


Title	Prof./Dr./Mr./Ms.	First Name	Thirupathi	Last Name	Natesan	Photograph
Designation		Professor				
Department		Chemistry				
Address	(Campus)	308 Block C, Department of Chemistry, University of Delhi, Delhi 110 007				
	(Residence)	5/11 University Road, Staff Quarters, University of Delhi, Delhi 110 007				
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Education						
Subject	Institution		Year	Details		
Ph.D	Indian Institute of Science		1998	Thesis topic: Contributions to the chemistry of cyclotriphosphazanes and bicyclic tetraphosphapentazanes		
M. Sc	University of Madras		1991	Subject: Chemistry		
B. Sc	University of Madras		1989	Subject: Chemistry		
Career Profile						
Organisation/Institution	Designation	Duration	Role			
University of Delhi	Professor	2010 onwards	Research and Teaching			
University of Delhi	Associate Professor	2007-2010	Research and Teaching			
University of Delhi	Reader	2004-2007	Research and Teaching			
Case Western Reserve University	Research Associate	2002-2004	Research			
Iowa State University	Post Doctoral Fellow	1999-2002	Research			
University of Ottawa	Post Doctoral Fellow	1998-1999	Research			
Indian Institute of Science	Research Associate	1997-1998	Research			
Research Interests/Specialization						
Platinum group metal complexes of nitrogen donor ligands, transition metal amides, imides and related complexes						
Group 12 metal carboxylate complexes, phosphorus-nitrogen rings, cages and their coordination chemistry aspects						
Organometallic and main group chemistry						
Teaching Experience (Subjects/Courses Taught)						
Inorganic Chemistry						
(i) M. Sc: Supramolecular and photoinorganic chemistry (2008 onwards), Chemistry of d- and f-block elements (2004-08), Catalysis and Bio-inorganic Chemistry (2005-09) and Transition metal organometallic Chemistry (2008 onwards) plus M. Sc Practicals (2004 onwards)						
(ii) Ph.D: (a) Metal alkoxide, aryloxide, amide, imide and related compounds (2004-2009) & (b) Organometallic Chemistry (2009 onwards)						
Honors & Awards						
1. CSIR-Junior Research Fellow (1992-94) & CSIR-Senior Research Fellow (1994-97)						
2. General Proficiency Certificate, Ripon and Mendeleev medals (1986-89)						

3. Stood University sixth rank in M.Sc (Non-Semester; 1989-1991)

Publications

Books/Monographs: Nil

Publications in In Indexed/Peer Reviewed Journals (LAST FIVE YEARS)

<u>Year of Publication</u>	<u>Title</u>	<u>Journal</u>	<u>Co-Authors</u>
2016	Six-membered Cyclopalladated $N,N',N''$ -Triarylguanidines, $[\{\kappa^2(C,N)Pd\}_2(\mu-OAc)(\mu-Pz)]$ , $[\kappa^2(C,N)Pd(\mu-Pz)]_2$ and a Novel $[AgNO_3]\{\{\kappa^2(C,N)Pd\}_2(\mu-NO_3)(\mu-Pz)\}$ : Syntheses, Reactivity Studies, Structural Aspects, and Solution Behavior	<i>Polyhedron</i> <b>2016</b> <i>Accepted for publication</i>	P. Agarwal, J. M. Thomas, C. Sivasankar, M. Nethaji
2015	Reactions of $Cd(OAc)_2 \cdot 2H_2O$ with variously substituted pyridines. Efforts to unravel the factors that determine structure/nuclearity of the products	<i>Polyhedron</i> <b>2015</b> , 98, 238	P. Saxena
2015	Ionic and neutral half-sandwich guanidinatoruthenium(II) complexes and their solution behaviour	<i>Eur. J. Inorg. Chem.</i> <b>2015</b> , 3182	R. Kishan; R. Kumar; S. Baskaran; C. Sivasankar
2014	Depalladation of neutral monoalkyne- and dialkyne inserted palladacycles and alkyne insertion/depalladation reactions of cationic palladacycles derived from $N,N',N''$ -triarylguanidines as facile route for guanidine containing heterocycles/carbocycles: Synthesis, Structural and Mechanistic aspects	<i>Organometallics</i> <b>2014</b> , 33,5554	P. Saxena, M. Nethaji
2013	Mono- and dialkyne insertion reactions of cyclopalladated $N,N',N''$ -triarylguanidines $[\kappa^2(C,N)(\mu-Br)]_2$ and <i>cis-/trans-</i> $[\kappa^2(C,N)(Lewis\ Base)Br]$ . Scaffolds for enlarged, rearranged, and zwitterionic palladacycles through ring contraction cum amine-imine tautomerization	<i>Organometallics</i> <b>2014</b> , 33,3182	P. Saxena, M. Nethaji
2013	Insertion Reactions of Six-Membered Cyclopalladated $N,N',N''$ -Triarylguanidine, $[Pd\{\kappa^2(C,N)-C_6H_3Me-3(NHC(NHAr)(=NAr))-2\}(\mu-Br)]_2$ (Ar = 2-MeC <sub>6</sub> H <sub>4</sub> ) with $PhC\equiv C-C(O)OR$ (R = Me and Et): A Gateway to Second Orthopalladation through Novel	<i>Organometallics</i> <b>2013</b> , 32,7580	P. Saxena, M. Nethaji.

