



Dr. R. RAMESH
Professor and Chair
Coordinator (Centre for Organometallic Chemistry)

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Academic Qualifications

M.Sc. 1988, University of Madras, Chennai.
M.Phil. 1990, Bharathiar University, Coimbatore.
Ph.D. 1996, Bharathiar University, Coimbatore.
Postdoctoral Research, 2005, POSTECH, S. Korea

Title of Ph.D. Thesis

Synthesis, Spectra and Electrochemistry of Ru(III) complexes
(Under the guidance of Prof. K. Natarajan).

Teaching Experience: 23 Years

Research Experience: 23 Years

Additional Responsibilities

1. Coordinator – Centre for Organometallic Chemistry
2. Coordinator – National Institutional Ranking Framework (NIRF), BDU (2017-19)
3. Convener – CRSI – Trichy-Madurai local Chapters (2020-23)
4. Director – Projects, Bharathidasan University (2021-2022)
5. Chairman, PG Board of Studies, Bharathidasan University. (2021-2024)

Areas of Research

Organometallics - Bio-Inorganic Chemistry -Metal Mediated Organic synthesis

Research Supervision / Guidance

Program of Study		Completed	Ongoing
Research	Ph.D.	16	08
	M.Phil.	17	00
Project	PG	58	06
	PDF	01	01

Publications

Total No. of Publications	:	103
Total No. of Conferences Attended	:	69
Cumulative Impact Factor (as per JCR)	:	249
h- index	:	37
i- 10 index	:	77
Total Citations	:	3305

Position held

Position	Institute	Period
1. Asst. Professor	Department of Chemistry Govt. Arts college Dharmapuri.	Oct1998- Feb 2000
2. Lecturer	School of Chemistry Bharathidasan University	Mar 2000 – Oct 2002
3. Sr. Lecturer	School of Chemistry Bharathidasan University	Oct 2002 – Oct 2007
4. Reader	School of Chemistry Bharathidasan University	Oct 2007 – Oct 2010
5. Assot. Professor	School of Chemistry Bharathidasan University	Oct 2010 – Dec 2012
6. Professor	School of Chemistry Bharathidasan University	Dec 2012 – Till date

Funded Research Projects

Completed Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	SERB	2017	2020	Development of organo ruthenium catalysts for direct synthesis of amides and amines/imines	32.00
2	CEFIPRA (Indo-French)	2014	2017	Influences of the resorcin[4] arene on the catalytic outcomes	189.60
3	SERB	2013	2016	A new series of Ru(II) and Pd(II) aroylhydrazone complexes: synthesis, structures and catalytic applications to transfer hydrogenation and carbon - carbon coupling reactions	40.00
4	CSIR	2013	2016	Ruthenium complexes featuring N-heterocyclic carbenes: Synthesis, structures, redox properties and catalytic applications	23.30
5	UGC	2011	2014	Novel binuclear ruthenium(III) complexes: Synthesis, structure, spectral, magnetic and electrochemical Properties	8.25
6	CSIR	2008	2011	Novel organo-ruthenium(III) metalla-cycles: New catalysts for transfer hydrogenation of ketones	14.36
7	DST	2007	2010	Development of novel ruthenium pincer organometallic catalysts: Synthesis, structure and catalytic transfer hydrogenation	18.96
8	DST	2007	2009	Synthesis of Uranium and Mercury phosphoylide complexes: reactivity towards carbonyl compounds, isocyanides and deprotonating agents	3.84
9	UGC	2006	2009	New families of Ru(II) carbonyl complexes: Synthesis, spectra, redox and catalytic Properties	4.42
10	CSIR	2005	2008	Novel Ru(III) complexes of multidentate ligands: Synthesis, spectra, electrochemistry and bioactivity	5.40
11	UGC	2001	2001	Ru(II) Schiff base complexes: Synthesis, characterization and antimicrobial activity	0.15

Distinctive Achievements / Awards

1. UGC-Mid Career Award, 2021.
2. Fellow, Royal Society of Chemistry (**FRSC**), UK.
3. Editorial Board Member in '**Frontiers in Catalysis**'-2020.
4. **CRSI-Bronze Medal** conferred by Chemical Research Society of India for outstanding contribution to Research-2020.
5. Tamil Nadu Scientist Award (**TANSA**), 2016.
6. Fellow of Academy of Sciences (**FASc**), University of Madras, Chennai.
7. **INSA-KOSEF** visiting fellowship Award, S. Korea, 2004.
8. **INSA -NRF** Visiting Fellowship Award, S. Korea, 2010.
9. Indian Academy of Sciences Visiting Fellowship Award, Hyderabad, 2002.
10. Senior Research Fellowship Award (**SRF**), CSIR, 1993.
11. **Gold Medal** in B.Sc. Chemistry, 1985.

Overseas Exposure / Visits

1. University of Strasbourg, **France**, May - June, 2015.
2. University of Stuttgart, **Germany**, May, 2015.
3. University of Zurich, **Swiss**, May, 2014.
4. University of Strasbourg, **France**, May, 2014.
5. University of Rennes, **France**, March, 2012.
6. INSA-NRF visiting fellowship, Chonbuk National University, **S. Korea**, Sep, 2010.
7. Visiting Scientist, POSTECH, **S. Korea**, Mar-Apr-2010
8. Brain Pool Invitation Fellowship, POSTECH, **S. Korea**, Nov 2005- Oct -2006.
9. INSA-KOSEF visiting fellowship, POSTECH, **S. Korea**, July-Sep, 2004.
10. Indian Academy of Sciences, University of Hyderabad, June-Aug, 2002.

Events organized in leading roles

1. Convener -CRSI-SRC College for Women, Tiruchirappalli, Sep 17th, 2021
2. Convener -CRSI-Cauvery College for Women, Tiruchirappalli, Sep 11th, 2021
3. Convener -CRSI- VHNSNC, Virudhunagar, Jan 29th, 2021.
4. Convener -CRSI- St. Xavier College, Palayamkottai, Dec 7th, 2020.
5. Convener - National Chemistry Week - CRSI- Nov 2nd-7th, 2020.
6. Convener - (By Invitation) DST-ACS publishing workshop, Bharathidasan University, Dec- 2019.
7. Convener - International Conference on Sustainable Energy Technologies (**i-SET**), June-2018.
8. Co-Convener -10th- CRSI Symposium, BDU-NIT, July - 2015.

