



Dr. Pranay P. Morajkar

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Interest & Expertise

To pursue research oriented academic career, establish a state-of-the-art research laboratory of excellence, pursue cutting edge research and transmit the knowledge gained to the student community via Bachelors, Masters and Doctoral academic curriculum in the field of “*Chemistry for Sustainable Energy and Environment*”.

Core Expertise: Atmospheric Chemistry, Material Chemistry, Reaction Kinetics & Modelling, Catalysis, Laser Spectroscopy and its applications in monitoring OH/ HO₂ radical induced Fast Reactions, CO₂ Storage and Conversion to Fuels, Fuel Formulation & Clean Combustion, Pollutant Mitigation and Electrochemical Energy Storage systems.

Education

November 2012	Ph.D. in Lasers, Optics, Gas kinetics and Atmospheric Chemistry, University of Lille1 in collaboration with University of Bordeaux1 (France)
May 2009	Master of Science in Physical Chemistry, Goa University (India)
May 2007	Bachelor of Science in Chemistry, Goa University (India)

Scientific Prizes, Awards & Grants

October 2026	Dr. Raghunath Mashelkar Award for Innovation & Research 2026 by WPU-Goa
April 2025	DST& WM Govt. of Goa travel grant to conduct research experiments at PTB Germany
March 2024	IGSTC Travel grant for Indo-German Bilateral workshop, PTB Germany
March 2024-25	GSRF research grant, Govt. of Goa, (India)
October 2022-25	DST&WM research grant, Govt. of Goa, (India)
June 2022-23	Best Chemistry Researcher award by CDFAA, Goa University (India)
June 2021-22	Best Chemistry Researcher award by CDFAA, Goa University (India)
February 2021-22	IPR Seed Grant, Goa University (India)
Nov. 2018-21	Indo-European S&T research grant via DST INNO-INDIGO S&T 2017
March 2016-19	DST-SERB Early Career Research Award (India)
March 2015-18	UGC-BSR-research grant (India).
Oct. 2009	MRT doctoral research fellowship by Ministry of Research, (France).
May 2009	Goa State Rank at the M.Sc. Physical Chemistry examination, Goa University, (India).
April 2007	Goa State Rank at the B.Sc. Chemistry examination, Goa University, (India).
May 2007	Merit Proficiency Award –by Chemistry Teachers Associations of Goa University, (India).
May 2007	Chemistry Proficiency Award-awarded by SESA Goa Pvt. Ltd. Goa (India)

Current Employment & Designation

Since June. 2014	Sr. Asst. Professor, School of Chemical Sciences, Goa University, India.
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Professional Research Experience

- Jan.2025-till date Research Scientist - Department of Physical Chemistry, PTB Braunschweig, Germany**
- **(on Sabbatical):** Established a new research laboratory “Catalytic Reactors & process metrology for Clean combustion”.
 - Design and development of Continuous Flow Fixed Bed Catalytic Profile Reactor hyphenated to micro-GC for fuel oxidation and mechanistic investigations.
- Jun 2014-Jan 2025 Assist. Professor (Sel. Grade III)- School of Chemical Sciences, Goa University, India**
- Established a research group and set up the *Laboratory of Nanostructured Materials for Energy & Environmental Applications*.
 - Designed and developed a continuous flow fixed-bed high-pressure catalytic reactor for biofuel and soot oxidation studies.
 - Design and fabrication of a photocatalytic batch reactor for treating dye-polluted water.
 - Procured and validated high-pressure -low temperature Parr Reactor integrated with a micro-GC for CO₂ conversion to value-added fuels/chemicals.
 - Initiated research collaborations under Indo-European S&T Cooperation (2017) with PTB (Germany), University of Helsinki (Finland), University of Catholique Luven Belgium and IIT Madras (India).
 - Led a DST & WM-Goa-funded project on nanostructured transition metal oxides for advanced energy storage devices.
 - Led a DST-India-funded international project on biodiesel combustion and CFD modelling for low-emission, high-efficiency systems.
 - Completed a SERB-India-funded project on CO₂/O₂ reactivity with hydrocarbons for CCS applications in depleted oil reservoirs.
 - Executed a UGC-India-funded project on TiO₂-based nanocomposites for photocatalytic degradation of hazardous organics.
 - Co-led a GSRF-Goa-funded project on developing a portable device for adulterant detection in turmeric.
- Feb 2019-Jun 2020 Research Scientist - Khalifa University, Abu Dhabi, UAE**
- Performed modifications in the exhaust system for detection and analysis of particulate matter emissions from diesel engine
 - Performed measurement of sooting propensity, nanostructure analysis and oxidative reactivity of diesel-biofuel soot in a diffusion flame setup.
- Jun. 2013-Jun.2014 CNRS Post Doctoral Associate - LRGP-CRT, University of Lorraine (France).**
- Worked on a sponsored research project entitled “HP/ LT oxidation studies of n-octane in context of CO₂/O₂ mixture injection under depleted oil reservoir condition for CCS technology applications by funded Total (France).
 - Developed global kinetic models, simulated the oxidation kinetics and product distribution of n-octane oxidation.

