journal of Biology (2024)
11. Scientific Reports (2024)
12. Asian Journal of Soil Science and Plant Nutrition (2025)
13. Journal of Applied Physical Science International(2025)
14. Journal of Scientific Research and Reports(2025)

#### **Paper Presentations in Conferences/ Seminars - 195**

##### **International -65, National -128**

1. “Energy, Environment and Sustainable Economy (EESE - 2013)”, Bangkok, Thailand
2. “Materials for the new millennium MatCon 2010”, Cochin University of Science and Technology, Cochin
3. “Recent Trends in Analytical Chemistry”, University of Madras, Chennai
4. “11<sup>th</sup> World Aqua Congress”, Aqua Foundation, New Delhi
5. "Recent Advances in Water Purification and Waste Water Treatment", Harcourt Butler Technical University, Kanpur, UP.
6. “Sustainable Green Chemical Technologies: Challenges and Opportunities”, Harcourt Butler Technical University, Kanpur, UP.
7. “Next Generation Sustainable Materials for Water and Energy Solutions”, VIT-AP University, India
8. Chemical Resilience & Sustainable Practices: Advanced Materials in Water Purification Strategies for Desalination, Energy Production & Environmental Conservation”, Harcourt Butler Technical University, Kanpur, UP.

#### **Participation in Conferences/ Seminars - 53**

1. Participation in the Interaction session “Meet the Nobel Laureate” with **Prof. Morten P Meldal- 2022 Chemistry Nobel Laureate** on 12.02.2024 at Malabar Christian College, Calicut.
2. International Conference on “10th World Aqua Congress”, 2016

#### **Participation in Workshop - 20**

1. Workshop on "Recent Advances in Water Purification and Waste Water Treatment" (**Best Paper Award**), Harcourt Butler Technical University, Kanpur, Uttar Pradesh, 2023
2. Workshop on “Effective and Efficient Online Teaching in the Age of Corona, A hands on Workshop”, Teaching Learning Centre-IIT Bombay, 2020
3. One week workshop “Advanced Material Characterization”, PSGTECHS COE Indutech, Neelambur, Coimbatore, 2019
4. International Preconference Workshop on, “Molecular Techniques for Emerging Contaminants Impact Assessment”, PSG Institute of Advanced Studies, Coimbatore, 2019

#### **Participation in Faculty Development Programme - 11**

1. Participation in Capacity Building Programme on STEM Education (Chemistry), organized by Teaching Learning Centre (TLC), IIT Madras, under the aegis of Ministry of Education, Government of India through Malaviya Mission Teacher Training Programme (2025)

## Participation in Webinar - 24

1. Webinar on “Computational Approaches for Experimental Chemists”, Vellore Institute of Technology, Chennai, 2020
2. National Webinar on “The Tale of Smart Materials: Towards Sustainable and Futuristic Applications”, Al-Ameen College, Edathala, Kerala, 2020
3. Webinar on “Recent Developments in Water Quality Management: Emerging Contaminants”, St Xavier’s College for Women, Aluva, Kerala, 2020

## Conference/Seminar/Workshop/Refresher Course Organized - 10

1. Science Academies sponsored 14 Days Refresher Course on “Theoretical and Computational Chemistry” 27.01.2021- 11.02.2021
2. International Interdisciplinary Virtual Conference on “Breakthroughs and Approaches in Contemporary Scientific Research”, in association with University of Dar es Salaam Tanzania 17.02.2021 - 19.02.2021
3. Workshop on “Glass Blowing”, at Ashok Glasswork and Neons, Ganapathy, Coimbatore, 6.11. 2012
4. A workshop on, “Sustainability through Green Chemistry”, sponsored by Royal Society of Chemistry, South India, 02.03.2012
5. Two-day National seminar on “Alternative Energy Resources – A Future Perspective” 30.08.2012- 31.08.2012
6. Community Oriented Programme, “Legal Awareness Programme for SHGs’ ”, sponsored by Rotary Club of Coimbatore Sai city, 23.06.2012