List of Publications

- 103 Nickel(II)-Catalyzed Selective (E)-olefination of Methyl Heteroarenes Using Benzyl Alcohols via Acceptorless Dehydrogenative Coupling Reaction
G. Balamurugan and R. Ramesh*, **ChemCatChem**,
IF:5.686; ISSN: 1867-3880. (Accepted), <https://doi.org/10.1002/cctc.202101455>
- 102 Assessment of Antiproliferative activity of New Half-sandwich Arene Ru(II) furylbenzhydrazone complexes
P. Ramya, R. Ramesh*, U. Devan, A.A.J. Velanganni and J. G. Malecki, **Appl. Organomet. Chem.**, 2021; e6512. IF:4.105; ISSN:1099-0739.
<https://doi.org/10.1002/aoc.6512>
- 101 Palladium(II) N,N,O-Pincer Type Complexes Mediated Dehydrogenative Coupling of Alcohols to Quinazolines
P. Anandaraj, R. Ramesh* and P. Kumaradhas, **New. J. Chem.**, 2021, **45**, 16572-16580
<https://doi.org/10.1039/D1NJ03146E>, IF:3.591; ISSN: 1369-9261
- 100 Palladium(II) N[^]O Chelating Complexes Catalyzed One-pot Approach for Synthesis of Quinazolin-4(3H)-ones via Acceptorless Dehydrogenative Coupling of Benzyl alcohols and 2-Aminobenzamide
S. Balaji, G. Balamurugan, R. Ramesh* and D. Semeril, **Organometallics**, 2021, 40, 6, 725–734.
IF: 3.876; ISSN:1099-0739.
<https://doi.org/10.1021/acs.organomet.0c00814>
- 99 Arene Diruthenium(II) Mediated Synthesis of Imines from Alcohols and Amines Under Aerobic Condition
V. Tamilthendral, R. Ramesh* and G. Malecki, **Appl. Organomet. Chem.**, 2020; e6122
[DOI.org/10.1002/aoc.6122](https://doi.org/10.1002/aoc.6122), IF:4.105; ISSN:1099-0739
- 98 Non-pincer-type Arene Ru(II) Catalysts for the Direct Synthesis of Azines from Alcohols and Hydrazine under Aerobic Conditions
S. Saranya, R. Ramesh* and D. Semeril, **Organometallics**, (2020) 39, 17, 3194-3201.
DOI:10.1021/acs.organomet.0c00367, IF: 3.876; ISSN:1099-0739.
- 97 Investigations on Antiproliferative Activity and Apoptosis Mechanism of New Arene Ru(II) Carbazole based Hydrazone Complexes
T. Sathiya Kamatchi, M.M. Khan, R. Ramesh*, H. Wang and G. Malecki, **Dalton Trans.**, 49 (2020), 11385, [DOI: 10.1039/D0DT01476A](https://doi.org/10.1039/D0DT01476A) ; IF:4.174; ISSN: 1477-9234.
- 96 Nickel(II) – N[^]N[^]O Pincer Type Complexes Catalyzed N-alkylation of Amines with Alcohols via Hydrogen Auto Transfer Reaction
G. Balamurugan, R. Ramesh* and G. Malecki, **J. Org. Chem.**, 85 (2020)7125.
DOI: 10.1021/acs.joc.0c00530; IF:4.335; ISSN: 1520-6904

- 95 Synthesis and Structure of Arene Ru(II) NAO-Chelating Complexes: In Vitro Cytotoxicity and Cancer Cell Death Mechanism,
S. Balaji, M.M. Khan, R. Ramesh*, H. Wang and D. Semeril, **Organometallics**, 39 (2020) 1366.
DOI: [10.1021/acs.organomet.0c00092](https://doi.org/10.1021/acs.organomet.0c00092); IF: 3.804; ISSN:1099-0739
- 94 Efficient construction of C-C bonds from aryl halides/aryl esters with arylboronic acids catalysed by palladium(II) thiourea complexes
T.S. Manikandan, R. Ramesh* and G. Malecki, **Appl. Organomet. Chem.**,
DOI:10.1002/aoc.5181; IF:3.259; ISSN:1099-0739
- 93 Synthesis of the First Resorcin[4]arene-Functionalized Triazolium Salts and Their Use in Suzuki Miyaura Cross-Coupling Reactions
D. Sémeril,* D. Matt and R. Ramesh, **Catalysts**, 9 (2019) 388.
[DOI: 10.3390/catal9040388](https://doi.org/10.3390/catal9040388); IF:3.444; ISSN:2073-4344
- 92 Direct synthesis of 2,4,5-trisubstituted imidazoles from primary alcohols by diruthenium(II) catalysts under aerobic conditions
S. Saranya and R. Rengan*, **Organic & Biomolecular Chemistry**, 17 (2019) 1402.
[DOI: 10.1039/C8OB02785D](https://doi.org/10.1039/C8OB02785D); IF:3.490; ISSN: 1477-0539
- 91 The Tandem C-H/N-H Activation of N-Methyl Arylamide Catalyzed by Dinuclear Pd(II) Benzhydrazone Complex: A Concise Access to Phenanthridinone
T.S. Manikandan, R. Ramesh* and D. Semeril, **Organometallics**, 38 (2019) 319.
[DOI:10.1021/acs.organomet.8b00714](https://doi.org/10.1021/acs.organomet.8b00714); IF:4.100; ISSN: 1520-6041
- 90 Synthesis and Structures of Arene Ruthenium(II)-NHC complexes: Efficient catalytic α -alkylation of ketones via hydrogen auto transfer reaction.
G. Balamurugan, S. Balaji, R.Ramesh* and N. Bhuvanesh, **Appl.Organomet.Chem.**,
DOI:10.1002/aoc.4696; IF:3.259; ISSN:1099-0739
- 89 Chiral calixarene and resorcinarene derivatives: Conical cavities substituted at their upper rim by two phosphito units and their uses as ligands in Rh- catalysed hydroformylation
N. Natarajan, M. Pierrevekin, D. Semeril, C. Bauder, D. Matt and R. Ramesh, **Catalysis Commun.**, 118 (2019) 70–75. DOI: [10.1016/j.catcom.2018.09.020](https://doi.org/10.1016/j.catcom.2018.09.020); IF: 3.674; ISSN: 1566-7367
- 88 Synthesis and structure of arene ruthenium(II) complexes: one pot catalytic approach to synthesis of bioactive quinolines under mild condition
S. Muthumari, S. Saranya and R. Ramesh*, **Appl.Organomet.Chem.**,
DOI: 10.1002/aoc.4582; IF: 3.259; ISSN:1099-0739
- 87 Synthesis and structure of arene ruthenium(II) benzhydrazone complexes: Antiproliferative activity, apoptosis induction and cell cycle analysis
R. Raj Kumar, R. Ramesh* and G. Malecki, **J. Organomet. Chem.**, 862 (2018) 95-104.
DOI: [10.1016/j.jorganchem.2018.03.013](https://doi.org/10.1016/j.jorganchem.2018.03.013); IF: 2.173; ISSN: 0022-328X
- 86 Synthesis and structure of Ru(II) complexes of thiosemicarbazones: Highly selective catalysts for oxidation of olefins to aldehydes
S. Muthumari and R. Ramesh*, **ChemistrySelect** 3 (2018) 3036–3041.
DOI: [10.1002/slct.201800163](https://doi.org/10.1002/slct.201800163); IF: 1.716; ISSN:2365-6549

