

# Curriculum Vitae: Dr. Rahul

## 1. Personal Information

- **Full Name:** Dr. Rahul
- **Designation:** Assistant Professor
- **Department/Discipline:** Department of Chemistry
- **Date of Birth:** 02 June 1993
- **Gender:** Male
- **Nationality:** Indian
- **Address for Correspondence:** Department of Chemistry, Gurugram University, Gurugram, Haryana - 122003
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- **Email ID:** rahul@gurugramuniversity.ac.in
- **LinkedIn/Research Profile:** <https://scholar.google.com/citations?user=MFmmjhQAAAAJ&hl=en>
- <https://www.linkedin.com/in/dr-rahul-sharma-849879245/>
- <https://orcid.org/my-orcid?orcid=0000-0002-9962-7238>
- <https://www.scopus.com/authid/detail.uri?authorId=57212897596>

## 2. Career Objective

To contribute effectively to the advancement of chemistry through high-quality teaching, innovative research, and interdisciplinary collaborations in nanomaterials, electrochemical sensing, photocatalysis, corrosion inhibition, and energy storage applications.

## 3. Educational Qualifications

<u>Degree/Course</u>	<u>Institution</u>	<u>University/Board</u>	<u>Year</u>	<u>CGPA/Percentage</u>
Ph.D. Chemistry	Central University of Haryana	Central University of Haryana	2024	Awarded
Integrated M.Sc. Chemistry	NIT Rourkela	NIT Rourkela	2016	7.00 CGPA

**Ph.D. Thesis Title:** *Synthesis of mixed metal oxide nanocomposites of transition and main group elements coupled with reduced graphene oxide for advanced functional applications.*

## 4. Teaching Experience

- Total Teaching Experience: 3+ Years
- Guest Faculty, Central University of Haryana (Dec 2022 – June 2024)
- Assistant Professor, Gurugram University (June 2024 – Present)

## 5. Research Experience

- Junior Research Fellow (UGC): Aug 2019 – Aug 2021
- Senior Research Fellow (UGC): Aug 2021 – Dec 2022

- **Areas of Specialization:**

- Nanocomposites and Functional Nanomaterials
- Reduced Graphene Oxide-Based Materials
- Photocatalysis and Environmental Remediation

- Corrosion Inhibition
- **Research Projects Handled: NA**
- **Research Guidance (Ph.D./M.Phil.):** One student is currently pursuing Ph.D. in my guidance

