

## Curriculum- Vitae

### **Vikrant Singh, Ph.D.**

*Researcher at Centre of Excellence for Energy & Environmental Studies (CEEES)  
Deenbandhu Chhotu Ram University of Science & Technology,  
Murthal, Sonapat-131039 (Haryana) India*

 <https://orcid.org/0009-0006-5553-2874>

 <https://scholar.google.com/citations?user=CUmKUfEAAAJ&hl=en&authuser=2>

Email: [ysrdatrata@gmail.com](mailto:ysrdatrata@gmail.com) ; [v.s.rao0507@gmail.com](mailto:v.s.rao0507@gmail.com)

Contact No. +91-9991264500



---

### **Research Interest:**

Energy storage materials and devices

Nanomaterials for environmental applications: water splitting, wastewater treatment and photocatalytic activity

### **Educational Qualifications:**

**Ph.D. (Energy and Environmental Studies)** from Centre of Excellence for Energy & Environmental Studies, Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Haryana) India (2024).

**M.Sc. (Environmental Science)** from Central University of Haryana, Mahendergarh, Haryana, India (2020).

**B.Sc. (Life Science)** from Sri Venkateswara College, University of Delhi, India (2018).

### **Research Internship & Project**

**Master's Thesis Project** (6 months) – **CSIR-National Physical Laboratory**

Title: Role of different indoor plant and their efficiencies in control of VOCs and particulate matter.

**Innovation Project** (12 months) - **Central University of Haryana, India**

Title: Effect of mining on groundwater, soil composition and air quality in Nangal Chaudhary area of Haryana.

**Summer Internship** (1 month) - **University of Delhi, India**

Title: Efficiency of Carbon sequestration by different plant species in undisturbed forest of National Capital Region of India.

### **Research Accomplishments:**

Total Publications: **10 (2022-Current)**

Peer-reviewed Int. Journals: **10**; Book Chapter: **01**

Total Citations: **>180**; h-index: **5**; i-10 index: **5**; Source: **Google Scholar**

Students Guidance: PG Dissertations helped during Ph.D.: **04**

Papers submitted for publications: **07**

## Complete List of Publications

2024

1. Ankit Rao, Anubha Kaushik, **Vikrant Singh Rao**, Satya Pal Nehra. Facile and binder free nano-architecturing of anode with biocompatible g-C<sub>3</sub>N<sub>4</sub>-PPy for bacterial community enrichment and green energy generation in microbial fuel cells. *Applied Energy*, 376 (2024) 124250. [I.F.: 10.10; ISSN: 0306-2619] <https://doi.org/10.1016/j.apenergy.2024.124250>
2. **Vikrant Singh Rao**, Anshu Sharma, SP Nehra\*. Photocatalytic Activity of Selenium Decorated Graphitic Carbon Nitride Nanocomposites for Dye Industries Wastewater Remediation. *Groundwater for Sustainable Development*. 27 (2024) 101317. [I.F.: 4.90; ISSN: 2352-801X] <https://doi.org/10.1016/j.gsd.2024.101317>
3. Sweety Dahiya, Sachin Shoran, D. N. Sharma, **V. S. Rao**, Sudesh Chaudhary, S. P. Nehra, Anshu Sharma\*. Bioengineered Sustainable Phytofabrication of Anatase TiO<sub>2</sub> - Adorned g-C<sub>3</sub>N<sub>4</sub> Nanocomposites and Unveiling their Photocatalytic Potential towards Advanced Environmental Remediation. *Chemosphere*. 362 (2024) 142456. [I.F.: 8.1; ISSN: 0045-6535] <https://doi.org/10.1016/j.chemosphere.2024.142456>
4. Rajat Arora, Monika Dhanda, Meena Yadav, **Vikrant Singh Rao**, Priti Pahuja, Simran Ahlawat, Satya Pal Nehra, Suman Lata. Nanoscale energy: unveiling the super-capacitive prowess of graphitic carbon nitride–carbon dots–yttria as GCY nanocomposites for sustainable energy electrode. *Journal of Solid State Electrochemistry*. XX (2024) XXXX [I.F.: 2.6; ISSN: 1433-0768] <https://doi.org/10.1007/s10008-024-06117-9>
5. **V. S. Rao**, A. Sharma, S. P. Nehra. Tungsten oxide embellished graphitic carbon nitride for dye industrial wastewater remediation using visible light. *International Journal of Environmental Science and Technology*. 2024 Oct 29:1-6. [I.F.: 3.1; ISSN: 1735-1472] <https://doi.org/10.1007/s13762-024-06127-0>

