


Name	Dr. D. THIRUMALAI	
Designation	Assistant Professor (SG)	
Mailing Address	Department of Chemistry Thiruvalluvar University Serkadu, Vellore-632 115. Tamil Nadu, INDIA.	
Academic Qualifications	M. Sc., M.Phil., Ph.D	
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Positions:

Position	Institution	From	To
Assistant Professor (Selection Grade)	Thiruvalluvar University, Vellore-632 115.	07.03.2020	Till date
Assistant Professor (Senior Scale)	Thiruvalluvar University, Vellore-632 115.	07.03.2015	06.03.2020
Assistant Professor	Thiruvalluvar University, Vellore-632 115.	07.03.2013	06.03.2015
Assistant Professor (Senior)	VIT University, Vellore-632 014.	01.09.2010	06.03.2013
Assistant Professor	VIT University, Vellore-632 014.	03.06.2009	31.08.2010
Researcher,	Industrial Technology Research Institute (ITRI), Taiwan.	01.06.2005	09.03.2009
Post-Doctoral Researcher,	Department of Chemistry, National Tsing Hua University, Taiwan.	01.10.2004	31.05.2005

Research Area/Specialization(s):

❖ Synthesis of Acridinedione and Pyridine Derivatives

- Synthesis and Studies on Anti-inflammatory and Anti-oxidant activities of Acridinedione, pyridinedinitrile, spiropyridine, pyrazolopyridines, nicotinonitrile and dicyanoaniline derivatives.

❖ Synthesis of Dendrimers as MRI contrast agents

- Synthesis of water-soluble linear dendrimers attached with various macrocyclic ligands capable of forming complex with Gd^{3+} ions, which could increase the contrast in Magnetic Resonance Imaging (MRI).
- Synthesis of star-burst dendrimers as blood pool agents in Magnetic Resonance Angiography (MRA).

❖ Synthesis of Dendrimer Encapsulated Metal Nanoparticles

- Synthesis of dendrimer encapsulated silver, gold and palladium nanoparticles.
- Design, synthesis and delivery of novel drugs.

Research Guidance/Supervision:

Programmes of Study	Completed	On Going
Ph.D	2	3
M.Phil	10	0

Research Papers:

Published in International Journals	Published in National Journals	Presented in International Conferences	Presented in National Conferences
40	1	15	15

Funded Research Projects (Completed) : 1

S. No	Agency	Period		Project Title	Budget (Rs. Lakhs)
		From	To		
1.	DST-SERB Fast track proposal for Young Scientists.	09.06.2014	08.12.2017	Synthesis and Evaluation of Novel "Starburst" Dendritic Contrast Agents for Magnetic Resonance Imaging (MRI).	24.42

Funded Research Projects (Ongoing): 1

S. No	Agency	Period		Project Title	Budget (Rs. Lakhs)
		From	To		
1.	Tamil Nadu State Council for Higher Education (TANSCHE)	June-2021	May-2024	Synthesis and Studies of "Starburst" Dendrimer-Acridinedione Conjugates as Fluorescent Chemosensors.	14.82

Number of Seminars/Conferences/Workshops/Events attended : 35
 Number of Seminars/Conferences/Workshops/Events organized : 03
 Number of Invited/Special Lectures delivered : 06
 Number of Books/Chapters/Monographs/Manuals written : 02

Achievements/Awards/Honors:

1. Qualified **GATE** - A National Level Exam in 1999.
2. Qualified UGC-CSIR (NET) Lectureship in 1999.
3. Awarded Senior Research Fellowship (2001) by CSIR, India.
4. DST-Young Scientist award. (Ref. No: SB/FT/CS-074/2013 dated 20.05.2014).

Membership Professional/National/International Bodies: 1. Member in ACS.
 (American Chemical Society)
 2. Lifetime Membership in CRSI.
 (Chemical Research Society of India)

Additional Responsibilities:

1. Member in Placement cell, Thiruvalluvar University, Vellore.
2. Member in Patent cell in Thiruvalluvar University, Vellore.

