

Curriculum Vitae



Dr. SUVERNA TRIVEDI

Fulbright Visiting Scholar, School of Chemistry &
Chemical Engineering

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Objective

To obtain a challenging position that effectively utilizes my skills and provides me with adequate opportunity to develop my technical and communication skills, allowing me to grow as a fresher while contributing to the organization's goals.

Career Overview

- 31/07/2021-29/07/2022 Fulbright Visiting Scholar, University of California, Berkeley, United state-94720
- 12/03/2020-30/07/2021 National Institute of Technology, Rourkela, Odisha, India-769008 {On leave till}
- Assistant Professor, Department of Chemical Engineering, [] {On leave}, will continue from 1 August 2022.
- Assistant Professor, Department of Chemical Engineering, Pandit Deendayal Energy University, Gandhinagar, Gujarat, [02 July 2018-15 January 2020]

Educational Information

- 2018 Ph.D. in Chemical Engineering, IIT BHU, Varanasi India [CGPA:9.7]
- 2014 MTech. in Chemical Engineering, IIT BHU, Varanasi, India [CGPA:9.33]
- 2012 BTech. in Chemical Engineering, IIT BHU, Varanasi, India [Percentage 82%]
- 2007 School Education completed [High School:78% & Intermediate:77%]

Summer Training

- 2010 DMSRDE (DRDO), Kanpur [Four weeks] *Topic: Development of Thermal Management Materials*

Post-Doctoral Project

BECO2N sensor network measured CO and CO₂ behavior with traffic data of Los Angeles with **Prof. Ronal C Cohen**, School of Chemistry, UC Berkeley, CA, USA.

Ph.D. Thesis Topic

Simultaneous catalytic oxidation of CO and CH₄: An approach of CNG vehicle emission control under the supervision of **Professor Ram Prasad.**, IIT BHU Varanasi India.

M. Tech. Thesis Topic

Simultaneous catalytic control of NO_x, Soot, CO and HC from diesel fueled vehicle under the supervision of **Professor Ram Prasad**, IIT BHU Varanasi, India.

Professional Recognition/ Award/ Prize/ Certificate, Fellowship

- 2020 Fulbright Principal candidate at University of California Berkeley.
- 2020 High Talent Research Programme awardee Wuhan University, China 2020 [Declined]
- 2020 Institute Post-Doc Fellowship, IIT-Delhi, India, 2020 [Declined]
- 2016 Best poster Presentation as post graduate scientist
Development of nano-NiCo₂O₄ spinel for abatement of CO-CH₄ emissions from CNG vehicles, ICNBL, 25-29 May 2016, NIT Srinagar- Kashmir, India.
- 2018 Assistant Professor, BIT Sindri, Dhanbad, [Declined].
- 2019 Assistant Professor, Marwadi University, Rajkot, Gujarat 360003 [Declined].
- 2012 MHRD Fellowship for Master
- 2014 MHRD Fellowship for Ph.D.
- 2012 Gate rank 654. [Qualified twice 2012 & 2013]
- 2012 Merit in Chemical Engineering UG Program, UPTU Lucknow, India.

Details of Projects completed/under implementation

- Co-PI: " Improving the Stability of Perovskite Solar Cells (>1000 Hrs)" – DST, Technology Mission Division from September 6, 2021 – September 6, 2024. Total Funding Amount: 42.6 Lakh. Suverna's portion: 5.34 Lakh for four three years (consumables)
- Co-PI: "Green and chemical Synthesis of nanomaterials for multifunctional applications", - International Scientific Research collaboration Grant with King Khalid University, Saudi Arabia from March 13, 2019 – March 13, 2020. Total Funding Amount 50Lakh. Suverna's portion: 6Lakh for material development.

Webinar Organized:

- Topic: *Scientific advances and challenges in Solar energy conversion into Electricity and fuels (Online)*, 04th November 2020.