- 85 Direct aerobic strategy for selective synthesis of imines via alcohols and amines promoted by ruthenium(II) (η^6 -cymene) complexes
T. S. Manikandan, S. Naveen, N. Loknath and R. Ramesh*, **ChemistrySelect**, 3 (2018) 1561-1568.
[DOI:10.1002/slct.201800083](https://doi.org/10.1002/slct.201800083); IF: 1.716; ISSN:2365-6549
- 84 Synthesis, antiproliferative activity and apoptosis promoting effects of arene Ru(II) complexes with N, O chelating ligands
N. Mohan, M.M. Khan and R. Ramesh*, **J. Organomet. Chem.**, 859 (2018) 124-131.
DOI: 10.1016/j.jorganchem.2018.01.022; IF: 2.173; ISSN: 0022-328X
- 83 Synthesis and structure of new binuclear ruthenium(II) arene benzyl bis(benzoylhydrazone) complexes: Investigation on antiproliferative activity and apoptosis induction
M. Subarkhan, S. Saranya, and R. Ramesh*, **Inorg. Chem. Front.**, 5 (2018) 585.
DOI:10.1039/C7QI00761B; IF: 5.934; ISSN: 2409-3424
- 82 Cavitand chemistry: nickel half-sandwich complexes with imidazolylidene ligands bearing one or two resorcinarenyl substituents
N. Natarajan, T. Chavagnan, D. Sémeril*, E. Brenner, D. Matt, R. Ramesh, and L. Toupet,
Eur. J. Inorg. Chem., (2018) 890–896
[DOI: 10.1002/ejic.201701143](https://doi.org/10.1002/ejic.201701143); IF:2.578; ISSN:1099-0682
- 81 Cyclometalated Ru(II)-NHC complexes as effective catalysts for transfer hydrogenation: Influence of wintip group on catalytic outcomes
G. Balamurugan, R. Ramesh* and G. Małecki., **ChemistrySelect**, 2 (2017) 10603.
DOI: [10.1002/slct.201702102](https://doi.org/10.1002/slct.201702102); IF: 1.716; ISSN:2365-6549
- 80 One-pot catalytic approach for the selective aerobic synthesis of imines from alcohols and amines using efficient arene diruthenium(II) catalysts under mild condition
S. Saranya, R. Ramesh* and G. Małecki., **Eur. J. Org. Chem.**, (2017) 6726.
[DOI: 10.1002/ejoc.201701408](https://doi.org/10.1002/ejoc.201701408); IF:2.578; ISSN:1099-0682
- 79 Versatile coordination ability of thioamide ligand in Ru(II) complexes: synthesis, computational studies, in vitro anticancer activity and apoptosis induction
R. Raj Kumar, R. Ramesh* and G. Malecki, **New. J. Chem.**, 41 (2017) 9130.
[DOI:10.1039/C7NJ01828B](https://doi.org/10.1039/C7NJ01828B); IF: 3.069; ISSN: 1369-9261
- 78 Transfer hydrogenation of ketones catalyzed by half-sandwich (η^6 -p-cymene) ruthenium(II) complexes incorporating benzoylhydrazone ligands
N. Mohan, S. Muthumari and R. Ramesh*, **Appl. Organomet. Chem.**, 31(2017) 3648.
DOI: 10.1002/aoc.3648; IF:3.259; ISSN:1099-0739
- 77 Synthesis and structural characterization of Pd(II) thiosemicarbazone complex: catalytic evaluation in synthesis of diaryl ketones from aryl aldehydes and arylboronic acids
R. N. Prabhu and R. Ramesh*, **Tetrahedron Lett.**, 58 (2017) 405.
DOI: [10.1016/j.tetlet.2016.12.032](https://doi.org/10.1016/j.tetlet.2016.12.032); IF: 2.379; ISSN: 0040-4020
- 76 Ru(II) carbazole thiosemicarbazone complexes with four membered chelate ring: Synthesis, molecular structures and evaluation of biological activities
R. Raj Kumar, R. Ramesh* and G. Malecki, **J. Photochem. Photobiol B: Biol.** 165 (2016) 310.
DOI: 10.1016/j.jphotobiol.2016.10.039; IF: 4.067; ISSN:1011-1344

- 75 Steric control on the coordination behaviour of carbazole thiosemicarbazones towards [RuH(Cl)(CO)(AsPh₃)₃]: A combined experimental and theoretical study
R. Raj Kumar, R. Ramesh and G. Malecki, **New J. Chem.**, 40 (2016) 10084.
[DOI:10.1039/C6NJ02430K](https://doi.org/10.1039/C6NJ02430K); IF: 3.069; ISSN: 1369-9261
- 74 Synthesis and molecular structure of arene ruthenium(II) benzhydrazone complexes: Impact of substitution at chelating ligand and arene moiety on antiproliferative activity
M. Mohamed Subarkhan, R. Ramesh, Y. Liu, **New J. Chem.**, 40 (2016) 9813.
[DOI:10.1039/C6NJ01936F](https://doi.org/10.1039/C6NJ01936F); IF: 3.069; ISSN: 1369-9261
- 73 Synthesis and characterization of cycloruthenated benzhydrazone complexes: Catalytic applications to selective oxidative cleavage of olefins to aldehyde.
T.S. Manikandan, R. Ramesh, D. Semeril, **RSC Adv.**, 6 (2016) 97107.
[DOI:10.1039/C6RA19044H](https://doi.org/10.1039/C6RA19044H); IF: 3.049; ISSN: 2046-2069
- 72 Square-planar Ni(II) thiosemicarbazonato complex as an easily accessible and convenient catalyst for Sonogashira cross-coupling reaction
R. N. Prabhu and R. Ramesh*, **Tetrahedron Lett.**, 57 (2016) 4893.
DOI:[10.1016/j.tetlet.2016.09.049](https://doi.org/10.1016/j.tetlet.2016.09.049); IF: 2.379; ISSN: 0040-4020
- 71 Ruthenium(II) Arene Complexes Containing Benzhydrazones: Synthesis, structure and Antiproliferative Activity
M. Mohamed Subarkhan, S. Saranya and R. Ramesh*, **Inorg. Chem. Front.**, 3(2016) 1245
[DOI: 10.1039/C6QI00197A](https://doi.org/10.1039/C6QI00197A); IF: 5.934; ISSN: 2409-3424
- 70 Synthesis and catalytic evaluation of ruthenium(II) benzhydrazone complex in transfer hydrogenation of ketones
T. S. Manikandan, S. Saranya, R. Ramesh*, **Tetrahedron Lett.**, 57 (2016) 3764.
DOI:[10.1016/j.tetlet.2016.07.020](https://doi.org/10.1016/j.tetlet.2016.07.020); IF: 2.379; ISSN: 0040-4020
- 69 Highly efficient palladium(II) hydrazone based catalysts for the Suzuki coupling reaction in aqueous medium
S. Muthumari and R. Ramesh*, **RSC Adv.**, 6 (2016) 52101.
[DOI:10.1039/C6RA06734D](https://doi.org/10.1039/C6RA06734D); IF: 3.049; ISSN: 2046-2069
- 68 Antiproliferative activity of cationic and neutral thiosemicarbazone copper(II) complexes
M. Mohamed Subarkhan, R. N. Prabhu, R. Raj Kumar and R. Ramesh*, **RSC Adv.**, 6 (2016), 25082.
[DOI:10.1039/C5RA26071J](https://doi.org/10.1039/C5RA26071J); IF: 3.049; ISSN: 2046-2069
- 67 Efficient and recyclable Ru(II) arene thioamide catalysts for transfer hydrogenation of ketones: Influence of substituent on catalytic outcome
A. Kanchanadevi, R. Ramesh* and D. Semeril, **J. Organomet. Chem.**, 808 (2016) 68.
DOI:[10.1016/j.jorganchem.2016.02.016](https://doi.org/10.1016/j.jorganchem.2016.02.016); IF: 2.173; ISSN: 0022-328X
- 66 Synthesis, structure and anticancer activity of (η^6 -benzene) ruthenium(II) complexes containing aroylhydrazone ligands
N. Mohan, S. Muthumari and R. Ramesh*, **J. Organomet. Chem.**, 807 (2016) 45.
DOI: [10.1016/j.jorganchem.2016.01.033](https://doi.org/10.1016/j.jorganchem.2016.01.033); IF: 2.173; ISSN: 0022-328X

