




Faculty Details proforma for DU Web-site

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cc: director@ducc.du.ac.in)

Title	Dr.	First Name	M	Last Name	Thirumal	Photograph
Designation		Professor				
Address		No. 209, Multistoreyed Building Department of chemistry University of Delhi Delhi				
Phone No	Office	91 -011-27666646-176				
	Residence					
	Mobile	9810096976				
Email		mthirumal@chemistry.du.ac.in				
Web-Page						
Educational Qualifications						
Degree		Institution			Year	
Ph.D.		IIT Delhi			2001	
M.Tech.		IIT Delhi			1995	
PG		Madras University			1992	
UG		Madras University			1990	
Career Profile						
Professor		Delhi University			2013 -till date	
Reader/ Associate Professor		Delhi University			2007- 2013	
Post –doc		University of Pennsylvania			2001- 2006	
Scientist		IIT Delhi			February 2001- August 2001	
Administrative Assignments						
Convener, Physical chemistry section 2018-2019						
Coordinator Central evaluation May June -2018						
Deputy Superintendent M.Sc Practical examinations I and III Semester 2016						
Secretary, Staff council 2012- 2015						
Deputy Superintendent M.Sc examinations I and III Semester 2013						
Convener, Physical chemistry section 2008-2009						
Member of various committees in the Chemistry department						
Areas of Interest / Specialization						
Microwave Dielectrics, Multiferroics, Solid Oxide Fuel cells, Non Lead based ferroelectric and Piezoelectric materials, Phosphors, and Nanomaterials						

Subjects Taught
<p>Irreversible Thermodynamics, Transport phenomena, Surface phenomena, Fast reactions</p> <p>Molecular structure: Spectroscopic and diffraction Methods Masters students III semester</p> <p>Analytical Techniques for Material Characterization</p> <p>Nanochemistry</p> <p>Physical chemistry experiments Master students I and II semester</p> <p>Teaching Assistant in IIT Delhi for Masters and B.Tech students</p>
Research Guidance
<p>Supervision of awarded Doctoral Thesis:</p> <p>Ram Jeewan Yadav: Complex Oxides for Dielectric Resonator Applications</p> <p>Jyoti Tanwar: Synthesis and characterization of novel ligands for targeted molecular imaging</p> <p>Swetha Sharma: Design and synthesis of Pyrazines, Imidazolones, Chromones and their Anticancer and Transacetylase Activities</p> <p>Ms. Ritu Payal – Photophysical Investigations of some Biologically Active Thymol Based Schiff Bases using Absorption and Fluorescence Spectral Studies in Homogeneous and Heterogeneous Media (jointly with Professor R.C. Rastogi)</p> <p>Mr. K Ganesh Kadiyala – Smart multimodal agents for Targeted – Molecular Imaging (jointly with Dr. Anupama Datta INMAS)</p> <p>Ms. Nibedita - Lanthanide based double perovskites and their dielectric properties (Jointly with Professor A. K. Ganguli IIT Delhi)</p> <p>Mr. Sandeep Kumar – Core/Shell Heterostructures: Synthesis, Characterization and their photocatalytic Applications (Jointly with Professor A. K. Ganguli IIT Delhi)</p> <p>Supervision of Doctoral Thesis, Under Progress:</p> <p>Ms. Yogita Bisht: Microwave Dielectrics: Understanding the reproducibility issues in complex</p>

oxides

Ms. Richa Tomar: Synthesis and Characterization of new oxides for magnetic and electrical properties

Ms. Devla – Anti-Tubercular & Anti-Leishmanial activity of some synthetic & Natural compounds

Mr. Ajay Pratap Singh: Nanomaterials: Transition Metal Nano oxides for photocatalytic applications

Ms. Sachi

Ms. Liza Sarma

Ms. Garima

Ms. Kharu Nisa

Publications Profile

- Synthesis and antimycobacterial activity of 1-(β -D-Ribofuranosyl)-4-coumarinyloxymethyl- / -coumarinyl-1,2,3-triazole Srivastava, S., Bimal, D., Bohra, K., Thirumal, M., Prasad, A.K. European Journal of Medicinal Chemistry 150, 268 (2018).
- $\text{Pr}_2\text{FeCrO}_6$: A Type i Multiferroic Das, N., Singh, S., Joshi, A.G. Thirumal M, Reddy V.R, Gupta, L.C. Ganguli, A.K. Inorganic Chemistry 56(21),12712 (2017)
- Microwave dielectrics: Solid solution, ordering and microwave dielectric properties of $(1-x)\text{Ba}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3-x\text{Ba}(\text{Mg}_{1/8}\text{Nb}_{3/4})\text{O}_3$ ceramics Bisht, Y., Tomar, R., Abhilash, P., Lekshmi, D.R., Thirumal, M. Bulletin of Materials Science 40(6), 1165 (2017).
- Dominant {100} facet selectivity for enhanced photocatalytic activity of NaNbO_3 in $\text{NaNbO}_3/\text{CdS}$ core/shell heterostructures Sandeep Kumar,ad R. Parthasarathy,a

Aadesh P. Singh,^{bc} Björn Wickman,^c Meganathan Thirumal and Ashok K. Ganguli
Catalysis Science & Technology 7(2), 481(2017).

