Gulzar Ahmad Bhat

Centre for Interdisciplinary Research Email: gulzarbhat@uok.edu.in and Innovations, University of Kashmir

Cell: 600.644.0334

ORCID ID: 0000-0001-7357-7327 Srinagar, J&K, India 190006 Website: Homepage

DOB: 17/01/1986

Bibliographic Overview

Publications:	34	First Author:	18	High IF (> 15) :	6
Citations:	565	H-Index:	16	Corresponding Author:	11
Invited Talks:	20	Poster Presentations:	18	Book Chapters:	2
Research Grants:	5	Total Impact Factor:	243	Average Impact Factor:	7.17

Education and Appointments

• 2021 - Present

University of Kashmir (Srinagar, J&K, India)

Position: Ramanujan Faculty Fellow

 \bullet 2018 - 2021

Texas A&M University (College Station, Texas, USA)

Position: Postdoctoral Research Associate Advisor: Prof. Donald J. Darensbourg

Research Areas:

- Synthetic approaches for developing sustainable polymers from the catalytic coupling of carbon-dioxide and epoxides.
- Incorporation of metallo-chain transfer agents into polycarbonates and polymonothicarbonates for prospective micellar catalysis, 3D Printing and Drug Delivery.
- \bullet 2012 2018

Indian Institute of Technology Bombay (Mumbai, India)

Degree: Ph.D., Chemistry

Advisor: Prof. Ramaswamy Murugavel

Thesis Title: Synthetic and Materials Chemistry Aspects of Metal Monoalkyl and

Monoaryl Phosphates

 \bullet 2009 - 2011

University of Kashmir, Srinagar J&K, India

Degree: M.Sc., Chemistry

Research Experience

1. Ramanujan Fellow: University of Kashmir, Srinagar, J&K, India (July 2021 – Present)

After joining CIRI at the University of Kashmir, I established the Polymer Chemistry Lab, focusing on sustainability through the valorization of CO₂. My research primarily explores the catalytic coupling of CO₂ with epoxides to produce value-added products. I am committed to both teaching and research, currently supervising three PhD students and having successfully guided three master's dissertations. I have secured three EMR grants, including a core research grant, to further advance this area of study. My work has been published in prestigious journals, and I have developed collaborative partnerships with leading universities worldwide. Notably, my first PhD student earned a fully funded visiting research scholar position in the United States for one year.

Key contributions include:

- Introducing Pd(II) into the backbone of polycarbonates through a chain-transfer approach, followed by the synthesis of micelles via a one-pot, two-step protocol, used for C–C cross-coupling reactions via micellar catalysis.
- Enhancing the circularity and sustainability of CO₂/epoxide copolymerization by utilizing biomass-derived epoxides, such as eugenol.
- Initiating a project on microplastic distributions in the cryosphere and developing chemical and biodegradation methods to address plastic pollution.

2. Postdoctoral Research: Texas A&M University (Advisor: Prof. Donald J. Darensbourg, Oct 2018 – June 2021)

Conducted research on CO_2 valorization to create value-added products through catalytic coupling with epoxides. Developed approaches for embedding discrete metal complexes in polymer chains via metallo-chain transfer agents during the copolymerization of $\mathrm{CO}_2/\mathrm{COS}$ with epoxides. Investigated branched sulfur-containing polymers, and also explored TEMPO-based and block polymers as inks for 3D printing.

Key contributions include:

- A novel approach for introducing a single metal complex into a polymer chain using metallo-chain transfer agents in CO₂ or COS/epoxide copolymerization processes.
- Placing single metal complexes into the backbone of CO₂-based polycarbonate chains for constructing nanostructures for prospective micellar catalysis.
- Synthesized well-defined branched sulfur-containing copolymers via a one-pot strategy.
- Mentored three undergraduate research students and one visiting graduate student.

3. Research Associate: Indian Institute of Technology Bombay (Advisor: Prof. R. Murugavel, March 2018 – September 2018)

Focused on the synthesis and characterization of dinuclear cyclo(metallo)phosphates and explored their catalytic activity in alcohol oxidation reactions. Key results:

• Dinuclear manganese(II), cobalt(II), and nickel(II) aryl phosphates incorporating 4-chloro-2,2:6,2-terpyridine coligands - efficient catalysts for alcohol oxidation.