- 65 Synthesis, molecular structure and electrochemical properties of nickel(II) benzhydrazone complexes: Influence of ligand substitution on DNA/protein interaction, antioxidant activity and cytotoxicity
R. Raj Kumar, and R. Ramesh*, **RSC Adv.**, 5 (2015) 101932.
[DOI: 10.1039/C5RA19530F](https://doi.org/10.1039/C5RA19530F); **IF:** 3.049; ISSN: 2046-2069
- 64 Synthesis and structure of nickel(II) thiocarboxamide complexes: effect of ligand substitutions on DNA/Protein binding, antioxidant and cytotoxicity.
R. Raj Kumar, M. Mohamed Subarkhan and R. Ramesh*, **RSC Adv.**,5 (2015) 46760.
[DOI:10.1039/C5RA06112A](https://doi.org/10.1039/C5RA06112A); **IF:** 3.049; ISSN: 2046-2069
- 63 An efficient trifunctional benzhydrazone ligated Pd(II) complex for Heck reactions of aryl bromides.
S. Muthumari, N. Mohan and R. Ramesh* **Tetrahedron Lett.**,56(2015) 4170.
[DOI:10.1016/j.tetlet.2015.05.016](https://doi.org/10.1016/j.tetlet.2015.05.016); **IF:** 2.379; ISSN: 0040-4020
- 62 Synthesis and molecular structure of ruthenium (III) benzoylhydrazone complexes: Substituents effect on transfer hydrogenation of ketones.
A.Kanchanadevi, R. Ramesh* and N. Bhuvanesh, **J. Organomet.Chem.**, 788 (2015)49.
DOI:10.1016/j.jorganchem.2015.04.032; **IF:** 2.173; ISSN: 0022-328X
- 61 Synthesis of Ru(II) pyridoxal thiosemicarbazone complex and its catalytic application to one-pot conversion of aldehydes to primary amides.
A. Kanchanadevi, R. Ramesh* and David Semeril, **Inorg. Chem. Commun.**, 56 (2015)116.
DOI: 10.1016/j.inoche.2015.04.006; **IF:** 1.795; ISSN: 1387-7003
- 60 Studies on synthesis, spectral, magnetic and electrochemical behavior of binuclear ruthenium(III) thiosemicarbazone complexes.
M. Mohamed Subarkhan and R. Ramesh*, **Spectrochimca.Acta. Part A: Mol. & Biomol. Spectroscopy**,138 (2015) 264.DOI: [10.1016/j.saa.2014.11.039](https://doi.org/10.1016/j.saa.2014.11.039); **IF:** 2.931; ISSN: 1386-1425
- 59 Direct synthesis of amides from coupling of alcohols and amines catalyzed by ruthenium(II) thiocarboxamide complexes under aerobic conditions
E. Sindhuja, S. Balaji ,R. Ramesh* and Y.Liu., **Organometallics**, 33 (2014) 4269.
[DOI: 10.1021/om500556b](https://doi.org/10.1021/om500556b); **IF:** 3.862; ISSN: 1520-6041
- 58 Direct synthesis of imines from alcohols and amines using an active ruthenium(II) NNN-pincer complex.
E. Sindhuja and R. Ramesh **Tetrahedron Lett.**, 55 (2014) 5504.
[DOI:10.1016/j.tetlet.2014.08.035](https://doi.org/10.1016/j.tetlet.2014.08.035); **IF:** 2.379; ISSN: 0040-4020
- 57 DNA/Protein interaction and cytotoxicity of palladium(II) complexes of thiocarboxamide ligands.
E. Sindhuja, R. Ramesh* and Y. Liu, **Inorg. Chim.Acta.**, 416 (2014) 1.
DOI: [10.1016/j.ica.2014.03.002](https://doi.org/10.1016/j.ica.2014.03.002); **IF:** 2.433; ISSN:0020-1693
- 56 Synthesis, spectral and electrochemical studies of binuclear Ru(III) complexes containing dithiosemicarbazone ligand
A. Kanchana Devi and R. Ramesh, **Spectrochimca. Acta. Part A: Mol. & Biomol. Spectroscopy**,117 (2014) 138.DOI: 10.1016/j.saa.2013.07.040; **IF:** 2.931; ISSN: 1386-

- 55 Palladium(II) thiosemicarbazone catalyzed Suzuki-Miyaura cross coupling reactions of aryl halides
D. Pandiarajan and R. Ramesh*, Yu Liu and R. Suresh, **Inorg. Chem. Commun.**, 33 (2013) 33.
DOI: [10.1016/j.inoche.2013.03.032](https://doi.org/10.1016/j.inoche.2013.03.032); IF: 1.795; ISSN: 1387-7003
- 54 Synthesis and structural characterization of palladium(II) thiosemicarbazone complex: Application to the Buchwald-Hartwig amination reaction
R. N. Prabhu and R. Ramesh*, **Tetrahedron Lett.**, 54 (2013) 1120.
DOI: [10.1016/j.tetlet.2012.12.070](https://doi.org/10.1016/j.tetlet.2012.12.070); IF: 2.379; ISSN: 0040-4020
- 53 Ruthenium(II) half-sandwich complexes containing thioamides : Synthesis, structures and catalytic transfer hydrogenation of ketones
D. Pandiarajan and R. Ramesh*, **J. Organomet. Chem.**, 723 (2013) 26 (Top 25 Hottest Article). DOI: [10.1016/j.jorganchem.2012.10.003](https://doi.org/10.1016/j.jorganchem.2012.10.003); IF: 2.173; ISSN: 0022-328X
- 52 Catalytic application of dinuclear palladium(II) bis(thiosemicarbazone) complex in the Mizoroki-Heck reaction.
R. N. Prabhu and R. Ramesh*, **Tetrahedron Lett**, 53 (2012) 5961.
[DOI: 10.1016/j.tetlet.2012.08.120](https://doi.org/10.1016/j.tetlet.2012.08.120); IF: 2.379; ISSN: 0040-4020
- 51 Synthesis, structural characterization, electrochemistry and catalytic transfer hydrogenation of ruthenium(II) carbonyl complexes containing tridentate benzoylhydrazone ligands
R. N. Prabhu and R. Ramesh*, **J. Organomet. Chem.**, 718 (2012) 43.
DOI: [10.1016/j.jorganchem.2012.08.002](https://doi.org/10.1016/j.jorganchem.2012.08.002); IF: 2.173; ISSN: 0022-328X
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N. Raja and R. Ramesh* **Tetrahedron Lett.**, 53 (2012) 4770.
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Others