June 2009- Dec 2012 Doctoral Research Fellow –University of Lille1/University of Bordeaux1, France.

- Worked on a Franco-German project entitled “Novel approaches in investigation of oxidation chemistry of monoaromatics” supported by DFG (Germany) and CNRS (France).
- Performed experiments with excimer laser photolysis coupled to time resolved UV-VIS spectrometer and kinetic measurements-simulation of Hexamethyl benzene reactivity with O₂.
- Utilized excimer laser photolysis coupled to Laser Induced Fluorescence (LIF) and cw-Cavity Ringdown Spectrometer (CRDS) for gas phase detection of OH and HO₂ radicals.
- Performed kinetic experiments and simulations on OH and HO₂ radical initiated oxidation of Benzene, Toluene, Xylene, Formaldehyde and Acetaldehyde.
- Performed OH radical lifetime measurements in smog chamber at Forschungszentrum Jülich (Germany) as a visiting scholar under Franco-German bilateral research collaboration.

Research Outcomes, Research Guidance, Teaching and Examinations

June 2014-till date: Research Patents

- **P. P. Morajkar*** and A. V. Salkar, Indian Patent award number 374807, METHOD FOR SYNTHESIZING TUNGSTEN TRIOXIDE NANORODS, publication date 05/01/2018.
- **P. P. Morajkar*** and A.V. Mendes, Indian Patent award number 564809, SN-NI HYBRID MICROSTRUCTURE AND A METHOD OF SYNTHESIZING SN-NI HYBRID MICROSTRUCTURE, publication date 16/11/2023.



Publication Overview

- 51 peer reviewed research papers in Q1 international journals of ACS, RSC, Elsevier, Springer, etc., with a total **Citations: 2423, H-index: 27, i10-index: 44** till date.

ALL Publications

- 1) D. Pradhan, S. S. Shetgaonkar, R. Fernandes, P. Morajkar, Hierarchical defect engineered V₂O₅-x/MoO₃-y microplates as efficient electrode material for enhanced supercapacitor performance. *Journal of Energy Storage* 2026, 176, 123385 (IF: 10.7)
- 2) S. Shetgaonkar, S. Baral, **P. P. Morajkar***, B. Viegas, S. Samant, Tailoring the Morphology and Active Sites in Spinel Cobaltites for Efficient Production of Glycerol Carbonate. *ChemCatChem* 2025, e00404. <https://doi.org/10.1002/cctc.202500404> (IF: 4.5)
- 3) S. Shetgaonkar, **P. P. Morajkar***, Ce⁴⁺/Co³⁺ engineered hetero-structured bifunctional macroporous catalyst for enhanced and selective carbonylation of glycerol using urea *Emergent Materials* 2024. <https://doi.org/10.1007/s42247-024-00861-4> (IF: 4.8)
- 4) S. Da Costa, K.R. Bukkarapu, R. Fernandes, A. Krishnasamy*, and **P. P. Morajkar*** Advancements in In-Cylinder and After-Treatment Strategies for Mitigating Pollutants from Diesel Engines: A Critical Review *ACS Energy Fuels* 2024, 38, 11, 9218–9261 (IF: 5.3)
- 5) G. Bharath, K. Rambabu, Bayan Alqassem, **P. P. Morajkar**, Mohammad Abu Haija, Ashok Kumar Nadda, Vijai Kumar Gupta, Fawzi Banat, Fabrication of gold nanodots decorated on 2D tungsten sulfide (Au-WS₂) photoanode for simultaneous oxidation of phenol and arsenic (III) from industrial wastewater, *Chemical Engineering Journal*,

