

Curriculum Vitae

Dr. Yuvaraj K

Assistant Professor,
Department of Chemistry,
Ahalia Integrated Campus, IIT Palakkad,
Kozhippara (P.O), Kerala, India.
Email: yuvaraj@iitpkd.ac.in
Moblie: +91 9750048515 (IND)



Education Details

- 2012-2017: Ph.D. in Chemistry, Indian Institute of Technology Madras, India.
2008-2010: MSc in Chemistry, St. Joseph's College, Bharathidasan University, Tamil Nadu, India.
2005-2008: BSc in Chemistry (Major), Gobi Arts and Science College, Bharathiyar University, Coimbatore, Tamil Nadu, India.

Doctoral Details

- *Dissertation: Chemistry of Diruthenium Analogues of Tetraborane(10) and Pentaborane(9)*
- *Supervisor: Prof. Sundargopal Ghosh, Indian Institute of Technology Madras, India.*

Professional Details

- **Assistant Professor** [February 2023-present]: Indian Institute of Technology Palakkad, Kerala, India.
- **Post-Doctoral Fellow** [January 2019-January 2023]
Advisor: Prof. Cameron Jones, Monash University, Australia.
- **SERB- Overseas Post-Doctoral Fellowship (O-PDF)** [January 2018-December 2018]
Advisor: Prof. Cameron Jones, Monash University, Australia.
- **SERB- National Post-Doctoral Fellowship (N-PDF)** [August 2017-December 2017]
Supervisor: Dr. Sakya S Sen, CSIR - National Chemical Laboratory (NCL), Pune.
- **Institute Pre-Doctoral Fellow** [November 2016-May 2017]
Supervisor: Prof. Sundargopal Ghosh, Indian Institute of Technology Madras, India.

Awards and Honors

- “Best poster prize” in IC 21 Virtual RACI Inorganic Chemistry Division Conference, 2021, Australia.
- “Best poster prize” in 12th Australasian Organometallics Meeting OZOM12, 2019, Australia.
- SERB- Overseas Post-Doctoral Fellowship (O-PDF), India, 2016-17.
- SERB- National Post-Doctoral Fellowship (N-PDF), India, 2017.
- Senior Research Fellowship (SRF-CSIR), CSIR-UGC, India, 2014.
- Junior Research Fellowship (JRF-CSIR), CSIR-UGC, India, 2012.
- Graduate Aptitude Test in Engineering (GATE), India, 2012.
- “Gold medal” in MSc chemistry during the year 2008-2010.

List of Publications

1. Ketyl Radicals Generated from Magnesium(I) Compounds: Useful Reagents for C–C Bond Forming Reactions. C. A. Rosengarten, [K. Yuvaraj](#), L. F. Lim, N. Cox and C. Jones, *Chem. Eur. J.* **2023**, (Accepted).
2. Reductive Activation of N₂ using a Calcium/Potassium Bimetallic System Supported by an Extremely Bulky Diamide Ligand. R. Mondal, [K. Yuvaraj](#), T. Rajeshkumar, L. Maron and C. Jones, *Chem. Comm.* **2022**, 58, 12665. (**Hot Article**)
3. C–H Activation of Inert Arenes using a Photochemically Activated Guanidinato-Magnesium(I) Compound. J. C. Mullins[#], [K. Yuvaraj](#)[#], Y. Jiang, G. P. Trieste III, A. Maity, D. C. Powers and C. Jones, *Chem. Eur. J.* **2022**, e202202103. (#Equal contribution).
4. Activation of CO using a 1,2-Disilylene: Facile Synthesis of an Abnormal N-Heterocyclic Silylene. P. Garg, A. Carpentier, I. Douair, D. Dange, Y. Jiang, [K. Yuvaraj](#), L. Maron and C. Jones, *Angew. Chem. Int. Ed.* **2022**, 134, e202201705.
5. Magnesium(I) Reduction of CO and N₂ Complexes of Cummin’s Molybdenum(III) Tris(anilide), [Mo(L){N(Ar')Bu^t}₃] (L = CO or N₂; Ar' = 3,5-dimethylphenyl). [K. Yuvaraj](#), A. Paparo, A. J. R. Matthews and C. Jones, *Eur. J. Inorg. Chem.* **2021**, 4998, (Selected as **Very Important Paper**).
(Invited submission for the EJIC/ChemCatChem joint special collection on Main Group Catalysis).
6. Reductive Coupling of CO with Magnesium Anthracene Complexes: Formation of Magnesium Enediolates. [K. Yuvaraj](#) and C. Jones, *Chem. Comm.* **2021**, 57, 9224.