## Grants – 5

| S.NO. | Project title  | Name of the agency  | Amount (in Lakhs) | Status    |
|-------|--|---|-------------------|-----------|
| 1     | Biosorbents in the Heavy Metal Removal from Industrial Effluents and Wastes(2012 - 15)                                     | Defence Research Development Organization, New Delhi  | 22.54             | Completed |
| 2     | Bioremediation of Heavy Metal Contamination in Coimbatore Wetlands by Green Approach (2012-15)                             | University Grants Commission, New Delhi   | 7.858             | Completed |
| 3     | Watershed Technology – Constructing Ion Exchangers using Eco-friendly Resins (2009-10)                                     | Innovation and Entrepreneurship Development Centre- National Science and Technology Entrepreneurship Development Board, Ahmedabad | 1.00              | Completed |
| 4     | Immobilization of Heavy Metal ions from Effluent Discharges by Bio sorption using Low-Cost Ecofriendly Materials (2010-12) | University Grants Commission – SERO, Hyderabad  | 1.00              | Completed |

|   |                            |  |      |           |
|---|----------------------------|--|------|-----------|
| 5 | Lake Restoration (2019-20) | Unnat Bharath Abhiyan, Ministry of Human Resource Development, New Delhi | 1.00 | Completed |
|---|----------------------------|--|------|-----------|

#### Membership in Professional Bodies - 4

| Name of the Professional Body                                      | Nature of membership | Duration   |
|--|----------------------|------------|
| 1. Indian Desalination Association, Mumbai                         | Life Member          | Since 2014 |
| 2. International Society for Development and Sustainability, Japan | Professional         | Since 2014 |
| 3. American Water Works Association, India                         | Annual               | 2017- 2018 |
| 4. INSO- VDGOOD Professional Association                           | Professional         | Since 2023 |

#### Awards/ Honors - 17

| Awards/Honors                                       | Agency/Institute  | Year of Award |
|---|---|---------------|
| Young Women Scientist Award 2011                    | Science City, Department of Higher Education, Government of Tamil Nadu          | 2013          |
| Best Researcher Award                               | Grabs Educational Charitable Trust, Chennai                                     | 2017          |
| Best Scientist Award                                | Indian Academic Researchers Association, Tiruchirappalli                        | 2017          |
| Outstanding Faculty in Science                      | Venus International Association, Chennai  | 2017          |
| Best Research Supervisor Award                      | Innovative Research Developers and Publishers (IRDP) Group of Journals, Chennai | 2017          |
| Dr. APJ Abdul Kalam Award for Scientific Excellence | Marina Labs Research and Development, Chennai                                   | 2018          |
| Global Eminent Researcher Award                     | VIIJ Trust, Thirunindravur, Tamil Nadu  | 2021          |
| Distinguished Professor Award                       | Institute of Researchers, Wayanad, Kerala                                       | 2021          |



|   |  |      |
|---|--|------|
| Research Excellence Award                           | INSO, VDGGOOD Professional Association, India  | 2023 |
| Outstanding Professor Excellence Award              | Prosper Foundation & Agri Amigos Private Limited   | 2023 |
| Appreciation Award for Dedicated Services           | Lions International, Lions Club of Coimbatore  | 2024 |
| Distinguished Professor Award (Cash Prize 25,000/-) | KPR Legacy Awards, KPR Institutions, Coimbatore  | 2025 |
| Inspiring Senior Scientist Award                    | National Teacher's Day 2025, Madras Journal Services Pvt Ltd., (Ministry of MSME, Government of India) | 2025 |

## Indexing and Citations

Citations – 550

H-index - 9

## Contribution

- Research Cell Coordinator (Dept. Level) (2010 - 2012)
- DBT Star Coordinator (Dept. Level) (2012 - 2014)
- ISO Internal Auditor (College Level) (2015-2023)
- NAAC (Criterion III) (Dept. level) (2018 -till date)
- Member of Task force for Internationalization and Branding towards NEP 2020 implementation
- Department Association In-charge and BOS member
- Principal Investigator – DST-FIST (PG Colleges) Level A (2022-Till date)