Additional Information:

Editorial Appointments-Editorial board member in Journal of Chemical Research and Application 2018.

Resource Person/Talk

- Resource person on five day webinar on "Recent Advances In Environmental Engineering And Management(RAEEM-2022)", Department of Civil Engineering, NIT Rourkela, Odisha, 12-16 February 2022.
- Invited talk on "Material design for Energy and Environment application", Department of Chemistry, Kashi Naresh Govt. PG College Gyanpur, Bhadohi December 2022.
- Resource person on Advanced Level Bridge Course on Materials organized by Ganpat University, Faculty of Science, Mehsana, Gujarat, 1st-7th Sep. 2020.
- Delivered an invited talk on *International e-Conference on Advanced Functional Materials and Optoelectronic Devices* organized by Institute of Physical Sciences for Study and Research, Veer Bahadur Singh Purvanchal University, Jaunpur, 13-15th June 2020.
- Delivered an invited talk on *Current Application of Nano-catalyst in Chemical Engineering* organized

by Applied Physics Department, Sardar VallabhBhai National Institute of Technology, Surat 16th–17 February 2019.

Book Published (International-3):

- S. K. Gautam, R. Prasad and **S. Trivedi**, Catalytic Abatement of CH₄ Emission from CNG Fueled Vehicle Exhaust. Lap Lambert Academic Publishing, Germany. 2017. ISBN: 978-3-330-04637-5.
- **S. Trivedi**, R. Prasad and S. Chadda, Catalytic Control of Hydrocarbon Emission from LPG fueled Vehicles. Lap Lambert Academic Publishing, Germany. 2016. ISBN: 978-3-330-01777-1. R. Prasad and
- **S. Trivedi**, Simultaneous Catalytic Control of CO, HC, NO_x and PM Emissions from Diesel Fuelled Vehicles. Lap Lambert Academic Publishing, Germany. 2014. ISBN: 978-3- 659-62017-1.

Publications (International: Total-20)