7. N-Heterocyclic Carbene, Carbodiphosphorane and Diphosphine Adducts of Beryllium Dihalides: Synthesis, Characterisation and Reduction Studies. A. Paparo, A. J. R. Matthews, C. D. Smith, A. J. Edwards, [K. Yuvaraj](#) and C. Jones, *Dalton Trans.* **2021**, 50, 7604.
8. C–N and C–H Activation of an N-Heterocyclic Carbene by Magnesium(II) Hydride and Magnesium(I) Complexes. [K. Yuvaraj](#), A. Carpenter, C. D. Smith, L. Maron and C. Jones, *Inorg. Chem.* **2021**, 60, 6065.
9. Reductive Hexamerization of CO Involving Cooperativity Between Magnesium(I) Reductants and [Mo(CO)₆]: Synthesis of Well-Defined Magnesium Benzenehexolate Complexes. A. Paparo[#], [K. Yuvaraj](#)[#], A. J. R. Matthews, I. Douair, L. Maron and C. Jones, *Angew. Chem. Int. Ed.* **2021**, 60, 630. ([#]Equal contribution), (Selected as **Hot Paper**).
Highlighted by [Chemistry Views](#), [NNNS Chemistry blog](#) and [Chemistry in Australia](#).
10. Reduction of a 1,4-Diazabutadiene and 2,2'-Bipyridine using Magnesium(I) Compounds. [K. Yuvaraj](#) and C. Jones, *Main Group Met. Chem.* **2020**, 43, 177.
11. Activation of Ethylene by N-Heterocyclic Carbene Coordinated Magnesium(I) Compounds. [K. Yuvaraj](#), I. Douair, L. Maron and C. Jones, *Chem. Eur. J.* **2020**, 26, 14665. (Selected as **Hot Paper**).
12. Sterically Controlled Reductive Oligomerisations of CO by Activated Magnesium(I) Compounds: Deltate vs. Ethenediolate Formation. [K. Yuvaraj](#), I. Douair, D. D. L. Jones, L. Maron and C. Jones, *Chem. Sci.* **2020**, 11, 3516.
13. Neutral, Anionic and Paramagnetic 1,3,2-Diazaberyllacycles Derived from Reduced 1,4-Diazabutadienes. A. Paparo, S. Best, [K. Yuvaraj](#) and C. Jones, *Organometallics* **2020**, 39, 4208. (Special Issue: Organometallic Chemistry of the Main-Group Elements).
14. Synthesis and Reactivity of Boryl Substituted Silaimines. [K. Yuvaraj](#) and C. Jones, *Dalton Trans.* **2019**, 48, 11961.
15. Reductive Trimerization of CO to the Deltate Dianion using Activated Magnesium(I) Compounds. [K. Yuvaraj](#), I. Douair, A. Paparo, L. Maron and C. Jones, *J. Am. Chem. Soc.* **2019**, 141, 8764.
Highlighted by [Chemistry in Australia](#).