- Fabrication of TiO₂/CdS/Ag₂S Nano-Heterostructured Photoanode for Enhancing Photoelectrochemical and Photocatalytic Activity under Visible Light Kumar, Sandeep; Singh, Aadesh P.; Yadav, Nitin; Thirumal Meganathan; Mehta, B. R.; Ganguli, Ashok K ChemistrySelect 1(15), 4891 (2016).
- Visible-Light-Driven Photoelectrochemical and Photocatalytic performance of NaNbO₃/Ag₂S core-shell Heterostructures Kumar, Sandeep; Singh, Aadesh P.; Bera, Chandan; Thirumal, Meganathan; Mehta, B.R; Ganguli, Ashok K ChemSusChem 9 (14), 1850 (2016).
- Monoclinically distorted perovskites, A₂ZnTiO₆ (A=Pr, Gd): Rietveld refinement, and dielectric studies Nibedita Das, Masood A. Nath, M. Thirumal, A.K. Ganguli. J. Solid State Chem., 229, 97 (2015).
- Picolinic acid based acyclic bifunctional chelating agent and its methionine conjugate as potential SPECT imaging agents: syntheses and preclinical evaluation Kadiyala, K. Ganesh; Tyagi, Tulika; Kakkar, Dipti; Chadha, Nidhi; Chuttani, Krishna; Roy, Bal Gangadhar; Thirumal, Meganathan; Mishra, Anil K.; Datta, Anupama RSC Advances 5(43), 33963 (2015) .
- Metal Based Imaging Probes of DO3A-Act-Met for LATI Mediated Methionine specific Tumors: Synthesis and Preclinical Evaluation K.Ganesh Kadiyala, anupama Datta, Jyoti Tanwar, Anupriya Adhikari, B.S.Hemanth Kumar, Krishna Chuttani, Meganathan Thirumal, Anil K.Mishra Pharm. Res. 32, 955, (2015).

- Achieving Enhanced visible-light driven photocatalysis using type-II NaNbO₃/CdS core /Shell heterostructures, Sandeep Kumar, Sunita Khanchandani, Meganathan Thirumal, Ashok. K.Ganguli *Appl. Mater. Interfaces* 6(15)13221, (2014).
- Design and synthesis of calcium responsive magnetic resonance imaging agent: Its relaxation and luminescence studies Jyoti Tiwari, Anupama Datta, Kanchan Chauhan, S.Senthil Kumaran, Anjani K.Tiwari, K.Ganesh Kadiyala, Sunil Pal, M.Thirumal, Anil K.Mishra *European Journal of Medicinal Chemistry* 82, 225, (2014).
- Synthesis of functionalized furopyrazines as restricted dipeptidomimetics S. Claerhout, S.Sharma, C.Skold,C.Cavaluzzo,A.Sandstrom, M.Larhed, M.Thirumal, V.S.Parmar, E.V. Van der Eycken *Tetrahedron* 68(14), 3019, (2012).
- Tunable high Q perovskite dielectrics in the BaO-NiO-Ta₂O₅ system. Thirumal, Meganathan; Davies, Peter K. *Journal of Materials Science* 46(13), 4715, (2011).
- Tetrasubstituted 2-Imidazolones via Ag(I)-Catalyzed Cycloisomerization of Propargylic Ureas Vaibhav P. Mehta, Ajendra kumar Sharma, Sachin G. Modha, Sweta Sharma, Thirumal Meganathan, Virinder Singh Parmar, and Erik Van der Eycken *J. Org. Chem.* 76(14) 5867(2011).
- Facile synthesis of non-ionic dimeric molecular resonance imaging contrast agent: its relaxation and luminescence studies Tanwar, Jyoti; Datta, Anupama; Tiwari, Anjani K.; Chaturvedi, Shubhra; Ojha, Himanshu; Allard, Michele; Chaudary, N. K.; Thirumal, M.; Mishra, Anil K. *Dalton Transactions* 40(13), 3346. (2011).
- Preclinical Evaluation of DO3P-AME-DO3P: A Polyazamacrocyclic Methylene Phosphonate for Diagnosis and Therapy of Skeletal Metastases. Tanwar, Jyoti;