1. No. of Ph.D. Thesis evaluated : 50
2. No. of Ph.D. Public Viva Voce Examination conducted : 42

Events Participated

Conferences / Seminars / Workshops:

1. A new route to the synthesis of novel hydrido complexes by the abstraction of a hydride ion from the coordinated β -diketonate ligands on ruthenium(II) complexes. UGC – DRS National Seminar on New trend in Dynamic and Structural Studies in Inorganic and Physical Chemistry, Madurai Kamaraj University, 1995.
2. Studies on the Schiff base complexes of ruthenium(III) containing triphenylphosphine/arsine. Indian Science Congress, Calcutta, 1995.
3. Ruthenium(II) thiocarbonyl complexes containing tetradentate Schiff bases. National Symposium on Metallo Organic chelates and Recent Advances in Chemistry, Presidency College, Chennai, Feb 2001.
4. Novel Ru(III) complexes containing bidentate Schiff base ligands. 5th National Symposium in Chemistry, CLRI, Chennai, February 2003.
5. Synthesis, characterisation, redox properties and biological studies of Ru(II) carbonyl complexes, 6th CRSI National Symposium, IIT Kanpur, February 2004.
6. Ruthenium(III) arylazophenolate complexes containing triphenylphosphine/arsine, 6th CRSI National Symposium, IIT Kanpur, February 2004.
7. Synthesis, Characterization and Bioactivity studies of ruthenium(II) carbonyl complexes containing triphenylphosphine and Monobasic Bidentate Schiff bases, 6th CRSI National Symposium, IIT Kanpur, February 2004.
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12. Synthesis, structure and redox properties of cycloruthenated complexes: Crystal structure of bis(triphenylphosphine) carbonyl-2-(phenylazo)-4-methylphenolato ruthenium(II), 2nd CRSI, Bharathidasan University, Tiruchirappalli, January 2005.
13. Cyclometallated Ruthenium(III) Complexes: Synthesis, Crystal Structure, Catalytic Transfer Hydrogenation of Ketones and Biological Activity, 7th CRSI National Symposium, IACS Kolkatta, February 2005.
14. Synthesis of Ru(II) Carbonyl Complexes Containing 2N2O Donor Ligands Towards Catalyzed Coupling Reactions, 7th CRSI National Symposium, IACS Kolkatta, February 2005.
15. Ru(II) Carbonyl Complexes with N2O2 Donors: Catalytic Isomerisation of Allylic Alcohols and Biological Activity, 7th CRSI National Symposium, IACS Kolkatta, February 2005.
16. Synthesis, Spectral, Redox and Biological studies of Schiff base Ruthenium(III) Complexes Derived from 3-acetyl-6-methyl-2H-pyran-2,4(3H)-dione, 7th CRSI National Symposium, IACS Kolkatta, February 2005.
17. Orthometallated Mononuclear Ruthenium(III) Complexes Containing C,N,O Donors, National Symposium on Electron Magnetic Resonance Spectroscopy (NSEMRS), Pondicherry University, Pondicherry, February 2005.
18. Pt(II)/Pd(II) pincer complexes that show C-H...Cl hydrogen bonding: Synthesis and application in catalytic aldol and silylcyanation reactions, National Seminar on Current trends in Chemistry, Cochin University of Science and Technology, Cochin, January 2008.
19. Ruthenium(III) complexes of amine-bis(phenolate) ligands as catalysts for transfer hydrogenation of ketones, Modern Trends in Inorganic Chemistry (MTIC-XIII) at Indian Institute of Science, Bangalore-560 012, from December 2009.
20. Pt(II)/Pd(II) pincer complexes that show C-H...Cl hydrogen bonding: Synthesis and application in catalytic aldol and silylcyanation reactions, 38th National Seminar on Crystallography, University of Mysore, Mysore, February 2009.
21. Synthesis, crystal structure and catalytic activity of ruthenium(II) carbonyl complexes containing ONO and ONS donor ligands, International Conference on Coordination and Organometallic Chemistry (ICCO-2009), Bharathiar University, Coimbatore, March 2009.
22. Ruthenium(II) mediated C-H activation of substituted acetophenone thiosemicarbazones: Synthesis, structural characterization, luminescence and electrochemical properties, International Conference on Coordination and Organometallic Chemistry (ICCO-2009), Bharathiar University, Coimbatore, March 2009.
23. Luminescence Properties of Organoruthenium(II) Thiosemicarbazone Complexes, International Conference on Materials of the Millennium (MATCON-2010), CUSAT, Cochin, January 2010.
24. Hydrazone Containing Transition Metal Complexes – Synthesis, Electrochemical Studies and Structural Aspects, National Conference on Recent Advances in Electroanalytical Techniques, Gandhigram Rural Institute, Gandhigram, February 2010.