- 6) A. Myagkiyae, C. Pacini-Petitjean, I. Panfilova, **P. P. Morajkar**, P. Faure-, J. Pironon, V. Burklé-Vitzthum, Flue gas injection into depleted tight hydrocarbon reservoirs in the context of global warming mitigation: Computed evolution of some reservoir parameters. *International Journal of Greenhouse Gas Control* 2022, 120(4):103764 (IF: 5.111)
- 7) M. Biradar, A. Salkar, **P. Morajkar***, **S. Bhosale**, **S. Bhosale***, Pyrazine-based organic electrode material for high-performance supercapacitor applications. *Journal of Energy Storage* 2022, 48, 103953 (IF: 6.583)
- 8) A. V. Salkar, A. P. Naik, G. D. J. Guerrero Peña, G. Bharath, M. A. Haija, F. Banat, **P. P. Morajkar***, 2D α -MoO_{3-x} truncated microplates and microdisks as electroactive materials for highly efficient asymmetric supercapacitors. ELSEVIER, *Journal of Energy Storage*. 2022, 48, 103958. (IF: 6.583)
- 9) S. Costa, A. Salkar, A. Krishnasamy, R. Fernandes, **P. P. Morajkar***, Investigating the oxidative reactivity and nanostructural characteristics of diffusion flame generated soot using methyl crotonate and methyl butyrate blended diesel fuels, *Fuel*, 2022, 309, 122141 (IF: 6.609)
- 10) S. V. Bhosale, M. Al Kobaisi, R. W. Jadhav, **P. P. Morajkar**, L. A. Jones and S. George, Naphthalene diimides: perspectives and promise. *Chem. Soc. Rev.*, 2021, 50, 9845-9998. (IF: 54.564)
- 11) H. Mittal, A. Alili, **P. P. Morajkar**, S.M. Alhassan, Crosslinked hydrogels of polyethylenimine and graphene oxide to treat Cr (VI) contaminate wastewater, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 630, 2021, 127533 (IF: 4.9)
- 12) S. Shetgaonkar, A. V. Salkar and **P. P. Morajkar***, Advances in Electrochemical and Catalytic performance of nanostructured FeCo₂O₄ and its composites, *Chemistry - An Asian Journal*, 2021. (IF : 4.586).
- 13) G. Bharath, K. Rambabu, A. Hai, **P. P. Morajkar**, A. V Salkar, S. W. Hasan, P. L. Show and F. Banat, Highly selective etherification of fructose and 5-hydroxymethylfurfural over a novel Pd-Ru/MXene catalyst for sustainable liquid fuel production, *Int. J. Energy Res.*, 2021. (IF: 5.164)
- 14) W. A. Ali, G. Bharath, **P. P. Morajkar**, A. V Salkar, M. A. Haija and F. Banat, Morphology-dependent catalytic activity of tungsten trioxide WO₃ nanostructures for hydrogenation of furfural to furfuryl alcohol, *J. Phys. D: Appl. Phys.*, 2021, 54, 305502. (IF : 3.207)
- 15) A. V. Salkar, A. P. Naik, S. V. Bhosale and **P. P. Morajkar***, Designing a Rare DNA-Like Double Helical Micro fiber Superstructure via Self-Assembly of In Situ Carbon Fiber- Encapsulated WO_{3-x} Nanorods as an Advanced Supercapacitor *Material, Appl. Mat. Inter.*, 2021, 13, 1288-1300. (IF: 9.229)
- 16) M. R. Biradar, A. V Salkar, **P. P. Morajkar***, S. V Bhosale and S. V Bhosale*, Designing neurotransmitter dopamine-functionalized naphthalene diimide molecular architectures for high-performance organic supercapacitor electrode materials, *New J. Chem.*, 2021, 45, 9346–9357. (IF: 3.591)
- 17) M. R. Biradar, A. V Salkar, **P. P. Morajkar***, S. V Bhosale and S. V Bhosale*, High- performance supercapacitor electrode based on naphthoquinone-appended dopamine neurotransmitter as an efficient energy storage material, *New J. Chem.*, 2021, 45, 5154– 5164. (IF: 3.591)
- 18) H. Mittal, A. Al Alili, **P. P. Morajkar** and S. M. Alhassan, Graphene oxide crosslinked hydrogel nanocomposites of xanthan gum for the adsorption of crystal violet dye, *J. Mol. Liq.*, 2021, 323, 115034. (IF: 6.165)
- 19) G. Bharath, K. Rambabu, **P. P. Morajkar**, R. Jayaraman, J. Theerthagiri, S. J. Lee, M. Y. Choi and F. Banat, Surface functionalized highly porous date seed derived activated carbon and MoS₂ nanocomposites for hydrogenation of CO₂ into formic acid, *J. Hazard. Mater.*, 2021, 409, 124980. (IF: 10.588)
- 20) A. P. Naik, J. V Sawant, H. Mittal, A. Al Alili and **P. P. Morajkar***, Facile synthesis of 2D nanoflakes and 3D nanosponge-like Ni_{1-x}O via direct calcination of Ni (II) coordination compounds of imidazole and 4-nitrobenzoate: Adsorptive separation kinetics and photocatalytic removal of Amaranth dye contaminated wastewater, *J. Mol. Liq.*, 2021, 325, 115235. (IF: 6.165)
- 21) H. Mittal, A. Al Alili, **P. P. Morajkar** and S. M. Alhassan, GO crosslinked hydrogel nanocomposites of chitosan/carboxymethyl cellulose – A versatile adsorbent for the treatment of dyes contaminated wastewater, *Int. J. Biol. Macromol.*, 2021, 167, 1248– 1261. (IF: 6.953).