Rearrangements			
2013	Six-membered [C,N] cyclopalladated sym- <i>N,N',N''</i> -tri(4-tolyl)guanidines: Synthesis, reactivity studies and structural aspects	<i>J. Organomet. Chem.</i> <b>2013</b> , 741-742, 141	P. Elumalai, M. Nethaji
2013	Dual role of acetate as a nucleophile and as an internal base in cycloplatination reaction of sym- <i>N,N',N''</i> -triarylguanidines	<i>Inorg. Chem.</i> <b>2013</b> , 52,1883.	P. Elumalai, M. Nethaji
2012	Mole ratio dependent formation of mononuclear versus pentanuclear zinc(II) pivalate complexes and the 'carboxylate shift' process	<i>Polyhedron</i> <b>2013</b> , 55, 233.	U. Kumar, M. Singh
2012	Influence of steric effect on the structural aspects of <i>N,N',N''</i> -triarylguanidine derived six-membered [C,N] palladacycles	<i>Polyhedron</i> <b>2012</b> , 52, 1041.	K. Gopi, P. Saxena, M. Nethaji
2011	Synthesis, Reactivity Studies, Structural Aspects, and Solution Behavior of Half Sandwich Ruthenium(II) <i>N,N',N''</i> -Triarylguanidinate Complexes	<i>Inorg. Chem.</i> <b>2012</b> , 51,157	T. Singh, R. Kishan, M. Nethaji
2011	3,5-Lutidine coordinated zinc(II) aryl carboxylate complexes: Precursors for zinc(II) oxide	<i>Inorg. Chim. Acta</i> <b>2011</b> , 372, 191.	U. Kumar, J. Thomas, R. Nagarajan.
2011	Effects of steric/basic properties of Lewis bases on the degree of aggregation of zinc(II) pivalate complexes	<i>Inorg. Chim. Acta</i> <b>2011</b> , 370, 122.	U. Kumar, J. Thomas, M. Agarwal.
2011	Synthesis, Reactivity, Structural Aspects, and Solution Dynamics of Cyclopalladated Compounds of <i>N,N',N''</i> -Tris(2-anisyl)guanidine	<i>Organometallics</i> <b>2011</b> , 30, 572.	K. Gopi, M. Nethaji.

#### Conference Presentations (LAST FIVE YEARS)

1. P. Agarwal, **N. Thirupathi**, M. Nethaji *The influence of synthetic routes upon the formation of  $[Cd(\kappa^2O,O'-OC(O)^tBu)_2(H_2O)_2]$  and  $\{Na_2[Cd(\kappa^2O,O'-OC(O)Me)(\kappa^2O,O'-OC(O)^tBu)(OC(O)^tBu)_2]\cdot 2^tBuC(O)OH\}_\infty$*  2016 In Abstract "18<sup>th</sup> CRSI National Symposium in Chemistry" P9, Punjab University and Institute of Nanoscience and Technology, Mohali.
2. R. Kumar, **N. Thirupathi**, *Transfer Hydrogenation of Ketones and Aldehydes Catalyzed by  $[(\eta^5-C_5Me_5)RhCl(\eta^2(N,N')(ArN)_2C\equiv N(H)Ar)]$*  2016 In Abstract "18<sup>th</sup> CRSI National Symposium in Chemistry" P200, Punjab University and Institute of Nanoscience and Technology, Mohali.