25. Synthesis, characterization and Electrochemical Behaviour of Transition Metal Complexes Incorporating Hydrazone Ligand, National Conference on Recent Advances in Electroanalytical Techniques, Gandhigram Rural Institute, Gandhigram, February 2010.
26. Luminescence and Electrochemical Properties of Cyclometallated Ruthenium(II) Complexes of Incorporating Thiosemicarbazones, National Seminar on Current Trends in Chemistry (CtriC-2011), Cochin University of Science and Technology, Cochin, March 2011.
27. Arene ruthenium(II) phenylthiosemicarbazone complexes mediated transfer hydrogenation of ketones, National Seminar on Current Trends in Chemistry (CtriC-2011), Cochin University of Science and Technology, Cochin, March 2011.
28. Synthesis, structural characterization, luminescence, electrochemical behaviour and DFT investigation of ruthenium(II) carbonyl complexes containing benzhydrazone ligands, 3rd Asian Conference on Coordination Chemistry (ACCC3-2011), New Delhi, October 17-20, 2011.
29. Pd(II) thiocarboxamide complexes catalyzed Suzuki coupling of aryl halides, 3rd Asian Conference on Coordination Chemistry (ACCC3-2011), New Delhi, October 17-20, 2011.
30. Dinuclear palladium(II) bis(thiosemicarbazone) catalyzed Mizoroki-Heck reaction, International Green Catalysis Symposium and Advanced Spring School on Green Catalysis, University of Rennes, March 7-9, 2012.
31. Synthesis, Characterisation and Catalytic Applications of Cationic Arene ruthenium(II) phenylhydrazone complexes, International Green Catalysis Symposium and Advanced Spring School on Green Catalysis, University of Rennes, March 7-9, 2012.
32. Arene ruthenium(II) complexes bearing thiocarboxamide ligands and their catalytic activity in oxidation of alcohols, International Green Catalysis Symposium and Advanced Spring School on Green Catalysis, University of Rennes, March 7-9, 2012.
33. National Seminar on Recent advances in synthetic Organic Chemistry 1990, Bharathiar University, Coimbatore.
34. UGC-DRS National Seminar on New Trends in Dynamic and Structural Studies in Inorganic and Physical Chemistry, Madurai Kamaraj University, 1995.
35. Indian Science Congress, Calcutta, 1995.
36. 2nd Winter School on Organometallic Chemistry, IIT, Kharagpur, Jan 2001.
37. Winter School on Bio-inorganic Chemistry, Department of Chemistry, Bharathidasan University, Trichy, Dec 2002.
38. Second Regional CRSI Symposium in Chemistry, School of Chemistry, Bharathidasan University, Trichy, Jan 2005.
39. Workshop on Organometallic Chemistry, Bhabha Atomic Research Centre (BARC), Mumbai, Apr 2005.
40. Symposium on Modern Trend in Inorganic Chemistry, Indian Institute of Technology (IIT Madras), Chennai, Dec-2007.
41. National Seminar on Current trends in Chemistry, Cochin University of Science and Technology, Cochin, Jan 18-19th, 2008.
42. National Conference on Recent Trends in Coordination and Organometallic Chemistry, Sri Ramakrishna Mission Vidyalaya College of Arts and Science,

- Coimbatore, July 17-18, 2008
43. 3rd CRSI-RSC Symposium at National Chemical Laboratory, Pune-411008, February 5, 2009.
 44. 11th CRSI National Symposium in Chemistry at National Chemical Laboratory, Pune-411008, from February 6th to 8, 2009.
 45. 38th National Seminar on Crystallography (38NSC2009) at University of Mysore, Mysore- 570006, from February 11th to 13, 2009.
 46. "Modern Trends in Inorganic Chemistry" (MTIC-XIII) at Indian Institute of Science, Bangalore- 560 012, from December 7 to 10, 2009.
 47. 12th CRSI National Symposium in Chemistry, Indian Institute of Chemical Technology, Hyderabad- 500 607, from February 4th to 7, 2010.
 48. National Seminar on Current Trends in Chemistry, Cochin University of Science and Technology, Cochin, from March 4th to 5, 2011.
 49. Chemical Research Society of India (CRSI), NIT, Surathkal, Mangalore.
 50. Emerging Trends in Chemistry, December 13, 2013, SRC, Trichy.
 51. Department of Chemistry, Anna University, December, 2013, Trichy.
 52. Academy Staff College, Bharathidasan University, 4th Jan, 2014, Trichy.
 53. Special Lecture on Bio-inorganic Chemistry, Thiagarajar College, Jan 2014, Madurai.
 54. National Workshop on Advanced Characterisation techniques (Act-2015), Periyar University, January 29-30th, 2015.
 55. Current Scenario In Material Chemistry (CSIMC-2015), Jamal Mohamed College, January 9-10th February, 2015.
 56. One day UGC sponsored seminar, Periyar EVR Govt. Arts College, 19th Feb, 2015.
 57. Faculty development programme, Anna University, BIT, Trichy, June - 2015.
 58. 10th CRSI Symposium, National Institute of Technology, Trichy, July - 2015.
 59. UGC sponsored National Seminar on Recent Advances in Chemistry, Kandaswami Kandar's College, Namakkal, Aug 13-14, 2015.
 60. One day National seminar, ANJAC College, Sivakasi, March 11, 2016.
 61. National Conference on the Recent Advances in the Applications of Macromolecular Materials (RAAMM - 2017), GRI, Ganghigram March 2, 2017.
 62. One Day UGC - National Conference on Recent Advances in chemistry, Meenakshi College, Madurai, Jan-2020.

International Conference Attended/Participated

1. Workshop on Integrated Molecular System, Jeju Island, S. Korea, Feb - 2006.
2. The 12th Samsung International Symposium on Molecular Medicine, Seoul, S. Korea, Sep- 2006.
3. International Conference on Coordination and Organometallic Chemistry (ICCO-2009), Bharathiar University, Coimbatore, March 2009.
4. International Conference on Materials of the Millennium (MATCON), CUSAT, Cochin, Jan-2010.
5. 3rd Asian Conference on Coordination Chemistry (ACCC-3, 2011), New Delhi, October -

- 2011.
6. International Green Catalysis Symposium and Advanced Spring School on Green Catalysis, University of Rennes, March 7-9, 2012.
 7. International Conference on Sustainable Energy Technologies (i-SET), BDU, June-2018.
 8. International conference on research initiatives in chemistry for sustainable development (RICS), March, 2019.
 9. International Conference ICACSEM, University of Madras, Jan-2020.

Other Training Programs Organised

1. Served as Coordinator – Refresher Course in Chemistry, UGC-HRDC, BDU, 2011.
2. Served as Coordinator – Refresher Course in Materials Science, UGC-HRDC, BDU, 2017.

Membership in Professional Bodies

1. Life Member: Academy of Sciences, University of Madras.
2. Life Member: Chemical Research Society of India (CRSI).
3. Member in American Chemical Society (ACS).
4. Member in Royal Society of Chemistry (RSC).

Academic Bodies

1. Member, Academic Council, Holy Cross College, Trichy (2019-22).
2. Member, Academic Council, Jamal Mohamed College, Trichy (2019-22).
3. Member, Selection Committee, CAS, GRI, Gandhigram (2019).
4. Member, Selection Committee, CAS, Annamalai University, Chidambaram (2019).
5. Member, Academic Council, JJ College of Arts and Science, Pudukkottai (2019).
6. Member, Board of Studies, Srimud Andavan Arts and Science College, Trichy (2018-21).
7. Member, College Committee, Jairams Arts and Science College, Karur (2018-21).
8. Member, College Committee, Mahatma Arts and Science College, Pudukkottai (2018-21).
9. Member, Board of Studies, Annamalai University, Chidambaram (2018).
10. Member, Board of Studies, Bharathiar University, Coimbatore (2018-20).
11. Member, Academic Council, JJ College of Arts and Science, Pudukkottai (2018).
12. Member, Research Committee, St. Joseph College, Trichy (2018).
13. Member, Academic Council, SRC, Trichy (2018).
14. Member, Academic Council, Jamal Mohamad College, Trichy (2018).
15. Member, Board of Studies, Annamalai University, Chidambaram (2017-20).
16. Member, Board of Studies, Thiruvalluvar University, Vellore (2017-20).
17. Member, Board of Studies, AVC College, Mayiladudurai (2016-18).
18. Member, Academic Audit meeting ANJAC, Sivakasi (2016).
19. Member, Board of Studies, SRC College, Trichy (2016).
20. Member, Scrutiny committee, Bharathiar University, Coimbatore (2016).
21. Selection Committee Member, Poombukar College, Poombukar (2016).
22. Selection Committee Member, Urumu Dhanalakshmi college, Trichy (2016).
23. Member, Board of Studies, Theivanai Ammal College For Women, Villupuram (2016).