- 22) A. P. Naik, A. V. Salkar, G. D. J. G. J. G. Peña, J. V. Sawant, G. Bharath, F. Banat, S. V. Bhosale and **P. P. Morajkar***, Facile synthesis of fibrous, mesoporous Ni_{1-x}O nanosponge supported on Ni foam for enhanced pseudocapacitor applications, *J. Mater. Sci.*, 2020, **55**, 12232–12248. (IF: 4.220)
- 23) M. K. Abdrabou, **P. P. Morajkar**, G. D. J. Guerrero Peña, A. Raj, M. Elkadi and A. V Salkar, Effect of 5-membered bicyclic hydrocarbon additives on nanostructural disorder and oxidative reactivity of diffusion flame-generated diesel soot, *Fuel*, 2020, **275**, 117918. (IF: 6.609)
- 24) **P. P. Morajkar**, M. K. Abdrabou, A. V Salkar, A. Raj, M. Elkadi and D. H. Anjum, Nanostructural Disorder and Reactivity Comparison of Flame Soot and Engine Soot Using Diesel and Jatropa Biodiesel/Diesel Blend as Fuels, *Energy & Fuels*, 2020, **34**, 12960–12971. (IF: 3.605)
- 25) **P. P. Morajkar**, M. K. Abdrabou, A. Raj, M. Elkadi, S. Stephen and M. Ibrahim Ali, Transmission of trace metals from fuels to soot particles: An ICP-MS and soot nanostructural disorder study using diesel and diesel/Karanja biodiesel blend, *Fuel*, 2020, **280**, 118631. (IF: 6.609)
- 26) H. Mittal, **P. P. Morajkar**, A. Al Alili and S. M. Alhassan, In-Situ Synthesis of ZnO Nanoparticles using Gum Arabic Based Hydrogels as a Self-template for Effective Malachite Green Dye Adsorption, *J. Polym. Environ.*, 2020, **28**, 1637–1653. (IF: 3.667)
- 27) A. P. Naik, H. Mittal, V. S. Wadi, L. Sane, A. Raj, S. M. Alhassan, A. Al Alili, S. V Bhosale and **P. P. Morajkar***, Super porous TiO_2 photocatalyst: Tailoring the agglomerate porosity into robust structural mesoporosity with enhanced surface area for efficient remediation of azo dye polluted waste water, *J. Environ. Manage.*, 2020, **258**, 110029. (IF: 6.789)
- 28) A. V Salkar, R. X. Fernandes, S. V Bhosale and **P. P. Morajkar***, NH- and CH-Substituted Ureas as Self-Assembly Directing Motifs for Facile Synthesis and Electrocapacitive Applications of Advanced WO_{3-x} One-Dimensional Nanorods, *ACS Appl. Energy Mater.*, 2019, **2**, 8724–8736. (IF: 6.024)
- 29) M. D. Aljabri, N. M. Gosavi, L. A. Jones, **P. P. Morajkar**, D. D. La and S. V Bhosale, Arginine-Induced Self-Assembly of Protoporphyrin to Obtain Effective Photocatalysts in Aqueous Media Under Visible Light., *Molecules*, 2019, **24**, 4172. (IF: 4.411)
- 30) **P. P. Morajkar**, G. D. J. Guerrero, A. Raj, M. Elkadi, R. K. Rahman, A. V Salkar, A. Pillay, T. Anjana and M. S. Cha, Effects of Camphor Oil Addition to Diesel on the Nanostructures and Oxidative Reactivity of Combustion-Generated Soot, *Energy & Fuels*, 2019, **33**, 12852–12864. (IF: 3.605)
- 31) A. V. Salkar, A. P. Naik, V. S. Joshi, S. K. Haram and **P. P. Morajkar***, Designing a 3D nanoporous network: Via self-assembly of WO_3 nanorods for improved electrocapacitive performance, *CrystEngComm*, 2018, **20**, 6683–6694. (IF: 3.545)
- 32) A. P. Naik, A. V Salkar, M. S. Majik and **P. P. Morajkar***, Enhanced photocatalytic degradation of Amaranth dye on mesoporous anatase TiO_2 : evidence of C–N, N=N bond cleavage and identification of new intermediates, *Photochem. Photobiol. Sci.*, 2017, **16**, 1126–1138. (IF: 3.982)
- 33) C. Pacini-Petitjean, **P. Morajkar**, V. Burkle-Vitzthum, A. Randi, C. Lorgeoux, J. Pironon, and P. Faure, Oxidation of *n*-Alkane ($n\text{-C}_8\text{H}_{18}$) under Reservoir Conditions in Response to Gas Mixture Injection (CO_2/O_2): Understanding Oxygenated Compound Distribution *ACS Energy & Fuels* 2016 30 (9), 7560-7570
- 34) C. Pacini-Petitjean, **P. P. Morajkar**, V. Burkle-Vitzthum, A. Randi, C. Lorgeoux, D. Morel, J. Pironon and P. Faure, Oxidation of *n*-Alkane ($n\text{-C}_8\text{H}_{18}$) under Reservoir Conditions, in Context of Gas Mixture Injection (CO_2/O_2): Construction of a Kinetic Model, *Energy & Fuels*, 2015, **29**, 1913–1922. (IF : 3.605)
- 35) H. Bouzidi, M. Djehiche, T. Gierczak, **P. P. Morajkar**, C. Fittschen, P. Coddeville and A. Tomas, Low-Pressure Photolysis of 2,3-Pentanedione in Air: Quantum Yields and Reaction Mechanism, *J. Phys. Chem. A*, 2015, **119**, 12781–12789. (IF: 2.781)
- 36) C. Pacini, **P. P. Morajkar**, P. Faure, V. Burkle-Vitzthum, A. Randi, C. Lorgeoux, J. Pironon and D. Morel, Effect of the Injection of a Gas Mixture ($\text{CO}_2 + \text{O}_2$) Onto Residual hydrocarbons in a Depleted oil Reservoir: Experiments and Modelling, *Energy Procedia*, 2014, **63**, 7830–7835. (IF : 1.89)