4. Graduate Research: Indian Institute of Technology Bombay (Advisor: Prof. R. Murugavel, January 2012 – February 2018)

Investigated stabilization of monoalkyl phosphates and production of $(RO)P(O)(OH)_2$ (R = Me, Et, iPr, tBu). Reacted these with transition metals to create 2D layered solids, then delaminated to single-layer nanosheets, revealing catalytic and electrochemical properties.

Key contributions include:

- Facile exfoliation of single-crystalline copper alkylphosphates to single-layer nanosheets with enhanced super capacitance.
- Synthesized thermolabile organotitanium monoalkyl phosphates and explored as epoxidation catalysts and single-source precursors for TiP₂O₇.
- Synthesized and characterized dimeric and polymeric copper organophosphates, exploring DNA cleavage and cytotoxic activity.
- Synthesized and characterized spirocyclic lanthanide organophosphate polymers with magnetic properties.

Teaching Experience

1. **2021** – Present

Actively involved in teaching at CIRI, University of Kashmir. I have developed an elective course on Green and Sustainable Chemistry.

2. **2013** – **2014**

Teaching Assistant for General Chemistry Course (CH107L) at IIT Bombay. Responsibilities included teaching B.Tech students various separation techniques in their first year.

3. 2014 - 2015

Teaching Assistant for Inorganic Chemistry Course (CH419L) at IIT Bombay. Responsibilities included instructing M.Sc. students on chromatographic separation of binary and ternary mixtures, with composition analysis via gravimetric methods.

Research Grants

On Going Projects

- 1. DST-SERB Sponsored Ramanujan Fellowship Grant entitled "Utilization of Carbon Dioxide for Making Polycarbonate Plastics and their Biodegradability Studies and Functionalization to Achieve Desired Properties" (2021-2026) (PI) (1 crore 19 lacs)
- 2. DST-SERB Sponsored Core Research Grant entitled "Explorations into Valorization of Carbon Dioxide to Achieve Sustainable Polycarbonates: Applications in 3D Printing and Micellar Catalysis" (2022-2025) (PI)(70 lacs)
- 3. JKDST&IC Sponsored Grant entitled "A General Strategy for the preparation of Transition Metal-Incorporated Microporous Networks for Energy Related Applications" (2024-2026) (PI) (10 Lacs)

Projects Under Review

- 1. DST Sponsored Nano Mission Project entitled "Development of Carbon Dioxide-Based Polymeric Materials via Coupling of Natural Product-Derived Epoxides and Carbon Dioxide: Synthesis and Applications" (PI) (1 crore 95 lacs)
- 2. ICMR Sponsered Centre for Advaced Research in Cancer Biology Joint Proposal with SKIMS, IIT Kanpur and IGIB New Delhi (10 Crore)(PI)

PhD Supervision

- 1. Mohsin Hassan (PhD Student, CIRI University of Kashmir, Oct 2022- Present)
- 2. Ireteza Qayoom (PhD Student, CIRI University of Kashmir, Oct 2022-Present)
- 3. Ishtiyaq Wani (PhD Student, CIRI University of Kashmir, Dec 2023-Present)

Honors and Awards

- 1. 2023 & INSA Visiting Scientist Award for working at IIT Kanpur for two Months
- 2. **2021** & Ramanujan Fellowship Award in Chemical Sciences by DST-SERB Govt. of India
- 3. 2016 & Best Poster Award in International Conference on Polymers and Organic Chemistry (POC-16) held in Greece. (http://blogs.rsc.org/qm/2016/07/23/congratulations-on-poc-16-poster-prize-winners/)
- 4. **2016** & Travel Award from IIT Bombay for attending International Conference in Greece.
- 5. 2014 & Senior Research Fellowship from University Grants Commission India.
- 2010 & National Eligibility Award University Grants Commission (UGC)/Council
 of Scientific and Industrial Research (CSIR) India Selected under Junior Research
 Fellowship (UGC-JRF) scheme.

Publications

- Sengoden, M.; Bhat, G. A*.; Roland, T.; Hsieh, C.-M.; Darensbourg, D. J*.,
 "Facile synthesis of polycarbonates from biomass-based eugenol: catalyst optimization for selective copolymerization of CO₂ and eugenol to achieve polycarbonates."