## 6. Publications

### (A) Research Papers in Journals

Citations: 1543

h-index: 17

i10-index: 28

Total Research Papers: 31

- 1 **Sharma, R.;** Kumar, H.; Saini, C.; Yadav, D.; Yadav, K.; Saloni; Minakshi; Kumar, A.; Rani, G. Revolutionizing Material Science: Enhanced Functionalities through Reduced Graphene Oxide/Al<sub>2</sub>O<sub>3</sub>/CuO/TiO<sub>2</sub> Nanocomposites. *Journal of Molecular Structure* **2025**, 1323, 140763. <https://doi.org/10.1016/j.molstruc.2024.140763>.
- 2 **Sharma, R.;** Kumar, H.; Kumari, R.; Kumar, G.; Ankit Dhayal; Yadav, A.; Yadav, D.; Yadav, K.; Saini, C.; None Saloni; Kumar, A.; Pandit, V. Innovative Al<sub>2</sub>O<sub>3</sub>-ZnO-TiO<sub>2</sub>@RGO Nanocomposites: A Versatile Approach for Advanced Water Purification, Biomedical Devices, and Environmental Remediation. *Diamond and related materials* **2024**, 111081–111081. <https://doi.org/10.1016/j.diamond.2024.111081>.
- 3 **Sharma, R.;** Kumar, H.; Saini, C.; Gupta, A.; Pandit, V. Exploring the Collaborative Wonders of Al<sub>2</sub>O<sub>3</sub>-Mn<sub>3</sub>O<sub>4</sub>-Fe<sub>2</sub>O<sub>3</sub> Nanoparticles Embedded in Reduced Graphene Oxide Matrices. *Inorganic chemistry communications/Inorganic chemistry communications (Online)* **2024**, 112275–112275. <https://doi.org/10.1016/j.inoche.2024.112275>.
- 4 **Sharma, R.;** Kumar, H.; Kumar, G.; Sharma, S.; Aneja, R.; Sharma, A. K.; Kumar, R.; Kumar, P. Progress and Challenges in Electrochemical Energy Storage Devices: Fabrication, Electrode Material, and Economic Aspects. *Chemical Engineering Journal* **2023**, 468, 143706–143706. <https://doi.org/10.1016/j.cej.2023.143706>.
- 5 **Sharma, R.;** Kumar, H.; Kumari, R.; Kumar, G.; Swami, B.; Kumar, A.; Rani, G.; Kumar, R. Next-Generation Nanocomposites: Optimizing Al<sub>2</sub>O<sub>3</sub>-CuO-ZnO and Reduced Graphene Oxide for Enhanced Performance. *Next Nanotechnology* **2024**, 7, 100119–100119. <https://doi.org/10.1016/j.nxnano.2024.100119>.
- 6 **Sharma, R.;** Kumar, H.; Yadav, D.; Saini, C.; Kumari, R.; Kumar, G.; Aravind Babu Kajjam; Pandit, V.; Ayoub, M.; None Saloni; Yogesh Deswal; Sharma, A. K. Synergistic Advancements in Nanocomposite Design: Harnessing the Potential of Mixed Metal Oxide/Reduced Graphene Oxide Nanocomposites for Multifunctional Applications. *Journal of energy storage* **2024**, 93, 112317–112317. <https://doi.org/10.1016/j.est.2024.112317>.
- 7 Kumar, H.; **Sharma, R.;** Yadav, A.; Kumari, R. Recent Advancement Made in the Field of Reduced Graphene Oxide-Based Nanocomposites Used in the Energy Storage Devices: A Review. *Journal of Energy Storage* **2020**, 102032. <https://doi.org/10.1016/j.est.2020.102032>.
- 8 Yadav, A.; Kumar, H.; Kumari, R.; **Sharma, R.** Progress in the Development of Metal Nanoparticles Encapsulated with Polypyrrole Plastic Nanocomposites: Antibacterial and Photocatalytic Properties. *Materials Science and Engineering: B* **2022**, 286, 116085. <https://doi.org/10.1016/j.mseb.2022.116085>.
- 9 Yadav, A.; Kumar, H.; **Rahul Shrama;** Kumari, R. Synthesis, Processing, and Applications of 2D (Nano)Materials: A Sustainable Approach. *Surfaces and Interfaces* **2023**, 39, 102925–102925. <https://doi.org/10.1016/j.surfin.2023.102925>.
- 10 Kumar, H.; Kumari, N.; **Sharma, R.** Nanocomposites (Conducting Polymer and Nanoparticles) Based Electrochemical Biosensor for the Detection of Environment Pollutant: Its Issues and Challenges. *Environmental Impact Assessment Review* **2020**, 85, 106438. <https://doi.org/10.1016/j.eiar.2020.106438>.
- 11 Kumar, H.; Kumari, R.; Yadav, A.; **Sharma, R.;** Dhanda, T. Trisodium Phosphate an Efficient Anti-Pitting and Anti-Cracking Agent for Mild Steel in 0.1 N Sulphuric Acid: Experimental & Molecular