- 37) **P. P. Morajkar**, A. Bossolasco, C. Schoemaeker and C. Fittschen, Photolysis of CH₃CHO at 248 nm: Evidence of triple fragmentation from primary quantum yield of CH₃ and HCO radicals and H atoms, *J. Chem. Phys.*, 2014, **140**, 214308. (IF: 3.488)
- 38) **P. P. Morajkar**, C. Schoemaeker, M. Okumura and C. Fittschen, Direct Measurement of the Equilibrium Constants of the Reaction of Formaldehyde and Acetaldehyde with HO₂ Radicals, *Int. J. Chem. Kinet.*, 2014, **46**, 245–259. (IF:1.462).
- 39) C. Bahrini, **P. P. Morajkar**, C. Schoemaeker, O. Frottier, O. Herbinet, P.-A. Glaude, F. Battin-Leclerc and C. Fittschen, Experimental and modeling study of the oxidation of n- butane in a jet stirred reactor using cw-CRDS measurements, *Phys. Chem. Chem. Phys.*, 2013, **15**, 19686–19698. (IF:3.676)
- 40) J.-C. Loison, M.-T. Rayez, J.-C. Rayez, A. Gratien, **P. P. Morajkar**, C. Fittschen and E. Villenave, Gas-Phase Reaction of Hydroxyl Radical with Hexamethylbenzene, *J. Phys. Chem. A*, 2012, **116**, 12189–12197. (IF: 2.781)
- 41) **P. P. Morajkar**, C. Schoemaeker and C. Fittschen, Absolute absorption cross sections for two selected lines of formaldehyde around 6625cm⁻¹, *J. Mol. Spectrosc.*, 2012, **281**, 18–23. (IF: 1.507)
- 42) C. Jain, **P. P. Morajkar**, C. Schoemaeker and C. Fittschen, Formation of HO₂ Radicals from the 248 nm Two-Photon Excitation of Different Aromatic Hydrocarbons in the Presence of O₂, *J. Phys. Chem. A*, 2012, **116**, 6231–6239. (IF: 2.781)
- 43) C. Jain, **P. P. Morajkar**, C. Schoemaeker, B. Viskolcz and C. Fittschen, Measurement of absolute absorption cross sections for nitrous acid (HONO) in the near-infrared region by the continuous wave cavity ring-down spectroscopy (cw-CRDS) technique coupled to laser photolysis., *J. Phys. Chem. A*, 2011, **115**, 10720–10728. (IF: 2.781)
- 44) **P. P. Morajkar** and J. B. Fernandes, A new facile method to synthesize mesoporous γ- Al₂O₃ of high surface area and catalytic activity, *Catal. Commun.*, 2010, **11**, 414–418. (IF: 3.626)
- 45) M. G. Lanjewar, **P. P. Morajkar** and J. Parab, Detection of tartrazine colored rice flour adulteration in turmeric from multi-spectral images on smartphone using convolutional neural network deployed on PaaS cloud. *Multimed Tools Appl.* 2022, **81**, 16537–16562. (IF: 2.757)
- 46) M. G. Lanjewar, **P. P. Morajkar** and J. S. Parab, Hybrid method for accurate starch estimation in adulterated turmeric using Vis-NIR spectroscopy, *Food Additives & Contaminants: Part A*, 2023, 40:9, 1131-1146 (IF: 2.9)
- 47) M. G. Lanjewar, **P. P. Morajkar** and J. S. Parab, Portable system to detect starch adulteration in turmeric using NIR spectroscopy *Food Control*, 2024, 155, 110095 (IF: 6.0)
- 48) M. G. Lanjewar, **P. P. Morajkar**, J. Parab, Robust method for detecting metanil yellow in turmeric: Integrating Vis-NIR spectroscopy and machine learning, *Journal of Food Composition and Analysis*, 2025, 142, 107409.
- 49) K. G. Panchbhai, S. S. Shetgaonkar, **P. P. Morajkar**, M. G. Lanjewar, Artificial intelligence with wrapper multioutput regression to identify chemical contents of fresh and dried manure samples using NIR spectroscopy, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 2025, 330, 125697.
- 50) M. G. Lanjewar, S. Asolkar, J. S. Parab, **P.P. Morajkar** Detecting starch-adulterated turmeric using Vis-NIR spectroscopy and multispectral imaging with machine learning, *Journal of Food Composition and Analysis*, 136, 2024, 106700
- 51) M.G. Lanjewar, **P.P. Morajkar**, P. Payaswini Modified transfer learning frameworks to identify potato leaf diseases. *Multimed Tools Appl* 2024, 83, 50401–50423.