 RSC Sustainability 2024, 2, 1431-1443. (IF= na)
- 2. Hassan, M.; **Bhat, G. A***.; Darensbourg, D. J*., "Post-polymerization function-alization of aliphatic polycarbonates using click chemistry." *Polym. Chem.* **2024**, 15, 1803-1820. (**IF= 4.6**)
- 3. Bhat, S.; Aasif, M.; Ahmad, M.; Khurshaid, F.; Yatoo, G. N.; Rather, Z.-U. K.; **Bhat**, **G.** A*.; Banday, J.; Wahid, M., "Ni₂P Anchored on Barbituric Acid-Modified Graphitic Carbon Nitride as a Versatile Photocatalyst for Hydroxylation of Aryl Boronic Acids and Oxidation of Benzyl Alcohols." *ACS Sustain. Chem. Eng.* **2024**, *12*, 141-153. (**IF** = **7.1**)
- Sengoden, M.; Bhat, G. A*.; Rutledge, R.J.; Rashid, S.; Dar, A.A.; Darensbourg, D. J*., "Micellar Catalysis: Polymer Bound Palladium Catalyst for Carbon-Carbon Coupling Reactions in Water." Proc. Natl. Acad. Sci. 2023, 120, e2312907120. (IF = 9.4)
- 5. Wei, P.; **Bhat, G. A***.; Darensbourg, D. J*., "Enabling New Approaches: Recent Advances in Processing Aliphatic Polycarbonate-Based Materials." *Angew. Chem. Int. Ed.* **2023**, *62*, e202307507. (**IF** = **16.82**)
- 6. **Bhat, G. A***.; Darensbourg, D.J*., "Coordination complexes as catalysts for the coupling reactions of oxiranes and carbon dioxide." *Coord. Chem. Rev.* **2023**, 492, 215277. (**IF** = **20.3**)
- 7. Sengoden, M.; **Bhat, G. A***.; Darensbourg, D. J*., "Sustainable Synthesis of CO₂-derived Polycarbonates from the Natural Product, Eugenol: Terpolymerization with Propylene Oxide." *Macromolecules* **2023**, *56*, 2362–2369.(**IF** = **5.1**)
- 8. Hassan, A.; Anis, I.; Shafi, S.; Assad, A.; Rasool, A.; Khanam, R.; **Bhat, G. A***.; Krishnamurty, S.; Dar, M. A., "First-Principles Investigation of the Electrocatalytic Reduction of CO₂ on Zirconium-Based Single-, Double-, and Triple-Atom Catalysts Anchored on a Graphitic Carbon Nitride Monolayer." *ACS Appl. Nano Mater.* **2022**, *5*, 15409-15417. (**IF** = **5.3**))
- 9. Sengoden, M.; **Bhat, G. A***.; Darensbourg, D. J*., "Bifunctional organoboron-phosphonium catalysts for coupling reactions of CO₂ and epoxides." *RSC Adv.* **2022**, *12*, 32440-32447. (**IF** = **4.03**)
- 10. Wei, P.; **Bhat, G. A**.; Cipriani, C.E.; Mohammad, H.; Schoonover, K.; Pentzer, E.M.; Darensbourg, D.J., "3D Printed CO₂-Based Triblock Copolymers and Post-Printing Modifications." *Angew. Chem. Int. Ed.* **2022**, *61*, e202208355. (**IF** = **16.82**)
- 11. **Bhat, G. A***.; Darensbourg, D.J*., "Progress in the Catalytic Reactions of CO₂ and Epoxides to Selectively Provide Cyclic or Polymeric Carbonates." *Green Chem.* **2022**, 24, 5007-50034. (**IF** = **11.03**)