16. Metal-rich Metallaboranes: Structures and Geometries of Heterometallic μ_9 -Boride Clusters. M. Bhattacharyya, [K. Yuvaraj](#), A. Chanda, V. Ramkumar and S. Ghosh, *Eur. J. Inorg. Chem.* **2018**, 2574.
17. Synthesis, Structure and Chemistry of Mono- and Digallane Complexes Supported by *N,O*-Ketimine Ligand. K. Bakthavachalam, [K. Yuvaraj](#), K. Raghavendra, V. Dorcet, T. Roisnel, A. Rit and S. Ghosh, *Chemistry Select* **2017**, 2, 7450.
18. Reactivity of $[M_2(\mu\text{-Cl})_2(\text{cod})_2]$ ($M = \text{Ir}, \text{Rh}$) and $[\text{Ru}(\text{Cl})_2(\text{cod})(\text{CH}_3\text{CN})_2]$ with $\text{Na}[\text{H}_2\text{B}(\text{bt})_2]$: Formation of Agostic versus Borate Complexes. K. Bakthavachalam, [K. Yuvaraj](#), M. Zafar and S. Ghosh, *Chem. Eur. J.* **2016**, 22, 17291.
19. Reactivity of CS_2^- Syntheses and Structures of Transition-metal Species with Dithioformate and Methanedithiolate Ligands. C. E. Rao, S. K. Barik, [K. Yuvaraj](#), K. Bakthavachalam, T. Roisnel, V. Dorcet, J-F. Halet and S. Ghosh, *Eur. J. Inorg. Chem.* **2016**, 4913.
20. New Trinuclear Complexes of Group 6, 8, and 9 Metals with a Triply Bridging Borylene Ligand. [K. Yuvaraj](#), M. Bhattacharyya, R. Prakash, V. Ramkumar and S. Ghosh, *Chem. Eur. J.* **2016**, 22, 8889.
21. Chemistry of Rh-N,S heterocyclic Carbene Complexes. D. K. Roy, [K. Yuvaraj](#), R. Jagan and S. Ghosh, *J. Organomet. Chem.* **2016**, 811, 8.
22. Electron-Precise 1,3-Bishomocubanes- A Combined Experimental and Theoretical Study. S. K. Barik, C. E. Rao, [K. Yuvaraj](#), R. Jagan, S. Kahlal, J-F Halet and S. Ghosh, *Eur. J. Inorg. Chem.* **2015**, 5556.
23. All-Metallagermoxane with an Adamantanoid Cage Structure: $[(\text{Cp}^*\text{Ru}(\text{CO})_2\text{Ge})_4(\mu\text{-O})_6]$ ($\text{Cp}^* = \eta^5\text{-C}_5\text{Me}_5$). K. Bakthavachalam, [K. Yuvaraj](#), B. Mondal, R. Prakash and S. Ghosh, *Dalton Trans.* **2015**, 44, 17920.
24. Homometallic Cubane Clusters: Participation of Three-Coordinated Hydrogen in 60-Valence Electron Cubane Core. [K. Yuvaraj](#), D. K. Roy, B. Mondal, B. Varghese and S. Ghosh, *Inorg. Chem.* **2015**, 54, 8673.
25. Diruthenium Analogues of Hexaborane(12) and Pentaborane(9): Synthesis and Structural Characterization of $[(1,2\text{-Cp}^*\text{Ru})_2\text{B}_2\text{H}_6\text{S}_2]$ and $[(2,3\text{-Cp}^*\text{Ru})_2\text{B}_3\text{H}_6(\mu\text{-}\eta^1\text{-EPh})]$, ($E = \text{S}, \text{Se}$ and Te) ($\text{Cp}^* = \eta^5\text{-C}_5\text{Me}_5$). C. E. Rao, [K. Yuvaraj](#) and S. Ghosh, *J. Organomet. Chem.* **2015**, 776, 123.
26. Chemistry of Early and Late Transition Metallaboranes: Synthesis and Structural Characterization of Periodinated Dimolybdaborane $[(\text{Cp}^*\text{Mo})_2\text{B}_4\text{H}_3\text{I}_5]$. [K. Yuvaraj](#), D. K. Roy, C. Arivazhagan, B. Mondal and S. Ghosh, *Pure Appl. Chem.* **2015**, 87, 195.