1. Chavan, R. D.; Tavakoli, M. M.; **Trivedi, S.**; Prochowicz, D.; Kalam, A.; Yadav, P.; Bhoite, P. H.; Hong, C. K. Interface Engineering of Mesoscopic Perovskite Solar Cells by Atomic Layer Deposition of Ta₂O₅. *ACS Appl. Energy Mater.* **2021**, 4 (10), 10433–10441.
2. Prochowicz, D.; **Trivedi, S.**; Parikh, N.; Saliba, M.; Kalam, A.; Mahdi Tavakoli, M.; Yadav, P. In the Quest of Low-Frequency Impedance Spectra of Efficient Perovskite Solar Cells. *Energy Technol.* **2021**, 9 (7), 2100229.
3. **Trivedi, S.**; Prochowicz, D.; Kalam, A.; Tavakoli, M. M.; Yadav, P. Development of All-Inorganic Lead Halide Perovskites for Carbon Dioxide Photoreduction. *Renew. Sustain. Energy Rev.* **2021**, 145, 111047.
4. Narayanan, S.; Parikh, N.; Tavakoli, M. M.; Pandey, M.; Kumar, M.; Kalam, A.; **Trivedi, S.**; Prochowicz, D.; Yadav, P. Metal Halide Perovskites for Energy Storage Applications. *Eur. J. Inorg. Chem.* **2021**, 2021 (13), 1201–1212.
5. **Trivedi, S.**; Prochowicz, D.; Parikh, N.; Mahapatra, A.; Pandey, M. K.; Kalam, A.; Tavakoli, M. M.; Yadav, P. Recent Progress in Growth of Single-Crystal Perovskites for Photovoltaic Applications. *ACS Omega* **2021**, 6 (2), 1030–1042.
6. Tripathi, B.; Mahapatra, A.; Verma, D.; Kalam, A.; Pandey, M. K.; **Trivedi, S.**; Kumar, M. Electro-Analytical Comparison of Commercial Mono-Crystalline Silicon and PERC Solar Cells to Maximize Performance. *Eng. Res. Express* **2020**, 2 (4), 045018.
7. **Trivedi, S.**; Prasad, R.; Mishra, A.; Kalam, A.; Yadav, P. Current Scenario of CNG Vehicular Pollution and Their Possible Abatement Technologies: An Overview. *Environ. Sci. Pollut. Res.* **2020**, 27 (32), 39977–40000.
8. Prochowicz, D.; Tavakoli, M. M.; Wolska-Pietkiewicz, M.; Jędrzejewska, M.; **Trivedi, S.**; Kumar, M.; Zakeeruddin, S. M.; Lewiński, J.; Graetzel, M.; Yadav, P. Suppressing Recombination in Perovskite Solar Cells via Surface Engineering of TiO₂ ETL. *Sol. Energy* **2020**, 197, 50–57.
9. Kalam, A.; Runjhun, R.; Mahapatra, A.; Tavakoli, M. M.; **Trivedi, S.**; Tavakoli Dastjerdi, H.; Kumar, P.; Lewiński, J.; Pandey, M.; Prochowicz, D. Interpretation of Resistance, Capacitance, Defect Density, and Activation Energy Levels in Single-Crystalline MAPbI₃. *J. Phys. Chem. C* **2020**, 124 (6), 3496–3502.
10. Mahapatra, A.; Runjhun, R.; Nawrocki, J.; Lewiński, J.; Kalam, A.; Kumar, P.; **Trivedi, S.**; Tavakoli, M. M.; Prochowicz, D.; Yadav, P. Elucidation of the Role of Guanidinium Incorporation in Single-Crystalline MAPbI₃ Perovskite on Ion Migration and Activation Energy. *Phys. Chem. Chem. Phys.* **2020**, 22 (20), 11467–11473.
11. Mahapatra, A.; Prochowicz, D.; Tavakoli, M. M.; **Trivedi, S.**; Kumar, P.; Yadav, P. A Review of Aspects of Additive Engineering in Perovskite Solar Cells. *J. Mater. Chem. A* **2020**, 8 (1), 27–54.
12. Prochowicz, D.; Tavakoli, M. M.; Alanazi, A. Q.; **Trivedi, S.**; Tavakoli Dastjerdi, H.; Zakeeruddin, S. M.; Grätzel, M.; Yadav, P. Charge Accumulation, Recombination, and Their Associated Time Scale in Efficient (GUA)_x(MA)_{1-x}PbI₃-Based Perovskite Solar Cells. *ACS Omega* **2019**, 4 (16), 16840–16846.
13. Kalam, A.; Al-Sehemi, A. G.; Mahapatra, A.; Verma, D.; **Trivedi, S.**; Pandey, M. K. Identification of

Defects and Defect Energy Distribution in the Perovskite Layer of MAPbI₃-XCl_x Perovskite Solar Cell. *Mater. Res. Express* **2019**, 6 (10), 105510.