Books Edited/ Chapters in Books

- 1) **P. P. Morajkar** and M. M. Naik, Advances in Nano and Biochemistry: Environmental and Biomedical Applications, 2023, Academic Press, Elsevier Science & Technology
- 2) **P. P. Morajkar**, A. P. Naik, S. T. Bugde, B. R. Naik Photocatalytic and microbial degradation of amaranth dye, 2019, Advances in Biological Science Research, 327-345, Academic Press, ELSEVIER.

- 3) A.V Salkar, S.V Bhosale, **P. P. Morajkar**, Nanostructured WO_{3-x} based advanced supercapacitors for sustainable energy applications, *Advances in Metal Oxides and Their Composites for Emerging Applications 2022*, 213-238, ELSEVIER
- 4) S. S Shetgaonkar, A. P Naik, M. M Naik, **P. P. Morajkar**, Coupling of photocatalytic and bioremediation processes for enhanced mitigation of xenobiotic pollutants from wastewater, *Advances in Nano and Biochemistry 2023*, 3-38 ELSEVIER
- 5) S. Da Costa, A.V. Salkar, **P.P. Morajkar**, Advanced methodologies for remediation of combustion-generated particulate matter (soot) from the environment, *Advances in Nano and Biochemistry 2023*, 199-231, Academic Press, ELSEVIER
- 6) D. Amedro, A. E Parker, C. Schoemaecker, C. Jain, **P. Morajkar**, P. S. Monks, K. Miyazaki, Y. Kajii, C. Fittschen, *HOx and ROx Radicals in Atmospheric Chemistry, Disposal of Dangerous Chemicals in Urban Areas and Mega Cities: Role of Oxides and Acids of Nitrogen in Atmospheric Chemistry*, 2013, 77-92, Springer Netherlands.