27. Mixed-Metal Chalcogenide Tetrahedral Clusters with an Exo-polyhedral Metal Fragment. **K. Yuvaraj**, D. K. Roy, V. P. Anju, B. Mondal, B. Varghese and S. Ghosh, *Dalton Trans.* **2014**, *43*, 17184.
28. Reactivity of Diruthenium and Dirhodium Analogues of Pentaborane(9): Agostic versus Boratrane Complexes. R. S. Anju, D. K. Roy, B. Mondal, **K. Yuvaraj**, C. Arivazhagan, K. Saha, B. Varghese and S. Ghosh, *Angew. Chem. Int. Ed.* **2014**, *53*, 2873.
29. New Heteronuclear Bridged Borylene Complexes That Where Derived from [Cp*CoCl]₂ and Mono-Metal-Carbonyl Fragments. D. Sharmila, **K. Yuvaraj**, S. K. Barik, D. K. Roy, K. K. Chakrahari, R. Ramalakshmi, B. Mondal, B. Varghese and S. Ghosh, *Chem. Eur. J.* **2013**, *19*, 15219.
30. Chemistry of Homo- and Heterometallic Bridged-Borylene Complexes. **K. Yuvaraj**, D. K. Roy, K. Geetharani, B. Mondal, V. P. Anju, P. Shankhari, V. Ramkumar and S. Ghosh, *Organometallics* **2013**, *32*, 2705.
31. Syntheses and Characterization of New Vinyl-Borylene Complexes by the Hydroboration of Alkynes with [(μ₃-BH)(Cp**Ru*CO)₂(μ-CO)Fe(CO)₃]. S. K. Bose, D. K. Roy, P. Shankhari, **K. Yuvaraj**, B. Mondal, A. Sikder and S. Ghosh, *Chem. Eur. J.* **2013**, *19*, 2337.

Seminars/ Conference Participated

1. Reductive Homologation of CO by Activated Magnesium(I) Reductants: Reactivity of Lewis base Adducts vs [Mo(CO)₆]. **K. Yuvaraj**, A. Paparo, I. Douair, L. Maron and C. Jones. International Conference on Main Group Synthesis and Catalysis (ICMGSC), 9-12 February **2023**, Jointly Organised by IISER Thiruvananthapuram and Royal Society of Chemistry, Kerala, India.
2. Reductive Trimerization of CO to the Deltate Dianion using Activated Magnesium(I) Compounds. **K. Yuvaraj**, I. Douair, A. Paparo, L. Maron and C. Jones. RACI Victorian Inorganic Symposium, 25th November **2022**, Swinburne University of Technology, Australia.
3. Reductive Homologation of CO by Activated Magnesium(I) Reductants: Reactivity of Lewis base Adducts vs [Mo(CO)₆]. **K. Yuvaraj**, A. Paparo, I. Douair, L. Maron and C. Jones. OZOM13, 13th Australasian Organometallics Meeting 11th–14th July 2022, Cairns, Queensland, Australia.