24. Selection Committee Member, Alagappa University, Karaikudi (2015).
25. Selection Committee Member in Appointment of JRF, NIT Trichy (2015).
26. Selection Committee Member in Appointment of JRF, GRI Ganghigram (2014).
27. Selection Committee Member in Appointment of Asst. Prof., CNC, Erode (2013).
28. Member, Board of Studies, PSGR, Krishnammal College for Women, Coimbatore (2012-14).
29. Member, Board of Studies, Jamal Mohamed College, Trichy (2012-13).
30. Member, Board of Studies, Bishop Heber College, Trichy (2012-13).
31. Member in Scrutiny Committee, C U T N, Tiruvarur (2012).
32. Board of Studies, Bishop Heber College, Trichy (2010-12).
33. Member in Academic Council, AVC College, Mayiladudhurai (2008-10).
34. Member in Academic Council, AVVM Sri Pushpam College, Poondi (2008-10).
35. Member, Selection Committee, SRC Trichy (2007).
36. Member, Board of Studies, SRC, Trichy (2006-07).
37. Member, Board of Studies, Jamal Mohamed College, Trichy (2004-06).

Others

1. Served as Syndicate Member, Bharathidasan University, 2008-11.
2. Served as Research Hostel Warden, Bharathidasan University, 2008.

Editorial Board

1. Editorial Board Member in 'Frontiers in Catalysis'-2020.
2. The Open Catalysis Journal, Bentham Publication.

Reviewer for the following Journals

1. Organometallics, ACS
2. Organic Letters, ACS
3. ChemCatChem, Wiley
4. Journal of organometallic chemistry
5. Polyhedron, Elsevier
6. Inorganic Chemistry Communication – Elsevier
7. Inorganic Chimica Acta, Elsevier
8. Spectrochimica Acta Part A: Mol. and Biomol. Spectroscopy – Elsevier
9. Journal of Molecular Structure – Elsevier
10. Indian Journal of Chemistry: Sec. A – CSIR, India
11. Applied Organometallic Chem., Wiley
12. Dalton Transactions, Royal Society of Chemistry.

Resource persons in various capacities

I. Invited lectures in India

1. Academy Staff College, Bharathidasan University, April 2000, Trichy.
2. SRC College, Feb 2007, Trichy

3. National Conference on Recent Trends in Coordination and Organometallic Chemistry, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, July 17-18, 2008.
4. Endowment Lecture given in S R College, Trichy.
5. J. J. College of Arts and Science, J. J. Nagar, Pudukkottai.
6. Academy Staff College, Bharathiar University, Feb 02, 2008, Coimbatore.
7. Thiagarajar College, March 2008, Madurai.
8. Sri Ramakrishna Mission Vidyalaya College, July 17-18, 2008, Coimbatore.
9. Holy Cross College, June 29, 2010, Trichy.
10. Academy Staff College, Bharathidasan University, Oct 18, 2010, Trichy.
11. Academy Staff College, Bharathiar University, October 13, 2010, Coimbatore.
12. Modern research in chemical sciences, Srinivasan College of Arts and Science, Jan 2011, Perambalur,
13. Academy Staff College, Bharathiar University, Sep 12, 2011, Coimbatore.
14. UGC sponsored competence-building programme for teachers, Chikkaiah Naicker College, March 2011, Erode.
15. One day Regional workshop on modern research in chemical sciences, Jan 2011, Perambalur.
16. National seminar on current trends in chemistry, chaired a session, March 2011, Cochin.
17. New Vistas in Chemistry, Jamal Mohamed College, Jan 2012, Trichy.
18. Resonance 2012, Gandhigram Rural University, Feb 2012, Gandhigram.
19. "National seminar on New Vistas in Catalysis and surface science, March 16-17, 2012, Annamalai University, Chidambaram.
20. National seminar on advanced materials, Bharathiar University, April 2012, Coimbatore.
21. Academy Staff College, Bharathiar University, May 11, 2012, Coimbatore.
22. Ayya Nadar Janaki Ammal College, October 01, 2012.
23. Manonmanium Sundaranar University, September 10, 2012.
24. PSGR, Krishnammal College for Women, July 19, 2013, Coimbatore.
25. Academy Staff College, Bharathiar University, August 20, 2013, Coimbatore.
26. CRSI mid-year symposium, National Institute of Technology, Surathkal, Karnataka, July 12-13, 2013.
27. Emerging Trends in Chemistry, December 13, 2013, SRC, Trichy.
28. Department of Chemistry, Anna University, December, 2013, Trichy.
29. Academy Staff College, Bharathidasan University, 4th Jan, 2014, Trichy.
30. Special Lecture on Bio-inorganic Chemistry, Thiagarajar College, Jan 2014, Madurai.
31. Academy Staff College, Bharathiar University, October 27, 2014, Coimbatore.
32. National Workshop on Advanced Characterisation techniques (Act-2015), Periyar University, January 29-30th, 2015.
33. Current Scenario In Material Chemistry (CSIMC-2015), Jamal Mohamed College, January 9-10th February, 2015.
34. One day UGC sponsored seminar, Periyar EVR Govt. Arts College, 19th Feb, 2015.
35. Faculty development programme, Anna University, BIT, Trichy, June - 2015.
36. 10th CRSI Symposium, National Institute of Technology, Trichy, July - 2015.

37. UGC sponsored National Seminar on Recent Advances in Chemistry, KandaswamiKandar's College, Namakkal, Aug 13-14, 2015.
38. One day National seminar, ANJAC college, Sivakasi, March 11, 2016.
39. Academy Staff College, Bharathiar University, Coimbatore, July 2016.
40. Faculty development programme, BIT, Trichy, August 2016.
41. Chemistry association inauguration, National College, Trichy, September 2016.
42. Guest lecture in UGC-Sponsored National Seminar, V.H.N.S.N college, Virudhunagar January 19, 2017.
43. Invited lecture in National conference, GRI, Ganghigram March 2, 2017.
44. Special lecture on Mossbauer spectroscopy, Periyar University, Salem March 30, 2017.
45. Invited lecture, UGC Academic Staff College, Bharathidasan University, Jan 6th, 2018.
46. Invited lecture, UGC Academic Staff College, Bharathidasan University, March 21nd, 2018.
47. Invited lecture, Pondicherry University, March 29th, 2018.
48. Invited lecture, Chemistry Association, UDC college, Trichy, 20th July, 2018.
49. Invited lecture, UGC-HRDC, Bharathiar University, 23rd July 2018, Coimbatore.
50. Invited lecture, Two day National Seminar (ABCD), Saratha Niketan college for Women, devakottai, Sep-28th, 2018.
51. Invited lecture, International Conference on Sustainable Energy Technolgies (i-SET), BDU, June-2018.
52. Invited lecture, International conference on research initiatives in chemistry for sustainable development (RICS), March, 2019.
53. Invited lecture, International Conference ICACSEM, University of Madras, Jan-2020.
54. Invited lecture, UGC-HRDC, Madurai Kamaraj University, Dec 11th, 2020.
55. Invited lecture, UGC-HRDC, Bharathiar University, Dec 12th, 2020.