3. V. Mishra, **N. Thirupathi** *Bis-Chelate Palladium(II) Amide Complexes Derived from N-Aryl-N',N''-dipyridylguanidines: Pre-Catalysts for Heck-Mizoriki Coupling Reactions involving Styrene and Aryl Bromides/Activated Aryl Chlorides* 2016 In Abstract "18<sup>th</sup> CRSI National Symposium in Chemistry" P258, Punjab University and Institute of Nanoscience and Technology, Mohali.
4. Saxena, P.; **Thirupathi, N.**; Nethaji, M. *Mono and Dialkyne Insertion Reactions of Cyclopalladated N,N',N''-Triarylguanidines, [(C,N)Pd( $\mu$ -Br)]<sub>2</sub> and cis/trans-[(C,N)Pd(Lewis base)Br]: Scaffolds for Enlarged, Rearranged and Zwitterionic Palladacycles through Ring Contraction cum Amine Imine Tautomerisation* 2014 In Abstract "16<sup>th</sup> CRSI National Symposium in Chemistry" P327, Indian Institute of Technology, Bombay.
5. Kishan, R.; **Thirupathi, N.**; Nethaji, M. *Synthesis, Structural Aspects and Solution Behavior of Rhodium (III) Half Sandwich Complexes Ligated by N,N',N''-Triarylguanidinate Ligands* 2014 In Abstract "16<sup>th</sup> CRSI National Symposium in Chemistry" P330, Indian Institute of Technology, Bombay.
6. Agarwal, P.; **Thirupathi, N.** *Reactivity Studies of Cyclopalladated N,N',N''-Triarylguanidines with Pyrazole and Substituted Pyrazoles: Structural Aspects and Solution Behaviour of New Palladacycles* 2013 In Abstract "Modern Trends in Inorganic Chemistry (MTIC-XV)", P-77, Indian Institute of Technology, Roorkee.
7. Kumar, R.; **Thirupathi, N.** *Synthesis, Structural Aspects and Solution Behaviour of [( $\eta^5$ -C<sub>5</sub>Me<sub>5</sub>)RhX{ $\kappa^2$ (N,N')}((ArN)<sub>2</sub>CNHAr)] and [( $\eta^5$ -C<sub>5</sub>Me<sub>5</sub>)RhL{ $\kappa^2$ (N,N')}((ArN)<sub>2</sub>CNHAr)][SbF<sub>6</sub>]; X = Cl, N<sub>3</sub>, and N<sub>3</sub>C<sub>3</sub>R<sub>2</sub> Ar = 2-X'C<sub>6</sub>H<sub>4</sub>; X' = F and Cl; L = Lewis base* 2013 In Abstract "Modern Trends in Inorganic Chemistry MTIC-XV", P-78, Indian Institute of Technology, Roorkee.
8. Kishan, R; Kumar, R; Nethaji, M; **Thirupathi, N.** *Neutral and Cationic Half Sandwich Ruthenium (II) Arene Complexes Ligated by N,N',N''-Triarylguanidinate(-1) Ligands: Synthesis, Structural Aspects, Solution Behaviour, and Their Utility in Transfer Hydrogenation* 2013 In Abstract "Emerging Trends in Development of Drugs and Devices", p.80, University of Delhi, Delhi.
9. Agarwal, P; **Thirupathi, N.** *Reactivity Studies of Guanidine Derived Palladacycles with Pyrazole and Structural Aspects* 2012 In Abstract "New Directions in Chemical Sciences (NDCS-2012)", p.48, Indian Institute of Technology, Delhi.
10. Saxena, P; **Thirupathi, N.** *Efforts To Unravel the Factors that determine the Configuration of the Palladium and Coordination Modes of Thiocyanate in Guanidine Derived Six-membered [C,N]Palladacycles* 2012 In Abstract "New Directions in Chemical Sciences (NDCS-2012)", p.50, Indian Institute of Technology, Delhi.
11. Saxena, P; **Thirupathi, N.** *Lewis base coordinated cadmium (II) acetate aggregates: Efforts to unravel the role of steric/basic properties of Lewis base upon the degree of aggregation* 2012 In Abstract "Symposium on New Developments in NMR and Conference of the National Magnetic Resonance Society", P-80, Indian Institute of Science, Bangalore.
12. Kumar U; Singh M; **Thirupathi, N.** *Influence of pH of the medium and solvent of crystallisation upon the*

nuclearity of 4-dimethylaminopyridine coordinated zinc (II) pivalate complexes 2011 In Abstract "3<sup>rd</sup> Asian Conference on Coordination Chemistry (ACCC-3, 2011)", p. 419, Indian Habitat Center, New Delhi.