3. Member in Disability Resource Center (DRC) Thiruvalluvar University, Vellore.
4. Faculty(i/c), Finance Office, Thiruvalluvar University (11.07.2019 to 28.09.2020)
5. Finance Officer (full additional charge), Thiruvalluvar University (29.09.2020 to 23.12.2020)
6. Faculty(i/c), Finance Office, Thiruvalluvar University (24.12.2020 to 20.12.2021)

Patents:

1. Dendritic polymers and magnetic resonance imaging (MRI) contrast agent employing the same. **D. Thirumalai**, Jim Lin and Jassy Wang, *US patent*, No. US 8,303,937, **2012**.
2. Dendritic polymers and magnetic resonance imaging (MRI) contrast agent employing the same. **D. Thirumalai**, Jim Lin and Jassy Wang, *US patent*, No. US 8,562,953, **2013**.
3. G. Rajaneeswaran, S. Thamarai Selvi, **D. Thirumalai**, S. Sivasubramanian, G. Vidya, *Cissus quadrangularis* (Linn) Inner Fibre Extracts for Treating Viral Infections and the Preparation Process Thereof, Indian Patent (filed), App. No. 202141000304, **2021**.

Publications in Journals:

1. M. Lavanya, J. Mao, J. Mao, **D. Thirumalai**, I. V. Asharani, Z. Huang and Sreenath R A (2022): Microwave Assisted, H3PW12O40 Mediated Green Synthesis, Crystal Structure, *in-Vitro* Anti-Inflammatory and Anti-Oxidant Investigation of Enaminoketones, Polycyclic Aromatic Compounds, DOI:10.1080/10406638.2022.2118329.
2. Asharani, I.V., Priya, D.B., Sivagami, M. **Thirumalai. D** (2022) Catalytic Activity of Size Tailored Gold Nanoparticles for the Reduction of Environmental Pollutant, 4-Nitrophenol: A Greener Approach. *J Clust Sci.* 33:1193–1203. <https://doi.org/10.1007/s10876-021-02045-0>
3. M. Lavanya, C. Lin, J. Mao, **D. Thirumalai**, S. R. Aabaka, X. Yang, J. Mao, Z. Huang, J. Zhao (2021) Synthesis and Anticancer Properties of Functionalized 1,6-Naphthyridines. *Top Curr Chem* **379**, 13. <https://doi.org/10.1007/s41061-020-00314-6>
4. Badma Priya, D., **Thirumalai, D.**, Asharani, I.V. (2021) Influence of synthetic parameters on the enhanced photocatalytic properties of ZnO nanoparticles for the degradation of organic dyes: a green approach. *J Mater Sci: Mater Electron.* 32:9956–9971. <https://doi.org/10.1007/s10854-021-05654-7>.
5. S. Subramani, **D. Thirumalai**, K. Sarumathy, T. Vijay (2021) Synthesis of copper nanoparticles using *Raphanus Sativus* (Radish) and its application in degradation of Methylene Blue dye, *International Journal of ChemTech Research*,14(1): 121-129.

6. S. Gajalakshmi, I. V. Asharani, **D. Thirumalai** (2021) Synthesis and Antioxidant Activity of Functionalized Pyridinyl-Methylthiosemicarbazide Derivatives, *Polycyclic Aromatic Compounds*, 42:6, 3478-3487. DOI: 10.1080/10406638.2020.1866033
7. P. Balu, I. V. Asharani, **D. Thirumalai** (2021) Synthesis of Melamine Core Starburst Polyamide G1 Dendrimer and its Antibacterial and Antioxidant Activities, *Asian J. Chem.*, Vol. 33, No. 1, 185-189.
8. **Thirumalai D**, Gajalakshmi S (2020) An Efficient Heterogeneous Iron Oxide Nanoparticles Catalyst for the Synthesis of 9-Substituted-Xanthene-1,8-Dione, *Res Chem Intermed* 46, 2657-2668. <https://doi.org/10.1007/s11164-020-04112-z>
9. P. Balu, I. V. Asharani, **D. Thirumalai** (2020) Catalytic degradation of hazardous textile dyes by iron oxide nanoparticles prepared from *Raphanus sativus* leaves' extract: a greener approach, *J. Mater. Sci.: Mater.*, 31:10669–10676.
10. Judy G, Manikandan M, **Thirumalai D**, (2019) Ki Jun K, Nazim H, (2019) Seong J K, Sechul C. Sustainable eco-friendly phytoextract mediated one pot green recovery of chitosan, *Sci. Rep.*, 9:13832 | <https://doi.org/10.1038/s41598-019-50133-z>
11. Lavanya M, Asharani IV, **Thirumalai D**, (2019) One pot multi-component synthesis of functionalized spiropyridine and pyrido[2,3-*d*] pyrimidine scaffolds and their potent in-vitro anti-inflammatory and anti-oxidant investigations. *Chem. Biol. Drug Des.* 94, 464–472.
12. T. Mondal, S. Datta, Sriman De, D. Thirumalai, and Debasis Koley, (2019) Donor Stabilized Diatomic Gr.14 E₂ (E = C–Pb) Molecule D–E₂–D (D = NHC, aNHC, ^NNHC, NHSi, NHGe, cAAC, cAASi, cAAGe): A Theoretical Insight. *J. Phys. Chem. A.* 123, 2, 565-581.
13. S. Datta, B. Maity, **D. Thirumalai**, and Debasis Koley, (2018) Computational Investigation of Carbene–Phosphinidenes: Correlation between 31P Chemical Shifts and Bonding Features to Estimate the π-Backdonation of Carbenes. *Inorg. Chem.* 57, 3993–4008.
14. Lavanya M, **Thirumalai D**, Asharani IV, (2017) One-pot cascade synthesis and *in vitro* evaluation of anti-inflammatory and antidiabetic activities of S-methylphenyl substituted acridine-1,8-diones. *Chem. Biol. Drug Des.* 90, 520–526.
15. D. Badma Priya., **D. Thirumalai**, I.V. Asharani (2017) Green Synthesis of Iron Oxide Nanoparticles Mediated by Actinodaphne madraspatna Bedd Leaves. *Asian J. Chem.* Vol. 29, No. 11, 2446-2448.
16. I.V. Asharani, **D. Thirumalai**, and A. Sivakumar (2017) Dendrimer encapsulated silver nanoparticles as novel catalysts for reduction of aromatic nitro compounds, IOP Conf. Ser.: Mater. Sci. Eng. 263 022010.
17. Gowtham M, Asharani IV, Paridhavi M, **Thirumalai D** (2016) A Comprehensive Review on Folklore Antidiabetic Plants. *Int. J. Pharm. Sci. Rev. Res.*, 39(2), 213-215.