Doctoral Thesis Guided

- Miss Amarja P. Naik (Rg.No.201002655), thesis entitled “*Nanoporous TiO_2 , NiO and their Nanocomposites for Environmental and Energy Applications*” (Completed).
- Mr. Akshay V. Salkar (Rg.No. 201103516), thesis entitled “*Nanostructured Tungsten and Molybdenum oxides as advanced electrode materials for Energy Storage Applications*” (Completed).
- Miss Sarvesha Shetgaonkar (Rg.No. 201303500), thesis entitled “*Conversion of CO_2 into value added chemicals using nanostructured catalyst*” (submitted).
- Miss. Samantha Da Costa (Rg.No. 201505638) thesis entitled “*Studies on development of catalytic processes for mitigation of diesel exhaust emissions*” (submitted).

Research Assistants Trained

- Guided 03 research assistants on sponsored research projects of DST India, SERB India & DST&WM Govt. of Goa, India.

Master Thesis Completed

- Guided 54 Master thesis since 2014 as a part of the M.Sc. Chemistry curriculum at GU.

Academic Teaching and Examination

Designed new courses and conducted teaching and examination for M.Sc. Chemistry courses such as i) General Physical Chemistry, ii) Chemical Kinetics, iii) Catalysis: Fundamentals and Applications, iv) Practical Courses in Physical Chemistry I&II, v) Ph.D. course work in Chemistry I: Research Methodology, vi) Ph.D. course work in Chemistry II: Advanced Research Theory.

Academic Professional Trainings

- Refresher Course in Natural & Biosciences (Inter Disciplinary), UGC-HRD, GU India
- Teaching Orientation Program UGC, UGC-HRDC-GJUST, Haryana India
- Refresher Course in Chemistry at UGC, HRDC, NEHU, Shillong, India

- Faculty Development Program in Chemistry, NIT Hyderabad, India.
- Training on MOOC & E-content Development HRDC, NEHU, Shillong, India
- Training on NEP2020 Sensitization and Orientation, UGC-HRD, GU India
- Training in Skill Development, HRDV, University of Hyderabad, India

Administrative Experience

May 2026-till date	Vice Chairperson, International Measurement Confederation IMEKO TC-20 Germany
August 2026	Elected Court Representative of Teaching Departments, GU, India
May 2022-2025	Scientific Secretary of International Measurement Confederation IMEKO TC-20 Germany
January 2023	Vice-Chairperson, Goa University Teachers Association, GU, India
January 2021	Chairperson Education outreach committee, SES-REC, GU, India
October 2022	Chairperson & Scientific Expert for Ph.D. research, SCS, GU, India. Member, Directorate of Unnat Bharat Abhiyan, GU, India. Member Technical Committee, GU, India.
January 2020	Member of Directorate of International Cooperation & Exchange, GU, India.
January 2019	Drafted the Goa University National & International Internship program Policy.
January 2019	Member of Institution Innovation Council, GU, India
March 2018	Elected Court Representative of Teaching Departments, GU, India
February 2014	Member of Technical Committee TC20, energy & related quantities IMEKO
July 2017	Member of American Chemical Society
March 2017	Warden, Men's Hostel, GU, India
May 2017	Member Secretary, Hostel Management Committee, GU, India
May 2017	Member, Anti Ragging Committee, GU, India
May 2017	Member of Campus Amenities Committee, GU, India
April 2017	Member of Executive Council, CDFAA, GU, India
June 2016	Member of Foreign Student Advisory Committee, GU, India
January 2015	Joint Secretary of International Conference on Green Chemistry, Catalysis, Energy and Environment (ICGC), GU, India
January 2015	Member of Examination Panel of Chemistry Teachers, GU, India

Served as visiting scientist

- Visiting Scientist at Physikalisch-Technische Bundesanstalt (PTB) Braunschweig, Germany
- Visiting Scientist at Khalifa University of Science & Technology, UAE
- Visiting Researcher at ARTG, National Atmospheric Research Laboratory (NARL), India

Scientific Outreach and Community Engagement Activities

- Associate Editor of international journal Measurement-Energy, Elsevier
- Scientific reviewer for international journals namely; Proceedings of the Combustion Institute, ACS Applied materials & Interfaces, Applied nanomaterials, Applied Energy Materials, Materials Chemistry & Physics, Process Safety & Environmental protection, journal of Analytical Applied pyrolysis, Inorganic Chemistry Communications, Journal of Hazardous Materials, Journal of Energy Storage, Environmental Pollution, Chemical Physics Letters, Carbon, International Journal of Biological Macromolecules, Arabian Journal of Chemistry

- Scientific Evaluator of Goa University for Goa Energy Development Cooperation project.
- Served as a Chairperson and established Mushroom Cultivation and Incubation Center at Goa University and conducted hands on-training and awareness programs for local farmers in Goa under Unnat Bharat Abhiyaan, Goa University India.
- Initiated Mussel farming and awareness projects for farmers in Goa's villages under Unnat Bharat Abhiyaan.