14. **Trivedi, S.**; Prasad, R. A Four-Way Catalytic System for Control of Emissions from Diesel Engine. *Sādhanā* **2018**, 43 (8), 1–13.
15. **Trivedi, S.**; Prasad, R.; Gautam, S. K. Design of Active NiCo₂O₄- δ Spinel Catalyst for Abatement of CO-CH₄ Emissions from CNG Fueled Vehicles. *AIChE J.* **2018**, 64 (7), 2632–2646.
16. **Trivedi, S.**; Prasad, R. Kinetics of Simultaneous Oxidation of CO-CH₄ over Pd-K Promoted NiCo₂O₄/ γ -Al₂O₃ Catalyst. *Can. J. Chem. Eng.* **2018**, 96 (6), 1352–1359.
17. **Trivedi, S.**; Prasad, R. Choice of Precipitant and Calcination Temperature of Precursor for Synthesis of NiCo₂O₄ for Control of CO-CH₄ Emissions from CNG Vehicles. *J. Environ. Sci.* **2018**, 65, 62–71.
18. **Trivedi, S.**; Prasad, R. Synthesis of K-Pd Doped NiCo₂O₄- δ by Reactive Calcination Route for Oxidation of CO-CH₄ Emissions from CNG Vehicles. *New J. Chem.* **2018**, 42 (6), 4142–4154.
19. **Trivedi, S.**; Prasad, R.; Chadha, S. Oxidation Kinetics of Propane-Air Mixture over NiCo₂O₄ Catalyst Emitted from LPG Vehicles. *Bull. Chem. React. Eng. Catal.* **2017**, 12 (2), 191–196.
20. **Trivedi, S.**; Prasad, R. Reactive Calcination Route for Synthesis of Active Mn-Co₃O₄ Spinel Catalysts for Abatement of CO-CH₄ Emissions from CNG Vehicles. *J. Environ. Chem. Eng.* **2016**, 4 (1), 1017–1028.

Conference/Workshop/Participation/Presentation:

- Participated in “Intensive Course on Advances in Preparation & Characterization of Heterogeneous Catalysts” organized by Department of Chemical Engineering & Technology, IIT (BHU), Varanasi, India, November 8-20th, 2015.
- Participated in “ECMA’s 2nd Global Learning Initiative Award” organized by Emission Control Manufacturing Association, New Delhi, India, and November 26th, 2014.
- S. Srivastava, **S. Trivedi**, P. Yadav, “Electrochemical Impedance Spectroscopy Analysis of Lead Halide Perovskite Solar cells”, Online school on Hybrid, Organic and Perovskite Photovoltaic, November 3-5th, 2020.
- **S. Trivedi** and R. Prasad K. A. Rajesh Kumar, “Effect of precipitants on NiCo₂O₄ catalyst for oxidation of CO-CH₄ mixture emitted from CNG vehicles”, Ac-Tech Anna University and IIT- Madras, Chennai, December 27-30th, 2016
- **S. Trivedi**, R. Prasad and S. K. Gautam, “Development of nano-NiCo₂O₄ spinel for abatement of CO-CH₄ emissions from CNG vehicles”, ICNBL, NIT Srinagar, Kashmir, May 25-29th, 2016.
- **S. Trivedi** and R. Prasad, “Thermal analysis of copper ammoniacal oxalate: Influence of environments in preparation of Cu-catalysts”, THERMANS, BARC Mumbai & IIT (BHU), January 18-22th, 2016.
- **S. Trivedi**, R. Prasad and S. K. Gautam, “Comparative study of Co-Mn and a ceria promoted Co- Mn mixed catalyst for simultaneous oxidation of CO and CH₄ emissions from CNG fuelled vehicles, CHEMCON 2015, IIT, Guwahati, December 27-30, 2015.
- **S. Trivedi** and R. Prasad, “Effect of calcination strategies on activity of Co-Mn catalysts for simultaneous control of CO and CH₄ emissions from CNG fuelled vehicles”, International Conference on Recent Trends in Engineering Science and Management, JNU, New Delhi, India, March, 15th, 2015.
- **S. Trivedi**, R. Prasad and Rajbala, A four way catalytic system for control of diesel engine emissions, 3rd International Conference on Emerging Trends in Engineering & Technology, Teerthankar Mahaveer University, Moradabad, India, and May 9-10th, 2014.

Personal Information

Father's Name : Mr. Rajesh Kumar Trivedi

Mother's Name : Mrs. Sunita Trivedi

Date of Birth : 15th Nov. 1990

Gender : Female

Marital Status : Unmarried

Language Known : English, Hindi

Present Address : 15 Terrace walk Berkeley CA USA-94707

Permanent Address: H. No.- 204 Purani Basti, New Shyam Nagar, Naubasata, Kanpur-208021.