18. Saravanan D, **Thirumalai D**, Sivakumar A, Asharani IV (2016) A Systematic Review on Natural Toxins in Food Plants. *Int. J. Res. Ayurveda Pharm. Sci.* 7:52-57.
19. Lavanya M, **Thirumalai D**, Asharani IV, Aravindan PG (2015) Domino synthesis of functionalized 1,6-naphthyridines and their in vitro anti-inflammatory and anti-oxidant efficacies. *RSC Adv.* 5, 86330-86336.
20. Saravanan D, **Thirumalai D**, Asharani IV (2015) Anti-HIV flavonoids from natural products: A systematic review. *Int. J. Res. Pharm. Sci.* 6 (3): 248-255.
21. Saravanan D, **Thirumalai D**, Asharani IV (2015) Evaluation of phytonutrients, mineral composition, antimicrobial and hepatoprotective activities of leaves of *Actinodaphne madraspatana* Bedd (Lauraceae). *J. Chem. Pharm. Res.*, 2015, 7:312-320.
22. **Thirumalai D**, Paridhavi M, Gowtham M (2013) Evaluation of Physiochemical, Pharmacognostical and Phytochemical Parameters of *Premna herbacea*. *Asian J. Pharm. Clin. Res.* 6:173-181.
23. Asharani IV, Thirumalai D, Paridhavi M, Gowtham M (2013) Physiochemical, Pharmacognostical And Phytochemical Evaluation of *Premna Latifolia*. *Int. J. Pharm. Pharm. Sci.* 5:309-317.
24. Silver Nanoparticle Biosynthesis and Antibacterial Activity of Aqueous Leaf Extract of *Lagerstroemia speciosa*, V. Sai Saraswathi, **D.Thirumalai**, M. Himaja, I.V. Asharani, K. V. Bhaskar Rao and S. R. Sathish Kumar, *IJAPR*, **2013**, 4 (7), 1995 – 1999.
25. Synthesis of Dendrimer-Encapsulated Silver Nanoparticles and Its Catalytic Activity on the Reduction of 4-Nitrophenol. I. V. Asharani and **D. Thirumalai**, *J. Chin. Chem. Soc.* **2012**, 59 (11), 1455-1460.
26. Standard Operating Procedures for the Quality Control Studies of Herbal Drugs. **D. Thirumalai**, M. Paridhavi, M. Gowtham, *Int. J. Pharm. Chem. Sci.*, **2012**, 1(1), 205-220.
27. An Overview of Standardization of Herbal Drugs. **D. Thirumalai**, M. Paridhavi, M. Gowtham, *Int. J. Rev. Life Sci.*, **2011**, 1(3), 167-170.
28. A phytochemical review on *premna* species. **D. Thirumalai**, M. Paridhavi, M. Gowtham, *Int. J. Res. Phytochem. Pharmacol.*, **2011**, 1(4), 196-200.
29. Detection of metals present in leaves of *Lagerstroemia Speciosa*. V. Sai Saraswathi, **D. Thirumalai**, Himaja Malipeddi, M. Saranya and P. Kusal Yadav, *Int. J. Pharm. Pharm. Sci.*, **2011**, 3 (4), 297-298.
30. Pharmacognostic and preliminary phytochemical study of *Lagerstroemia Speciosa* leaves. V. Sai Saraswathi, **D. Thirumalai**, P. Kusal Yadav and M. Saranya, *International Journal of Research in Ayurveda and Pharmacy*, **2011**, 2 (3), 893-898.
31. Dynamic Contrast-Enhanced Folate-Receptor-Targeted MR Imaging Using a Gd-loaded PEG-Dendrimer–Folate Conjugate in a Mouse Xenograft Tumor Model. Wei-Tsung Chen,

