

# Akshay Gautam

## Curriculum Vitae

Department of Chemistry  
H.V.M. (P.G.) College  
✉ [gautamkshay@gmail.com](mailto:gautamkshay@gmail.com)

### Professional Experience

May, 2020 - Present **Assistant Professor**, Department of Chemistry, H.V.M. (P.G.) College

### Education

2018	<b>CSIR-NET (JRF)</b> Qualified
2018-2019-	<b>GATE</b> Qualified
2019	<b>PhD</b> , Pursuing.
2016- 2018	<b>Master of Science</b> , Department of Chemistry,
2013 - 2016	<b>Bachelor of Science</b> , Subject: Chemistry, Botany and Zoology

### Research Interests

- Nanomaterial Synthesis & Characterization** – Expertise in sol-gel, hydrothermal, and other wet-chemical methods for synthesizing TiO<sub>2</sub> nanoparticles with controlled size, morphology, and crystallinity.
- Photocatalysis & Advanced Oxidation Processes** – Investigating photocatalytic degradation of organic pollutants (dyes, pharmaceuticals, pesticides) using TiO<sub>2</sub>-based nanomaterials under UV/visible light.
- Surface Modification & Doping of TiO<sub>2</sub>** – Enhancing photocatalytic efficiency via metal/non-metal doping, heterojunctions, and composite formation (e.g., TiO<sub>2</sub>/graphene, TiO<sub>2</sub>/CNTs).
- Green Chemistry & Sustainable Applications** – Developing eco-friendly synthesis routes and photocatalytic systems for wastewater treatment and environmental remediation.
- Kinetics & Mechanistic Studies** – Analyzing reaction mechanisms, radical scavenging effects, and degradation pathways using techniques like LC-MS, FTIR, and UV-Vis spectroscopy

### Research Experience

- My prior research endeavor aimed to Development of **sol-gel, hydrothermal, and solvothermal methods** for synthesizing TiO<sub>2</sub> nanoparticles with controlled size (5–50 nm), crystallinity (anatase/rutile phase tuning) Engineered **doped TiO<sub>2</sub> (N, S, Fe, Ag)** and **TiO<sub>2</sub>-based composites** (graphene, carbon nanotubes) to enhance visible-light absorption and reduce charge recombination for improved photocatalytic efficiency. Investigated **photocatalytic degradation kinetics** of organic pollutants (methyl orange, rhodamine B, pharmaceuticals) under UV/visible light, achieving >90% degradation efficiency.

### Selected Workshops/Conferences/Schools Attended

1. 10<sup>th</sup> International Conference on Materials for advanced technologies Marina Bay Sands, Singapore 23 June - 28 June 2019
2. 3<sup>rd</sup> International Conference (Hybrid Mode) on Food, Agriculture and Innovations (3<sup>rd</sup> ICFAI)
3. 3<sup>rd</sup> International Conference on “Global Initiative in Agricultural, Forestry and Applied Sciences for Food Security, Environmental Safety and Sustainable Development (GIAFAS-2021)” Jointly Organized by the Agricultural & Environmental Technology Development Society (AETDS),

### Awards/Scholarships/Fellowships/Achievements

1. Received Young Teacher award at the 3<sup>rd</sup> International Conference (Hybrid Mode) on Food, Agriculture and Innovations (3<sup>rd</sup> ICFAI)
2. Received Uttarakhand Seva Ratan 2021 award From Vishwa Seva Parishad

### Publications

1. P. Bamola, C. Dwivedi, A. Gautam, M. Sharma, S. Tripathy, A. Mishra, H. Sharma, *Strain-Induced Bimetallic Nanoparticles-TiO<sub>2</sub> Nanohybrids for Harvesting Light Energy*, *Applied Surface Science* (2020)
2. Parveen, S., Gupta, V., Kumar, V. N., Srineetha, U., Mohan, M. R., Rao, C. N., Kandwal, A., Reddy, C. N., & Gautam, A. (2024). *Biosynthesis and evaluation of metallic nanoparticles (ZnO-NPs) using polyphenol-containing Ajuga macrosperma (Ghonke ghas) leaf extract, along with anticancer activity and antimicrobial activity*. *Advances in Bioresearch*, 15(2), 379–390. <https://doi.org/10.15515/abr.0976-4585.15.2.379390>
3. Parveen, S., Gupta, V., Kandwal, A., Gautam, A., Rawat, R., Gupta, P. K., & Singh, N. (2024). *Therapeutic potential of bioactive copper oxide nanoparticles (CNPs) towards breast cancer, lungs cancer and prostate cancer*. *Bulletin of Environment, Pharmacology and Life Sciences*, 13(2), 225–230