13. Elumalai, P. **Thirupathi, N.**; Nethaji, M. *A rational design of sym N,N',N''-tris(2,5-xylyl)guanidine that avoids cyclopalladation: Synthesis, and structural characterisation of trans-[X<sub>2</sub>Pd(LH<sub>2</sub><sup>2,5-xylyl</sup>)<sub>2</sub>] (X = Cl, OC(O)R; R = Me, <sup>t</sup>Bu, Ph, CF<sub>3</sub>) and their utility as precatalysts for Heck-Mizoroki coupling of aryl chlorides* 2011 In Abstract Symposium on Modern Trends in Inorganic Chemistry-XIV (MTIC-XIV)", p. 219, P-77, School of Chemistry, University of Hyderabad, Hyderabad.
14. Gopi K; Saxena, P; Nethaji, M; **Thirupathi, N.** *Influence of the steric effect on the structural aspects of N,N',N''-triarylguanidines derived six-membered [C,N] palladacycles* 2011 In Abstract "3<sup>rd</sup> Asian Conference on Coordination Chemistry (ACCC-3, 2011)", p. 450, Indian Habitat Center, New Delhi.
15. Kishan; R; **Thirupathi, N.**; Singh, T. *Synthesis, structural aspects, and solution behaviour of ruthenium(II) half sandwich complexes ligated by N,N'-diarylthiourea* 2011 In Abstract "3<sup>rd</sup> Asian Conference on Coordination Chemistry (ACCC-3, 2011)", p. 406, Indian Habitat Center, New Delhi.

#### Lecture delivered

1. **Thirupathi, N.** *Alkyne Insertion Reactions of Cyclopalladated N,N',N''-Triarylguanidines and the Utility of Alkyne Inserted Products as Precursors for Guanidine Containing Heterocycles/Carbocycle* In Abstract "New Directions in Chemical Synthesis-II (Inorganic Synthesis)" L24, Indian Institute of Technology Bombay, Mumbai, 10-11 December 2014
2. **Thirupathi, N.** *Platinum (II) Complexes of Sym N,N',N''-Triarylguanidines* 2013 In Abstract "National Symposium on Recent Advances in Chemistry (NSRAC-2013)", p.24, Pondicherry University, Pondicherry.
3. **Thirupathi, N.** *Exploration of Organometallic and Coordination Chemistry Aspects of Platinum Group Metal Complexes Ligated by sym N,N',N''-Triarylguanidines and its Monoanion* 2011, In Abstract "3<sup>rd</sup> Asian Conference on Coordination Chemistry (ACCC-3, 2011)", p. 204, Indian Habitat Center, New Delhi.
4. **Thirupathi, N.** *Lewis Base Coordinated Zinc (II) and Cadmium (II) Carboxylate Complexes and their Implications in Materials and Coordination Chemistry* 2011 In Abstract "Indian Council of Chemists", p. 54, Osmania University, Hyderabad.

Total Publication Profile optional

Books \_\_\_\_\_ Nil

In Indexed/Peer Reviewed Journals

**37 Total publications in journals plus one US Patent**

Public Service/University Service/Consulting Activity

University Service: Coordinator for CHNSO elemental analyzer in USIC and Coordinator for 400 MHz NMR instrument USIC, University of Delhi, Delhi 7 (2008-till date); Member of various committees in USIC and Chemistry Department Member of Technical and Purchase Committees for Mass Spectrometer, Coordinator for Refresher Course in Chemistry 2015

Professional Societies Memberships

- a. Life Member, Chemical Research Society of India
- b. Life Member, Nuclear Magnetic Resonance Spectroscopy
- c. Life Member, Indian Council of Chemist
- d. Life Member, International Union of Crystallography

Projects (Major Grants / Collaborations)

Projects Completed: (a) 'Guanidine Scaffold for constructing short and wide bite angle phosphine ligands and their transition metal complexes (DST Project; SR/S1/IC-22/2004; completed in Aug 2008)' (b) "Lewis Base Supported Zinc(II) Carboxylate Complexes and Their Thermal Behavior" (CSIR Project: #01(2076)/06/EMR-II) (c) *N,N',N''*-Triarylguanidine Complexes of Platinum Group Metals (DST Project SR/S1/IC-04/2010)

Ongoing Project: *sym N,N',N''*-Triarylguanidines as Scaffolds for New Class of Metallacycles and Half Sandwich Complexes of Platinum Group Metals (2015 onwards; DST)

Other Details; M. Phil degree awarded: 4 (total)

Ph.D degree awarded: 7 (total)

Number of undergraduate students trained: two (Deeksha Sharma; University of Delhi; Summer Internship in Exposure to Laboratory Research and Divyansh Anil Khurana, Indian Institute of Science; KVPY-SA 2013)

Number of Research Scholars presently working: 5