- D. Thirumalai**, Tiffany Ting-Fang Shih, Ran-Chou Chen, Shin-Yang Tu, Chin-I Lin and Pang-Chyr Yang, *Molecular Imaging and Biology*, **2010**, 12(2), 145-154
32. Synthesis of 4-aryl-5-oxo-1*H*,4*H*-5,6,7,8-tetrahydroquinoline and 4-aryl-5-oxo-1*H*-4,5,6,7-tetrahydrocyclopenteno[*b*]pyridine derivatives by ultrasound irradiation and by conventional methods, **D. Thirumalai**, P. Murugan and V. T. Ramakrishnan, *Indian J. Chem.*, **2006**, 45*B*, 335-338.
33. Synthesis and Photocyclization of 1,2,4-Triazole-3-thiones, S. Aruna, A. Senthilvelan, **D. Thirumalai**, S. Muthusamy and V.T. Ramakrishnan, *Synthesis*, **2006**, 3841.
34. The different electronic natures displayed by the alkylthio groups in simple and higher conjugated aniline systems. Han, Chien-Chung; Balakumar, R.; **Thirumalai, D.**; Chung, Ming-Tsu. *Organic & Biomolecular Chemistry*, **2006**, 4, 3511-3516.
35. A Novel Colorimetric and Fluorescent Chemosensor for Anions Involving PET and ICT Pathways, V. Thiagarajan, P. Ramamurthy, **D. Thirumalai** and V. T. Ramakrishnan, *Org. Lett.*, **2005**, 7, 657-660.
36. Photochemical Synthesis of Benzoxazolo[3,2-*b*]isoquinolin-11-one and Isoquinolino[3,2-*b*][1,3]benzoxazin-11-one Under Basic Conditions, A. Senthilvelan, **D. Thirumalai** and V. T. Ramakrishnan, *Tetrahedron*, **2005**, 61, 4213-4220.
37. Synthesis and characterization of 9-(4-nitrophenyl)-3,3,6,6-tetramethyl-3,4,6,7,9,10-hexahydro-1,8(2*H*,5*H*)acridinedione and its methoxyphenyl derivative. K. Palani, **D. Thirumalai**, P. Ambalavanan, M. N. Ponnuswamy and V. T. Ramakrishnan, *J. Chem. Cryst.* **2005**, 35, 751-760.
38. A Facile and Simple Route to the Synthesis of Condensed Acridine Systems. P. Murugan, K.C. Hwang, **D. Thirumalai** and V. T. Ramakrishnan, *Syn. Commun.* **2005**, 35, 1781-1788.
39. Photochemical Synthesis of Triazolo[3,4-*b*]-1,3(4*H*)-benzothiazines: A Detailed Mechanistic Study on Photocyclization/Photodesulfurization of Triazole-3-thiones. A.Senthilvelan, **D. Thirumalai** and V.T.Ramakrishnan, *Tetrahedron*, **2004**, 60, 851-860.
40. Synthesis of Nicotinonitrile Derivatives as a New Class of NLO Materials. V. Raghukumar, **D. Thirumalai**, V. T. Ramakrishnan, V. Karunakaran and P. Ramamurthy, *Tetrahedron*, **2003**, 59, 3761-3768.
41. 10-(4-Fluorophenyl)-3,3,6,6,9-pentamethyl-3,4,6,7,9,10-hexahydroacridine-1,8(2*H*, 5*H*)-dione and 10-(4-Fluorophenyl)-3,3,6,6-tetramethyl-9-propyl-3,4,6,7,9,10-hexahydroacridine-1,8(2*H*, 5*H*)-dione, A. Subbiah Pandi, D. Velmurugan, S. S. Raj, Hoong-Kun Fun, P. R. Seshadri and **D. Thirumalai**, *Acta. Cryst. C*, **2001**, 57, 821-824.