II. Invited lectures (International)

1. Department of Chemistry, POSTECH, Sept-2004, S. Korea.
2. Department of Chemistry, Kookmin University, Apr-2010, S. Korea.
3. Department of Chemistry, Pusan National University, Sept-2010, S. Korea.
4. Department of Chemistry, Chonbuk National University, Sept-2010, S. Korea.
5. CNRS, University of Strasbourg, May 2014, France.
6. Department of Chemistry, University of Zurich, May 2014, Swiss.

Significant contributions to science based on the work done in India

We have made significant contributions to the development of synthesis of novel ruthenium organometallic compounds and organometallics based homogeneous catalysis. Further, new and novel rhodium pincer complexes are synthesized and used as catalyst for the first time in the National level. Furthermore, we have designed ruthenium complexes with dioxygen binding capability, an important biological function.

In the past 20 years, Inorganic Chemistry has been greatly enriched by the continuing development of the Coordination, Bio-inorganic and Organometallic Chemistry and Catalysis. I have been actively involved in various investigations in these areas.

In the last 20 years I have made significant contributions in some of the modern areas of inorganic chemistry – Ruthenium based Organometallics, Coordination and Bio-inorganic chemistry and Catalysis and almost all the work were published in reputed journals in the name of Department of Chemistry, Bharathidasan University.

1. Organometallic Chemistry:

Organometallic chemistry is one which lies at the interface between classical organic and inorganic chemistry and is concerned with compounds containing a direct metal-carbon bond. This field provides a series of important conceptual insights, surprising structures and useful catalysts.

I have made significant contributions to ruthenium based organometallic chemistry. A number of air stable ruthenium carbonyl complexes have been synthesized and characterized in my laboratory. It is well known from the literature that only a few ruthenium(II) cyclometalated compounds containing different ligands including chiral versions have been reported. On the other hand, air stable cyclometalated ruthenium(III) complexes and their catalytic applications are completely neglected in the literature. In view of this, we have synthesized cyclometalated ruthenium(III) complexes in our laboratory and reported for the first time. {Ref: **Tetrahedron Lett.** 46 (2005) 5215, and **J. Organomet. Chem.** 690 (2005) 3937}

On careful verification on ruthenium pincer complexes from the literature, we have also extended our research to Pd, Pt and Rh pincer complexes with excellent results. Out of these, we reported Rh pincer complexes and their catalytic activity in organic transformation for the first time from national level {Ref: **Tetrahedron Lett.** 50, (2009), 7014} and we are pioneer in this pincer organometallics chemistry.

2. Coordination Chemistry:

Coordination chemistry of the ruthenium by ligand of different types is of significant importance because of the fascinating reactivities exhibited by the resultant complexes and the nature of the ligand that dictates the property of those complexes.

I have reported several number of ruthenium(II) and ruthenium(III) complexes containing various donor atoms like O, S, N, P and As in different combinations resulting in bi-, tri- and tetradentate ligands. A variety of ligands such as Schiff bases, diketones, semicarbazones / thiosemicarbazones, thiocarbonyl, tripodal ligands etc., have been successfully used in the synthesis of new ruthenium(II) and ruthenium(III) complexes with interesting properties. The outcome of investigations on the synthesized complexes is published in various reputed International and National journals.

3. Bio-Organometallic Chemistry:

One of the rapidly growing areas in inorganic chemistry is 'Bio-Inorganic chemistry' which largely focuses on the role of metal ions in biology.

Many of the synthesized ligands and their ruthenium complexes have been screened for their antibacterial and antifungal activities. The complexes show better cytotoxicity in inhibiting the growth of different bacterial and fungal species. The possible modes of action of these complexes with the biological system are described and are published in International journals of high impact factor. Further, we reported some of the ruthenium(III) Schiff base complexes which

mimic the activity of iron in reversible binding of molecular oxygen. The reversible binding of molecular oxygen to ruthenium complexes has been studied and is published in a well reputed international journal of high impact factor for the first time in *J. Inorg. Biochem.* Many organometallic ruthenium complexes have been reported as potential anticancer agents and the results are published in **Organometallics**, **Dalton Transactions**, **Inorganic Chemistry Frontiers** and **New Journal of Chemistry** etc.

4. Homogeneous Catalysis:

Homogeneous catalysts are becoming increasingly important because of the high rate – dramatic substrate selectivities and mild conditions. Further, mechanism are more easily studied for homogeneous catalysis and applied principally to the synthesis of high-volume, low-cost “commodity chemicals”.

New ruthenium complexes synthesised from our laboratory have been developed as efficient catalysts in many organic transformations such as oxidation of alcohols, transfer hydrogenation of ketones and transfer hydrogenation of imines. A number of coordination and organometallic ruthenium complexes have been effectively used as catalyst in oxidation of a wide variety of alcohols. Similarly, a first report on cyclometallated ruthenium(III) complexes as excellent catalyst for transfer hydrogenation of ketones has been achieved by my group {Ref: **Tetrahedron Lett.** 46 (2005) 5215, and **J. Organomet. Chem.**, 690 (2005) 3937}. Our investigation on the catalytic activity in some organic transformations is further extended to transition metals like Pd, Pt, and Rh. Cyclometallated Pd and Pt complexes are used as catalysts in aldol and silylcyanation reactions successfully {Ref: **J. Organomet. Chem.** 69 (2006) 5927: cited in **Chem. Rev.** 107 (2007) 4584}. Furthermore, we have developed new Rh pincer complexes as catalyst for the first time in the national level in transfer hydrogenation of ketones and is published in a reputed international journal. {Ref: **Tetrahedron Lett.** 50 (2009) 7014}. Further several Pd and Ru complexes have been developed as efficient catalysts for synthesis of organic compounds and are published in **Organometallics**, **Dalton trans.**, **RSC Adv.**, etc.

Contributions to Bharathidasan University

- Constant and continuous teaching and research
- Operating several research projects from various funding agencies like UGC, CSIR, DST, INDO-FRENCH in the name of Bharathidasan University
- Publishing research articles in reputed journals in the name of Bharathidasan University.
- Served as warden, research scholar hostel, Bharathidasan University 2008-11.
- Served as NIRF Coordinator, Bharathidasan University, 2017-19.