4. Reductive Homologation of CO by Activated Magnesium(I) Reductants: Reactivity of Lewis base Adducts vs Catalytic $[\text{Mo}(\text{CO})_6]$. **K. Yuvaraj**, A. Paparo, I. Douair, L. Maron and C. Jones. 6th–8th July 2021, IC 21 Virtual RACI Inorganic Chemistry Division Conference, Australia (**Best poster prize**).
5. Reductive Trimerization of CO to the Deltate Dianion using Activated Magnesium(I) Compounds. **K. Yuvaraj**, I. Douair, A. Paparo, L. Maron and C. Jones. OZOM12 12th Australasian Organometallics Meeting, July 9-12, 2019, Melbourne, Australia (**Best poster prize**).
6. Low-Valent NHC-Coordinated Mg(I)-Dimers for Small Molecule Activation. **K. Yuvaraj** and C. Jones. RACI Victorian Inorganic Symposium, 30th November 2018, Monash University, Australia.
7. The Modern Trends in Inorganic Chemistry (MTIC)-XVII, 11-14 December, 2017, jointly hosted by NCL-Pune, IISER-Pune, and SP Pune University-Pune, India.
8. Eight Membered Dimetallaheterocycles: Main Group-Transition Metal Analogues of 1,5-Cyclooctadiene. **K. Yuvaraj**, V. Ramkumar and S. Ghosh. Chemistry in-house symposium (CiHS-2016), August 17th, 2016, Department of Chemistry, IIT Madras, Chennai, India.
9. Eight Membered Dimetallaheterocycles: Main Group-Transition Metal Analogues of 1,5-Cyclooctadiene. **K. Yuvaraj**, V. Ramkumar and S. Ghosh. Boron in the Americas meeting (Boram XV), June 25th–28th, 2016, Queen's University, Kingston, Ontario.
10. Syntheses and Characterization of Novel Vinyl-Borylene Complexes by the Hydroboration of Alkynes with $[(\mu_3\text{-BH})(\text{Cp}^*\text{RuCO})_2(\mu\text{-CO})\text{Fe}(\text{CO})_3]$ ($\text{Cp}^* = \eta^5\text{-C}_5\text{Me}_5$). **K. Yuvaraj**, A. Sikder and S. Ghosh. Chennai Chemistry Conference (CCC), 8-10 February, 2013, CLRI, Chennai, India.
11. Syntheses and Characterization of Novel Vinyl-Borylene Complexes by the Hydroboration of Alkynes with $[(\mu_3\text{-BH})(\text{Cp}^*\text{RuCO})_2(\mu\text{-CO})\text{Fe}(\text{CO})_3]$ ($\text{Cp}^* = \eta^5\text{-C}_5\text{Me}_5$). **K. Yuvaraj**, A. Sikder and S. Ghosh. New Directions in Chemical Sciences (NDCS), 7-9 December, 2012, IIT Delhi, New Delhi, India.
12. Summer training program in chemistry -2009 (STPIC) from 25-5-2009 to 13-6-2009, Department of chemistry, University of Madras, Sponsored by Science city, Department of higher education, Government of Tamilnadu.

Invited Lectures

1. "Revolution of Modern Main Group Chemistry" on the UGC Sponsored National Seminar on "Frontiers in Chemical Sciences" on 10th March **2023**, PG & Research Department of Chemistry, Gobi Arts and Science College, Gobichettipalayam, Tamilnadu.

Experimental Skills

- Single crystal X-ray diffractometer (**Oxford XtaLAB Synergy-S**) (four-year experience)
- Synchrotron MX1 and MX2 beam lines for single crystals (four year experience)
- Structure solution and modelling disorder of the single crystal X-ray data by using X-seed and Olex2 programs.
- FT-NMR spectrometer (**Bruker Avance III 400 and 600 MHz**)
- GC/MS analyses (Agilent 6890 GC)
- FT-IR (**Jasco, Agilent Cary 630**)
- Cyclic voltammetry (**CH instruments**)
- UV-Vis spectrophotometer (**Jasco V-650, Evolution 300-Thermoscientific**)
- Standard Schlenk line and glove-box techniques for inert atmosphere reactions
- Vacuum distillation and sublimation.

Link to Social Academic Profile

Google Scholar: <https://scholar.google.com.au/citations?user=9sTruBYAAAAJ&hl=en>

Web of Science: <https://publons.com/researcher/3797688/k-yuvaraj/publications/>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=55580742400>

ORCID ID: <https://orcid.org/0000-0003-3527-3423>