2023

6. **Vikrant Singh Rao**, Rishabh Sharma, Devina Rattan Paul, Miroslav Almáši, Anshu Sharma, Suresh Kumar, Satya Pal Nehra\*. Architecting of the Z-scheme heterojunction Gd<sub>2</sub>O<sub>3</sub>/g-C<sub>3</sub>N<sub>4</sub> nanocomposites for enhanced visible-light-induced photoactivity towards organic pollutant degradation. *Environmental Science and Pollution Research*. 30 (2023) 98773–98786. [I. F.: 5.8; ISSN: 0944-1344] <https://doi.org/10.1007/s11356-023-25360-7>
7. Rajat Arora, Monika Dhanda, Meena Yadav, Rinki Malik, Priti Pahuja, Simran Ahlawat, **Vikrant Singh Rao**, S. P. Nehra, Suman Lata. Bi-functionality of Coral reef-like nano-range composites fabricated as g-C<sub>3</sub>N<sub>4</sub>/ppy/PSS for efficacious electrochemical super-capacitive energy accumulation and dye depletion. *Solid State Ionics*. 403 (2023) 166402. Pages: 1-13. [I. F.: 3.0, ISSN: 0167-2738] <https://doi.org/10.1016/j.ssi.2023.116402>
8. Devina Rattan Paul, Rishabh Sharma, Priyanka Panchal, **Vikrant Singh Rao**, Shubham Gautam, Anshu Sharma, Satya Pal Nehra\*. Mg/Li@GCN as highly active visible light responding 2D photocatalyst for wastewater remediation application. *Environmental Science and Pollution Research*. 30(44) (2022) 98540-98547. [I. F.: 5.8, ISSN: 0944-1344] <https://doi.org/10.1007/s11356-022-21203-z>

2

2022

9. Rishabh Sharma, Miroslav Almáši, S. P. Nehra\*, **V. S. Rao**, Priyanka Panchal, Devina Rattan Paul, I. P. Jain, Anshu Sharma. Photocatalytic Hydrogen Production using Graphitic Carbon

Nitride (GCN): A Precise Review. *Renewable and Sustainable Energy Reviews*. 168 (2022) 112776. Pages: 1-15. [I.F.: 16.3; ISSN: 1364-0321]  
<https://doi.org/10.1016/j.rser.2022.112776>

10. Devina Rattan Paul, Rishabh Sharma, Priyanka Panchal, **Vikrant Singh Rao**, Shubham Gautam, Anshu Sharma, Satya Pal Nehra\*. Mg/Li@GCN as highly active visible light responding 2D photocatalyst for wastewater remediation application. *Environmental Science and Pollution Research*. 30(44) (2022) 98540-98547. [I. F.: 5.8, ISSN: 0944-1344]  
<https://doi.org/10.1007/s11356-022-21203-z>

#### Book Chapter Published

1. Yamini, **Vikrant Singh Rao**, Neeraj Mishra, and Sanjay Kumar. "Environmental Applications of Nanosponges (NSPs) to Clean up Oil Spills." In *Nanosponges for Environmental Remediation*, pp. 425-447. *Cham: Springer Nature Switzerland, Springer*, 2023. [https://doi.org/chapter/10.1007/978-3-031-41077-2\\_19](https://doi.org/chapter/10.1007/978-3-031-41077-2_19)