- 12. Anis, I.; Dar, M. S.; **Bhat, G. A***.; Rather, G. M.; Dar, M. A., "Probing the Site-Specific Reactivity and Catalytic Activity of Ag_n (n = 15–20) Silver Clusters." *ACS Omega* **2022**, 23, 19687-19693. (**IF** = **3.7**)
- 13. Sengoden, M.; **Bhat, G. A***.; Darensbourg, D. J*., "Explorations into the Sustainable Synthesis of Cyclic and Polymeric Carbonates and Thiocarbonates from Eugenol-Derived Monomers Reactions with CO₂, COS, or CS₂." *Green Chem.* **2022**, 24, 2535-2541. (**IF** = **11.03**)
- 14. **Bhat, G. A**.; Rashad, A. Z.; Ji, X.; Quiroz, M.; Fang, L.; Darensbourg, D. J., "TEMPO Containing Radical Polymonothiocarbonate Polymers with Regio- and Stereo-Regularities: Synthesis, Characterization, and Electrical Conductivity Studies." *Angew. Chem. Int. Ed.* **2021**, *60*, 20734-20738. (**IF** = **16.82**)
- 15. Verma, S.; **Bhat, G. A**.; Murugavel, R*., "Cyclopentadienyl Removal Assisted Nuclearity Expansion in Thermolabile Titanium and Zirconium Organophosphates Sourced from Metallocene Dichlorides." *J. Organomet. Chem.* **2021**, *932*, 121642. (**IF** = **2.34**)
- 16. **Bhat, G. A.**; Darensbourg, M.Y.; Darensbourg, D.J*., "Copolymerisation of Propylene Oxide and ¹³CO₂ to Afford Completely Alternating Regioregular ¹³C-Labelled Poly(propylene carbonate)." *Polymer Journal* **2021**, *53*, 215-218. (**IF** = **3.13**)
- 17. **Bhat, G. A.**; Murugavel, R*., "Dinuclear Group 12 Phosphates Bridged by Hexadentate 2,3,5,6-Tetra(2-pyridyl)-pyrazine and their Supramolecular Organization." J. Mol. Struct. **2021**, 1224, 128960. (**IF** = **3.84**)
- 18. **Bhat, G. A.**; Luo, Ming.; Darensbourg, D. J*., "Catalysis of Carbon Dioxide and Oxetanes to Produce Aliphatic Polycarbonates." *Green Chem.* **2020**, *22*, 7707-7724. (**IF** = **11.03**)
- 19. **Bhat, G. A.**; Rashad, A. Z.; Darensbourg, D. J*., "Synthesis of Terpyridine-Containing Polycarbonates with Post-polymerization Providing Water-Soluble and Micellar Polymers and Their Metal Complexes." *Polym. Chem.* **2020**, *11*, 4699-4705. (**IF** = **4.6**)
- 20. **Bhat**, **G. A**.; Murugavel, R*., "Single-4-Ring Zinc Organophosphate Based Expanded Ditopic N,N'-Metalloligands." J. Chem. Sci. **2020**, 132, 121. (**IF** = **2.15**)
- 21. Yue, T. J.; **Bhat, G. A**.; Zhang, W.J.; Ren, W. M.; Lu, X. B., Darensbourg, D.J*., "Facile Synthesis of Well-Defined Branched Sulfur-Containing Copolymers via a One-pot Copolymerization of Carbonyl Sulfide and Epoxide." *Angew. Chem. Int. Ed.* **2020**, *59*, 13633-13637. (**IF** = **16.82**)
- 22. Wahid, M*.; Patel, M.; Haroon, H.; Kumar, A.; **Bhat, G. A.**; Majid, K*.; Putthusseri, D.; Ahmad, J.; Lone, S., "High Na⁺ Mobility in rGO Wrapped High Aspect Ratio 1D SbSe Nano Structure Renders Better Electrochemical Na⁺ Battery Performance." *ChemPhysChem.* **2020**, *21*, 814-820. (**IF** = **3.1**)