- Datta, Anupama; Tiwari, Anjani Kumar; Thirumal, Meganathan; Chuttani, Krishna; Mishra, Anil Kumar *Bioconjugate Chemistry* 22(2), 244 (2011).
- N-Heterocyclic Carbene Catalyzed Aroylation of 3,5-Dichloro-2(1H)-pyrazinones
Vaibhav P. Mehta, Ajendra kumar Sharma, Sachin G. Modha, Sweta Sharma,, Thirumal Meganathan, Virinder Singh Parmar, and Erik Van der Eycken, *J. Org. Chem.* 76(8) 2920 (2011).
 - Ternary Niobates and Tantalates: Materials for microwave Dielectrics Masood A Nath, M. Thirumal, Vishnu Shanker and A. K Ganguli *Society for Materials chemistry Bulletin*, 1(1) (2010).
 - A new form of $MgTa_2O_6$ obtained by the molten salt method A. K. Ganguli, S. Nangia, M. Thirumal and P. L. Gai, *J.Chem.Sci.*, **118**(1), 37 (2006).
 - $Ba_8ZnTa_6O_{24}$: A new high Q dielectric Perovskite M.Thirumal, and P. K. Davies *J. Am. Ceram. Soc.*, **88**(8), 2126 (2005).
 - Communicating with Wireless perovskites: cation order and Zinc volatilization P. K. Davies, A. Borisevich and M. Thirumal *J. Eur. Ceram. Soc.*, **23**, 2461 (2003).
 - Studies on dielectric oxide materials containing niobium and tantalum M. Thirumal, and A. K. Ganguli, *Progress in Crystal Growth and Characterization of Materials*, **44** (3), 147(2002).
 - $Ba_3ZnTa_{2-x}Nb_xO_9$ and $Ba_3MgTa_{2-x}Nb_xO_9$ ($0 \leq x \leq 1$): synthesis, structure and dielectric properties M. Thirumal, I. N. Jawahar, K. P. Surendiran, P. Mohanan and A. K. Ganguli, *Mater. Res. Bull.*, **37**(14), 2321 (2002).
 - Synthesis and dielectric properties of $Ba_3ZnNb_2O_9$ and $Sr_3ZnNb_2O_9$ solid solution, M. Thirumal, and A. K. Ganguli, *Bull. Mater. Sci.*, **25**, 259 (2002).
 - Synthesis and microwave dielectric properties of $Sr_3Zn_{1-x}Mg_xNb_2O_9$ Phases, M.

Thirumal, I. N. Jawahar, K. P. Surendiran, P. Mohanan and A. K. Ganguli, Mater. Res. Bull., **37**(1), 185 (2002).

- Phase analysis and dielectric properties of oxides obtained in the $\text{MgO} - (1-x)\text{Nb}_2\text{O}_5 - (x)\text{Ta}_2\text{O}_5$ system, M. Thirumal and A. K. Ganguli, Proceedings Indian Academy of Sciences, Chemical Sciences **113**(5-6), 603 (2001).
- Synthesis and dielectric properties of magnesium niobate-magnesium tantalate solid solutions, M. Thirumal and A. K. Ganguli, Mater. Res. Bull., **36**(13-14), 2421(2001).
- New double perovskites having low dielectric loss: LaBaZnTaO_6 , LaSrZnNbO_6 and $\text{Ba}_2\text{Zn}_{0.5}\text{Ti}_{0.5}\text{TaO}_6$, A. K. Ganguli, V. Grover and M. Thirumal, Mater. Res. Bull., **36**(11), 1967 (2001).
- Molten salt synthesis of complex perovskite – related dielectric oxides, M. Thirumal, P. Jain and A. K. Ganguli, Mater. Chem. and Phys., **70**,7 (2001)
- $\text{Ba}_3\text{ZnTa}_{2-x}\text{Nb}_x\text{O}_9$ and $\text{Ba}_3\text{MgTa}_{2x}\text{Nb}_x\text{O}_9$: Synthesis, Structural and Dielectric Studies, M. Thirumal, G. SenthilMurugan, K. B. R. Varma and A. K. Ganguli, Mater. Res. Bull., **35**, 2423 (2000).
- Influence of Strontium on the cubic to ordered hexagonal phase transformation in Barium Magnesium Niobate, M. Thirumal and A. K. Ganguli, Bull. Mater. Sci., **23**, 495 (2000).
- Phase analysis and dielectric properties of ceramics in the $\text{PbO-MgO-ZnO-Nb}_2\text{O}_5$ System: a comparative study of materials obtained by the ceramic and molten salt synthesis routes, M. Thirumal and A. K. Ganguli, Bull. Mater. Sci., **23**, 101 (2000).