#### Paper Presented in Conferences/Seminars/Symposiums/Workshops etc:

1. **V. S. Rao**, A. Sharma, S. P. Nehra. "Selenium doped with Graphite carbon nitride to enhance the Photocatalytic activity for efficient Dye degradation" at the International Conference on "Emerging Trends in Science and Technology", Vedanta PG Girls University of Rajasthan, Jaipur, India, held during 29-31<sup>st</sup> March 2022.
2. **V. S. Rao**, A. Sharma, S. P. Nehra. "Gadolinium oxide doped with Graphite carbon nitride for the enhanced Photocatalytic activity towards organic Dye" at the International Conference on "Emerging Trends in Science and Technology", Vedanta PG Girls University of Rajasthan, Jaipur, India, held during 29-31<sup>st</sup> March 2022.
3. **V. S. Rao**, A. Sharma, S. P. Nehra. "Enhancing Visible-Light-Induced Photoactivity Toward Organic Pollutant Degradation using Gd<sub>2</sub>O<sub>3</sub>/g-C<sub>3</sub>N<sub>4</sub> Nanocomposites" in International Conference on 2<sup>nd</sup> International Conference on "Advanced Developments in Chemistry and Allied Sciences-2023" on 17 & 18 January 2023".
4. Attended a One Week Interdisciplinary FDP on "Environmental Sustainability and Disaster Risk Reduction" from 4<sup>th</sup> March 2024 to 9<sup>th</sup> March 2024.
5. **V. S. Rao**, A. Sharma, S. P. Nehra. "Trio obtained Gadolinium decked graphitic carbon nitride modified using polypyrrole for superlative super capacitive performance" in International Symposium on Energy Storage Technologies for Sustainable Future (ESTSF-2024) organized by Central for Renewable Energy & Storage in collaboration with Shodh Lab, Suresh Gyan Vihar University, Jaipur, Rajasthan held on 7<sup>th</sup> & 8<sup>th</sup> January 2024.
6. **V. S. Rao**, A. Sharma, S. P. Nehra. "Prolific intercalation of Gd<sub>2</sub>O<sub>3</sub>@g-C<sub>3</sub>N<sub>4</sub> impregnated Polypyrrole for high-end super-capacitive performance, at the International Conference on Materials for Energy & Sustainable Development (MESD-2023) organized by JNU, New Delhi held during 27-26<sup>th</sup> October 2023.
7. **V. S. Rao**, A. Sharma, S. P. Nehra. "Cyprus Metal Wrapped Graphitic Carbon Nitride For Magnificent Visible Light Photocatalysis Activity for the Degradation of Organic Pollutant", at 3<sup>rd</sup> International Conference on Recent Trends in Environment and Sustainable Development (RTESD 2023) organized by Department of Sciences, Vivekananda Global University, Jaipur, Bharat. (**Best Presentation Award**)
8. **V. S. Rao**, A. Sharma, S. P. Nehra. "Sustainable Water Treatment: Investigating The Effectiveness of Manganese Oxide-Doped Carbon Nitride In Water Remediation", at 3<sup>rd</sup> International Conference on Recent Trends in Environment and Sustainable Development (RTESD 2023) organized by Department of Sciences, Vivekananda Global University, Jaipur, Bharat.

9. **V. S. Rao**, A. Sharma, S. P. Nehra. "Evaluation of the Photodegradation of Organic Pollutants in water using Highly Visible light- active tungsten oxide embellished graphitic carbon nitride", at the 4<sup>th</sup> International Conference on Condensed Matter & Applied Physics (ICC-2023) organized by Government Engineering College, Bikaner during 09-10<sup>th</sup> October 2023.
10. **V. S. Rao**, "Air Pollution: its effect, mitigation and remediation plan, at the National Conference organized by IGNOU, New Delhi, and Shiksha Sanskriti Utthan Nyas from 23-24<sup>th</sup> September 2023.
11. **V. S. Rao**, A. Sharma, S. P. Nehra. "Trio obtained Gadolinium doped graphitic carbon nitride modified using polypyrrole for superlative super capacitive performance" in International Chemical Engineering Conference on Energy, Environment and Sustainability (ICECEES- 2024) organized by the Department of Chemical Engineering, IIT Roorkee held on 15-17<sup>th</sup> February 2024.

## **References**

### ➤ **Dr. Satya Pal Nehra**

Assistant professor  
Centre of Excellence for Energy and Environmental Studies  
Deenbandhu Chhotu Ram University of Science and Technology, Murthal  
Email - [spnehra.energy@dcru.ac.in](mailto:spnehra.energy@dcru.ac.in)

### ➤ **Dr. Sumit Kumar Mishra**

Principle Scientist  
CSIR-National Physical Laboratory Studies, New Delhi  
Email- [mishrask@nplindia.org](mailto:mishrask@nplindia.org)

### ➤ **Dr. Bhaskaran**

Assistant professor  
Department of Chemistry  
H. N. B. Garhwal University  
Srinagar (Garhwal), 246174, Uttarakhand, India  
Email- [drbhaskaran2@gmail.com](mailto:drbhaskaran2@gmail.com)

## **Personal Details**

Date of Birth:	1 <sup>st</sup> May, 1996
Gender:	Male
Nationality:	Indian
Language Proficiency:	English, Hindi

Place: **Delhi, India**

Date: **1<sup>st</sup> December, 2024**

**(Vikrant Singh)**