- 23. **Bhat, G. A.**; Rashad, A. Z.; Folsom, T. M.; Darensbourg, D. J*., "Placing Single Metal Complexes into the Backbone of CO₂-based Polycarbonate Chains, Construction of Nanostructures for Prospective Micellar Catalysis." *Organometallics* **2020**, 39, 1612-1618. (**IF** = **3.83**)
- 24. Folsom, T. M.; **Bhat, G. A.**; Rashad, A. Z.; Darensbourg, D. J*., "Approach for Introducing a Single Metal Complex into a Polymer Chain: Metallo-Chain Transfer Agents in CO₂ or COS/Epoxide Copolymerization Processes." *Macromolecules* **2019**, *52*, 5217-5222. (**IF** = **6.05**)
- 25. **Bhat, G. A**.; Haldar, S.; Verma, S.; Chakraborty, D.; Vaidhyanathan, R*.; Murugavel, R*., "Facile Exfoliation of Single-Crystalline Copper Alkylphosphates to Single-Layer Nanosheets and Enhanced Supercapacitance." *Angew. Chem. Int. Ed.* **2019**, *58*, 16844-16849. (**IF** = **16.82**)
- 26. **Bhat, G. A.**; Verma, S.; Rajendran, A.; Murugavel, R*., "Thermolabile Organotitanium Monoalkyl Phosphates: Synthesis, Structures, and Utility as Epoxidation Catalysts and Single-Source Precursors for TiP₂O₇." *Inorg. Chem.* **2018**, *57*, 7644-7654. (**IF** = **5.43**)
- 27. **Bhat, G. A.**; Rajendran, A.; Murugavel, R*., "Polydentate 4-Pyridyl-terpyridine Containing Discrete Cobalt Phosphonate and Polymeric Cobalt Phosphate as Catalysts for Alcohol Oxidation." *Z. Anorg. Allg. Chem.* **2018**, *644*, 692-699. (**IF** =1.5)
- 28. **Bhat, G. A.**; Rajendran, A.; Murugavel, R*., "Dinuclear Manganese(II), Cobalt(II), and Nickel(II) Aryl Phosphates Incorporating 4-Chloro-2,2:6,2-Terpyridine Coligands Efficient Catalysts for Alcohol Oxidation." *Eur. J. Inorg. Chem.* **2018**, 2018, 795-804. (**IF** = **2.55**)
- 29. **Bhat, G. A**.; Maqbool, R.; Murugavel, R*., "Synthesis, Characterization, Nuclease, and Cytotoxic Activity of Phosphate-Free and Phosphate-Containing Copper 4-(N-methylpyridinium)-2,2:6,2 Terpyridine Complexes." *J. Chem. Sci.* **2018**, *130*, 21. (**IF** = **2.15**)
- 30. Gupta, S. K.; **Bhat, G. A**.; Murugavel, R*., "Lanthanide Organophosphate Spiro Polymers: Synthesis, Structure, and Magnetocaloric Effect in the Gadolinium Polymer." *Inorg. Chem.* **2017**, *56*, 9071-9083. (**IF** = **5.43**)
- 31. **Bhat, G. A.**; Maqbool, R.; Dar, A. A.; Ul Hussain, M.; Murugavel, R*., "Selective Formation of Discrete Versus Polymeric Copper Organophosphates: DNA Cleavage and Cytotoxic Activity." *Dalton Trans.* **2017**, *46*, 13409-13420. (**IF** = **4.56**)
- 32. **Bhat, G. A.**; Kalita, A. C.; Murugavel, R*., "Intriguing structural chemistry of neutral and anionic layered monoalkylphosphates: single-source precursors for high-yield ceramic phosphates." *CrystEngComm* **2017**, *19*, 5390-5401. (**IF** = **3.75**)
- 33. Dar, A. A.; **Bhat, G. A.**; Murugavel, R*., "Dimensionality Alteration and Intraversus Inter-SBU Void Encapsulation in Zinc Phosphate Frameworks." *Inorg. Chem.* **2016**, *55*, 5180-90. (**IF** = **5.43**)

34. **Bhat, G. A.**; Vishnoi, P.; Gupta, S. K.; Murugavel, R*., "Anhydrous manganese hypophosphite dense framework solid: Synthesis, structure and magnetic studies." *Inorg. Chem. Commun.* **2015**, *59*, 84-87. (**IF** = **3.42**)

Books

- 1. **Bhat, G. A.**; Darensbourg, D. J*., Chapter on "Sulfur-Containing Polymers" in From Synthesis to Functional Materials (Wiley-VCH, 2021).
- 2. **Bhat, G. A**.; Darensbourg, D. J*., "Polymerization of Epoxides" Comprehensive Organometallic Chemistry IV **2022**, 13, 431-455.

Selected Presentations

- 1. Nov 2024 & International Conference on Polymers, Composites, Nanocomposites and Biocomposites-2024 (ICPCNB-2024) (MGU Kerala, Invited Talk)
- 2. **Sep 2024** & Conference on Catalysis for Energy, Environment and Sustainability (CEES) and 3rd CO2 India Network Meet (IICT Hyderabad, Invited Talk)
- 3. **July 2024** & IUPAC MACRO-2024 50th World Polymer Congress (University of Warwick UK; Invited Talk)
- 4. **Sept 2023** & 6th EuChems Conference on Green and Sustainable Chemistry (University of Salerno Italy; Invited Talk)
- 5. **Sept 2023** & Conference on Catalysis for Energy, Environment and Sustainability (CEES) and 2nd CO2 India Network Meet (IIT Mandi, Invited Talk)
- 6. Oct 2022 & Conference on Advances in Catalysis for Energy and Environment (CACEE-2022) (Tata Institute of Fundamental Research Mumbai, Invited Talk)
- 7. **July 2019** & Polymers for Advanced Technologies Conference (Texas A&M University, Texas, Oral Presentation)
- 8. May 2017 & 28th Annual meeting of Materials Research Society of India (IIT Bombay, Mumbai India, Poster Presentation)
- 9. **Aug 2019** & American Chemical Society National Meeting (San Diego, CA; Poster Presentation)
- 10. **July 2019** & Polymers for Advanced Technologies Conference (Texas A&M University, Texas, Oral Presentation)
- 11. May 2017 & 28th Annual meeting of Materials Research Society of India (IIT Bombay, Mumbai India, Poster Presentation)
- 12. Mar 2017 & In-house Symposium Department of Chemistry (IIT Bombay, Powai Mumbai India; Flash Presentation)
- 13. **June 2016** & 16th International Conference on Polymers and Organic Chemistry (Creta Maris, Beach Greece; Poster Presentation)