Conference Organization/ Presentations (in the last three years)

- Microwave dielectrics: Understanding the complexities in Perovskites 8th conference of Haridwar Chapter of *The Indian Science Congress Association* Nainital 14-15th October, 2017 Nainital INDIA
- Sustainable Chemical and Materials Science: Progress and Challenges! – National conference on Recent innovations in chemical sciences and environment technology

(SCMS-2016) (March 03-March 04, 2017) Sri Aurobindo college Delhi, INDIA.

- Sustainable Chemical and Materials Science: Progress and Challenges! – National conference on sustainable chemical & Material sciences (SCMS-2016) (August 05-August 06, 2016) S.S.Jain Subodh college Jaipur, INDIA.
- Microwave dielectrics: Understanding the complexities in Perovskites M.Thirumal, Yogita Bisht and Richa Tomar- International Conference on Materials Science & Technology (March 01-March 04,2016)University of Delhi, INDIA.
- Microwave dielectrics: Understanding the complexities in Perovskites, M.Thirumal, Yogita Bisht and Richa Tomar- 18th CRSI National symposium in Chemistry (February 05-February 07, 2016, Punjab University,Chandigarh, INDIA.
- Microwave dielectrics: Understanding the complexities in Perovskites M.Thirumal-International Conference on Multifunctional Materials for Future Applications (Oct 27-20, 2015) IIT(BHU),Varanasi INDIA.
- Microwave Dielectrics: The solid solution and composites of $(1-x)\text{Ba}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3 - (x)\text{Ba}(\text{Mg}_{1/8}\text{Nb}_{3/4})\text{O}_3$ Yogita Bisht and M.Thirumal -9th National Conference on Solid State Chemistry and Allied Areas (ISCAS-2015) Bhaskaracharya College of Applied Sciences, (May 8-10, 2015) University of Delhi, INDIA.
- Preparation and Dielectric Properties of $(1-x) \text{Ba}_3\text{NiTa}_2\text{O}_9 - (x) \text{Ba}_8\text{NiTa}_6\text{O}_9$: Comparative Study by Solid State and One Pot Metathesis” Richa Tomar and M.Thirumal -International workshop on Science, Environment and Education (IWOSSE-2015), (April 18, 2015)Pokhra, NEPAL.
- Synthesis characterization and dielectric properties of $(1-x)\text{Ba}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3 - (x)\text{Ba}(\text{Mg}_{1/8}\text{Ta}_{3/4})\text{O}_3$ Yogita Bisht and M.Thirumal -International workshop on Science, Environment and Education (IWOSSE-2015), (April 18, 2015)Pokhra, NEPAL.

- Influence of processing conditions on the dielectric properties of $\text{Ba}(\text{Zn}_{1/3}\text{Ta}_{2/3})\text{O}_3$ (BZT) Ajay Pratap singh, Ram Jeewan Yadav, and M.Thirumal- International workshop on Science, Environment and Education (IWOSSE-2015), (April 18, 2015) Pokhara, NEPAL.
- Preparation and dielectric properties of $(1-x)\text{Ba}_3\text{NiTa}_2\text{O}_9 - (x)\text{Ba}_8\text{NiTa}_6\text{O}_{24}$: Comparative study by Solid State method and One Pot Method. Richa Tomar and M.Thirumal – 6th National Symposium for Materials Research Scholars 12-14,2014 IIT Bombay, INDIA
- Synthesis, characterization and dielectric properties of $(1-x)\text{Ba}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3 - (x)\text{Ba}(\text{Mg}_{1/8}\text{Ta}_{3/4})\text{O}_3$ Yogita Bisht and M.Thirumal – 6th National Symposium for Materials Research Scholars 12-14,2014 IIT Bombay, INDIA
- Structure and dielectric properties of $(1-x)\text{Ba}_3\text{NiTa}_2\text{O}_9 - (x)\text{Ba}_8\text{NiTa}_6\text{O}_{24}$ ceramics Richa Tomar and M.Thirumal – ISCAS 2013. jammu , INDIA
- Synthesis characterization and dielectric properties of $\text{Ba}_8\text{MgTa}_6\text{O}_{24}$ Yogita Bisht and M.Thirumal - ISCAS 2013. jammu , INDIA

Research Projects (Major Grants/Research Collaboration)

- DU-DST
- DU

Awards and Distinctions

- G.A.T.E (Graduate Aptitude Test in Engineering) 1994
- Young scientist award in the International School on Powder Diffraction by IUCr, held at Calcutta, India.1998.
- Second best Poster award In the National symposium and conference of ISCAS held in Jammu.1999.

Association With Professional Bodies

1. Reviewing
 - Reviewer/ Referee for various International and National journals

2. Memberships

Life member Indian Association of solid state chemists and allied scientists

Other Activities

Member of various committees in the chemistry department

Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC or PDF file to be attached as a link on your faculty page.