Major Research Conference Presentations

- October 2026: Invited delegate and session chair, International Conference on Measurement of Energy, NIT Meghalaya, Sohara, India
- March 2026: Invited talk at the 59th German Catalysis Conference (59. Jahrestreffen Deutscher Katalytiker), 18–20th March 2026 at Congress Centrum Weimarhalle in Weimar, Germany.
- Sep 2024: Invited talk on “Nanostructured Materials for Energy and Environment at the International Conference on Green Energy: Powering a Sustainable Future”, at Govt. College of Arts, Science and Commerce, Khandola Goa.
- March 2024: Invited talk on “Advanced Nanomaterials for Clean Combustion Technologies” IGSTC Indo-German Bilateral Research workshop PTB Braunschweig Germany.
- Dec 2020: Oral presentation on DNA-like WO₃ superstructures for advanced supercapacitor applications at the conference on advanced materials for renewable energy and sustainable environment organized by P.E.S. college of Arts and Science, Goa (India).
- Jan 2020: Poster presentation on NH- and CH- substituted ureas as motifs for synthesizing WO₃ nanorods at the conference on advanced materials for renewable energy and sustainable environment (AMRESE 2020) at the Govt. College of Arts, Science and Commerce, Khandola, Goa (India).
- Dec 2019: Poster presentation on superporous TiO₂ photocatalyst with enhanced surface area for wastewater treatment at the conference on new frontiers in chemistry (NFCFA 2019) at BITS, Goa.
- Feb 2019: Poster presentation on 3D nanoporous WO₃ for supercapacitor applications at the conference on advancement in science & technology (NCAST 2019) at the Govt. College of Arts, Science and Commerce, Khandola, Goa (India).
- Jan 2019: Poster presentation on nanostructured WO₃ for electrochemical applications at the conference on advanced in materials science & applied biology (AMSAB 2019) at the NMIMS Mumbai (India).
- May 2018: Invited talk: Nanostructured materials for treatment of exhaust gas emissions from diesel engine at the Department of Physical Quantities, PTB Braunschweig, (Germany)
- Jan 2018: 21st Workshop & Symposium on Thermal Analysis (THERMANS 2018) GU (India).
- Jan 2018: Conference on Advances in Catalysis for Energy and Environment (CACEE 2018) TIFR, Mumbai, (India).
- July 2017: 21st CRSI National Symposium in Chemistry, IICT Hyderabad, (India).
- Jan 2017: Conference on New Frontiers in Chemistry, the NFCFA BITS Goa (India).
- Dec 2015: Poster Presentation on Photocatalytic degradation of Amaranth dye using TiO₂ catalyst at the NFCFA BITS Goa (India).
- July 2015: Oral presentation: Reaction kinetics and its Applications in Atmospheric and Combustion

systems. Invited lecture at the National Atmospheric Research laboratory, Gadanki (India).

- July 2015: Participated in Atmospheric aerosol balloon measurement campaign at NARL in collaboration with NASA Langley, (USA).
- Jan 2015: Participated in the International conference on Green chemistry, Catalysis, Energy and Environments at Goa University, Goa, (India).
- June 2012: Poster presentation: A kinetic study of the gas phase reaction of $\text{CH}_2\text{O} + \text{HO}_2$ radicals. 22nd International Symposium on Gas Kinetics, Boulder, Colorado (USA).
- June 2012: Oral presentation: Quantum yield of HCO and H atoms from the 248 nm photolysis of CH_3CHO and the reaction kinetics of $\text{CH}_3 + \text{HO}_2$ radicals. XXXIIth Reunion annuelle du group de Cinetique et Photochimie Bordeaux (France).
- June 2011: Poster presentation: OH initiated oxidation of Hexamethylbenzene. XXXIth Reunion annuelle du group de Cinetique et Photochimie, Wimereux (France).
- May 2011: Poster presentation: Direct measurement of equilibrium constant for the reaction of $\text{CH}_2\text{O} + \text{HO}_2$ radicals using laser photolysis coupled to cw-CRDS technique. Journée de Doctorat, IRENI, (France).
- Mar 2010: Oral presentation: OH initiated oxidation of aromatic compounds: the special case of Hexamethyl benzene, DFG-CNRS Meeting, Bayreuth (Germany)