- 14. Aug 2015 & Chemical Frontiers 2015 (Goa, India; Poster Presentation)
- 15. **Dec 2015** & International Symposium on Modern Trends in Inorganic Chemistry (Jadavpur University, Kolkata India; Oral Presentation)

Outreach

- 1. **April 2024** Career Opportunities After Bachelor's Degree (Outreach Lecture at GDC Sopore)
- 2. **Aug 2023** Molecules that changed the World (Outreach Lecture at GCW Nawakadal Sgr.)
- 3. Mar 2023 INYAS outreach lecture at SMMSK Ganderbal (Materials S&T for Society)
- 4. April 2019 Science Night at Sul Ross Elementary School (Presenter)
- 5. Oct 2018 Chemistry Open House at Texas A&M University (Presenter)
- 6. Feb 2015 TechConnect at Nehru Science Centre (Presenter)
- 7. Jan 2014 Magic in Chemistry show at IITB for Junior students (Presenter)
- 8. Dec 2013 Techfest at IITB for Junior students (Presenter)

Mentoring

- 1. **Dr Junaid Ali** (Postdoc in collaboration with Prof. V. Chandrasekhar Tata Institute of Fundamental Research (TIFR) Hyderabad, India)(Oct 2024 to present)
- 2. **Beenish Shakeel** (Masters Student, Clinical Biochemistry University of Kashmir Aug 2023-April 2024)
- 3. Quratualain Ain (Masters Student, Nanotechnology Dept. University of Kashmir Aug 2022-April 2023)
- 4. **Hameem Yousuf** (Masters Student, Clinical Biochemistry University of Kashmir Aug 2022-April 2023)
- Hamza Mohammad (Undergraduate Student, Texas A&M University, Dec 2019
 July 2021)
- 6. **Ryan Rutledge** (Undergraduate Student, Texas A&M University, May 2019 May 2020)
- 7. **Ahmed Z. Rashad** (Visiting Undergraduate Student, Texas A&M University, January 2019 January 2020)
- 8. **Tucker Folsom** (Undergraduate Student, Texas A&M University, October 2018 May 2019)

- 9. Vishal Singh (Undergraduate summer intern at IITB from Banaras Hindu University, Varanasi, India, May 2018 July 2018)
- 10. **Deepak Sharma** (Masters Student from Department of Chemistry IITB Powai Mumbai, India, May 2017 April 2018)
- 11. Gaurav Khurana (Masters Summer Intern student from Department of Chemistry Indian Institute of Technology Kanpur, India, May 2015 July 2015)
- 12. **Sonam Verma** (Graduate student, Department of Chemistry IITB Powai Mumbai, India, Jan 2014 Aug 2017)

Service

1. President, Postdoctoral Association of Chemistry (PAC), Texas A&M University (July 2019 – 2021)

Professional Affiliations

- 1. Current Member of American Chemical Society (ACS) (2014 Present)
- 2. Lifetime Member of Chemical Research Society of India (CRSI) (2016 Present)
- 3. Associate Member of Royal Society of Chemistry (AMRSC) (2015 2017)

References

- Professor Donald J. Darensbourg

Department of Chemistry, Texas A&M University

Email: djdarens@chem.tamu.edu

Phone: $+1\ 979-845-5417$

- Professor Marcetta Darensbourg

Department of Chemistry, Texas A&M University

Email: marcetta@chem.tamu.edu

Phone: +1 979-229-3370

- Professor R. Murugavel

Department of Chemistry, Indian Institute of Technology Bombay, India

Email: rmv@chem.iitb.ac.in Phone: +91 982-080-3249

- Professor Debabrata Maiti

Department of Chemistry, Indian Institute of Technology Bombay, India

Email: dmaiti@chem.iitb.ac.in Phone: +91 982-090-7155