

Name: Dr Trupti K. Gajaria

Designation: Assistant Professor

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School: School of Science

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Research Interest:



- Material Science being at the locus of the energy applications, the design and development of eco-friendly, sustainable and non-hazardous materials is of prime interest. My research domain covers density functional theory-based investigation of diverse materials under ambient and modified conditions, specifically semiconductors and heterostructures.

Academic Background:

Degree	Subject	University	Year
B.Sc.	Physics	M K Bhavnagar University, Bhavnagar	2010
M.Sc.	Physics	M K Bhavnagar University, Bhavnagar	2012
Ph.D.	Physics	The M S University of Baroda, Vadodara	2020

Professional Experience:

From	Period	Position	Organisation
2013-2018	4.9 Years	Teaching Assistant/Lecturer	Shree Swaminarayan Naimisharanya College of Science, M K Bhavnagar University, Bhavnagar
2012-2014	1.5 Years	Visiting Lecturer	Sir Prabhaskar Pattani College of Science, M K Bhavnagar University, Bhavnagar

Publications:

○ Journals

- **Trupti K. Gajaria**, Shweta D. Dabhi and Prafulla K. Jha, “*ab initio* Energetics and Thermoelectric Profiles of Gallium Pnictide Polytypes”, *Scientific Reports*, 5884 (9), 1-20. <https://doi.org/10.1038/s41598-019-41982-9>
- **Trupti K Gajaria**, Basant Roondhe, Shweta D Dabhi and Prafulla K Jha, “Exploring the hidden catalyst from boron pnictide family for HER and OER”, *International Journal of Hydrogen Energy*, vol. 45, no. 37, p. 18612-18622, 2020. <https://doi.org/10.1016/j.ijhydene.2019.09.107>
- **Trupti K Gajaria**, Basant Roondhe, Shweta D Dabhi, Piotr Śpiewak, Krzysztof J Kurzydłowski and Prafulla K Jha, “Hydrogen evolution reaction electrocatalysis trends of confined gallium phosphide with substitutional defects”, *International Journal of Hydrogen Energy*, vol. 45, no. 44, p. 23928-23936, 2020. <https://doi.org/10.1016/j.ijhydene.2019.09.032>
- Madhavi H Dalsaniya, **Trupti K Gajaria**, Narayan N Som and Prafulla K Jha, “Electron density modulation of a metallic GeSb monolayer by pnictogen doping for excellent hydrogen evolution”, *Physical Chemistry Chemical Physics*, vol. 22, p. 19823-19836, 2020. <https://doi.org/10.1039/D0CP02541K>
- Raghottam M Sattigeri, **Trupti K Gajaria**, Prafulla K Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Emergence of s-, p-d band inversion in zincblende gold iodide topological insulator and its thermoelectric properties." *Journal of Physics: Condensed Matter* 33, no. 15, p.155402, 2021. <https://doi.org/10.1088/1361648X/abdce8>
- **Trupti K Gajaria**, Darshil Chodvadiya, and Prafulla K. Jha. "Density Functional Theory Investigation of Thermal Conductivity in α -CN and α -CP Monolayers: Implications for Thermal Management of Electronic Devices." *ACS Applied Nano Materials* 4, no. 5, p.4474-4483, 2021. <https://doi.org/10.1021/acsnm.1c00097>
- Madhavi H Dalsaniya, **Trupti K Gajaria**, Narayan N. Som, Prafulla K. Jha, Piotr Śpiewak, and Krzysztof J. Kurzydłowski. "Type-II GeAs/GaSe heterostructure as suitable candidate for solar power conversion efficiency." *Solar Energy* 223, p. 87-99, 2021. <https://doi.org/10.1016/j.solener.2021.05.034>

○ Conference Proceedings

- **Trupti K.Gajaria**, D. Dabhi, Bhumi A. Baraiya, Venu Mankad, and Prafulla K. Jha, "Vibrational properties of III-V semiconductor in wurtzite phase: A comparative density functional theory study." *In AIP Conference Proceedings*, vol. 1832, no. 1, p. 090043. AIP Publishing, 2017. <https://doi.org/10.1063/1.4980596>
- **Trupti K. Gajaria**, Shweta D. Dabhi and Prafulla K Jha, “Diameter and strain dependent structural, electronic and optical properties of gallium phosphide nanowires”, *In AIP Conference Proceedings*, vol. 2115, no. 1, p. 030178. AIP Publishing, 2019. <https://doi.org/10.1063/1.5113017>
- **Trupti K. Gajaria**, Shweta D. Dabhi and Prafulla K. Jha, “Electro-Optic Transport through Janus Monolayers of In₂SSe, In₂STe and In₂SeTe”, *In AIP Conference Proceedings*, vol. 2265, no. 1, p. 030727. AIP Publishing, 2020. <https://doi.org/10.1063/5.0016948>

- Madhavi H. Dalsaniya, Khushbu Patel, **Trupti K. Gajaria** and Prafulla K. Jha, “An Ab-initio Competitive Study of Adsorption Mechanism of Lightest Alkali and Halide Elements towards the AIC –Monolayer”, *In AIP Conference Proceedings*, vol. 2265, no. 1, p. 030707, AIP Publishing, 2020. <https://doi.org/10.1063/5.0016935>

Awards/Recognitions:

- Awarded **DST WOS-A fellowship** National research program funded by department of Science & Technology (DST), Ministry of Science & Technology, Government of India.
- Awarded **ICTP International Travel grant** for presenting paper at Conference on Modern Concepts and New Materials for Thermoelectricity organized by International Center for Theoretical Physics (ICTP), 2019.
- Received **Best Oral Presentation Award** at 1st DAE Computational Chemistry Symposium (DAE CCS 2019) organized by Department of Atomic Energy (DAE) at Bhabha Atomic Research Center (BARC), Mumbai, India.
- Received **Best Poster Award** at Indo-German Bilateral Workshop on Membranes for Water and Energy (IGWMWE2019) organized by CSIR CSMCRI, Bhavnagar, Gujarat, India.

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