- Dynamics Study. *Chemical Data Collections* **2020**, *30*, 100575. <https://doi.org/10.1016/j.cdc.2020.100575>.
- 12 Kumar, H.; Rajrani; **Rahul**; Yadav, A.; Rajni. Synthesis, Characterization and Influence of Reduced Graphene Oxide (RGO) on the Performance of Mixed Metal Oxide Nano-Composite as Optoelectronic Material and Corrosion Inhibitor. *Chemical Data Collections* **2020**, *29*, 100527. <https://doi.org/10.1016/j.cdc.2020.100527>.
  - 13 Kumar, H.; Boora, A.; Yadav, A.; Rajni; **Rahul**. Polyaniline-Metal Oxide-Nano-Composite as a Nano-Electronics, Opto-Electronics, Heat Resistance and Anticorrosive Material. *Results in Chemistry* **2020**, *2*, 100046. <https://doi.org/10.1016/j.rechem.2020.100046>.
  - 14 Yadav, A.; Kumar, H.; **Sharma, R.**; Kumari, R.; Thakur, M. Quantum Dot Decorated Polyaniline Plastic as a Multifunctional Nanocomposite: Experimental and Theoretical Approach. *RSC Advances* **2022**, *12* (37), 24063–24076. <https://doi.org/10.1039/d2ra03554e>.
  - 15 Kumari, R.; Kumar, H.; Yadav, A.; **Sharma, R.**; Kumari, A.; Kumar, A. Metal Nanocomposites-Based Electrochemical Sensor for the Detection of Vanillin (Food Additives): Experimental and Theoretical Approach. *Food Bioscience* **2023**, *52*, 102464. <https://doi.org/10.1016/j.fbio.2023.102464>.
  - 16 Yadav, A.; Kumar, H.; **Sharma, R.**; Kumari, R.; Singh, D.; Hamed, O. A. Metal Oxide Decorated Polyaniline Based Multifunctional Nanocomposites: An Experimental and Theoretical Approach. *Results in Engineering* **2023**, *18*, 101161–101161. <https://doi.org/10.1016/j.rineng.2023.101161>.
  - 17 Kumar, G.; Kumar, H.; **Sharma, R.**; Kumari, R.; Ankit Dhayal; Yadav, A.; Yadav, A.; None Priynka. Synergistic Performance of Epoxy Modified Cellulose/Polyaniline/Ternary Metal Oxide Nanocomposites. *Next materials* **2024**, *2*, 100141–100141. <https://doi.org/10.1016/j.nxmte.2024.100141>.
  - 18 R. Kumari; Kumar, H.; **Sharma, R.**; Kumar, G.; Aarti Tundwal; Ankit Dhayal; Abhiruchi Yadav; Aarti Khatkar. Highly Efficient and Reliable Voltammetry Food Sensor for Tartrazine Dye Using a Nanocomposite Reformed Electrode. *Microchemical Journal* **2024**, *196*, 109583–109583. <https://doi.org/10.1016/j.microc.2023.109583>.
  - 19 Kumari, R.; Kumar, H.; **Sharma, R.**; Yadav, A.; Kumar, G.; Aarti Tundwal; Ankit Dhayal; Sharma, A. Highly Sensitive Amperometric Food Sensor for Sudan-I Dye Using Nanocomposites Modified Working Electrode. *Microchemical Journal* **2023**, *193*, 109078–109078. <https://doi.org/10.1016/j.microc.2023.109078>.
  - 20 Yadav, A.; Kumar, H.; **Sharma, R.**; Kumari, R. Influence of Polyaniline on the Photocatalytic Properties of Metal Nanocomposites: A Review. *Colloid and Interface Science Communications* **2021**, *40*, 100339. <https://doi.org/10.1016/j.colcom.2020.100339>.
  - 21 Kumar, H.; Luthra, M.; Manisha Punia; Yadav, A.; Kumari, R.; **Sharma, R.**; Aarti Tundwal; Kumar, G.; Kaur, P. PANI Encapsulated  $\alpha$ -MnO<sub>2</sub> Nanocomposites as Photocatalytic, Antibacterial and Anticorrosive Agents: Sustainable Experimental and Theoretical Studies. *Results in engineering* **2023**, 101250–101250. <https://doi.org/10.1016/j.rineng.2023.101250>.
  - 22 Kumar, H.; Yadav, P.; R. Ananda Kumari; **Sharma, R.**; Sharma, S.; Singh, D.; Hariom Dahiya; Kumar, P.; Santosh Kumar Bhardwaj; Kaur, P. Highly Efficient Green Corrosion Inhibitor for Mild Steel in Sulfuric Acid: Experimental and DFT Approach. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **2023**, *675*, 132039–132039. <https://doi.org/10.1016/j.colsurfa.2023.132039>.
  - 23 Aarti Tundwal; Kumar, H.; Binoj, B. J.; **Sharma, R.**; Kumar, G.; Kumari, R.; Ankit Dhayal; Yadav, A.; Singh, D.; Kumar, P. Developments in Conducting Polymer-, Metal Oxide-, and Carbon Nanotube-Based Composite Electrode Materials for Supercapacitors: A Review. *RSC advances* **2024**, *14* (14), 9406–9439. <https://doi.org/10.1039/d3ra08312h>.
  - 24 Yadav, A.; Kumar, H.; **Sharma, R.**; R. Ananda Kumari; Kumar, G.; Aarti Tundwal; Ankit Dhayal; Amar Prasad Yadav; Singh, D. Mixed Metal Oxide Decorated Polypyrrole Nanocomposites for Multifunctional Applications. *Inorganic Chemistry Communications* **2023**, *158*, 111701–111701. <https://doi.org/10.1016/j.inoche.2023.111701>.
  - 25 Aarti Tundwal; Kumar, H.; Binoj, B. J.; **Sharma, R.**; R. Ananda Kumari; Yadav, A.; Kumar, G.; Ankit Dhayal; Amar Prasad Yadav; Singh, D.; Bindu Mangla; Kumar, P. Conducting Polymers and Carbon

- Nanotubes in the Field of Environmental Remediation: Sustainable Developments. *Coordination Chemistry Reviews* **2024**, 500, 215533–215533. <https://doi.org/10.1016/j.ccr.2023.215533>.
- 26 Kumar, S.; **Sharma, R.**; Sharma, V.; Harith, G.; Sivakumar, V.; Krishnan, V. Role of RGO Support and Irradiation Source on the Photocatalytic Activity of CdS–ZnO Semiconductor Nanostructures. *Beilstein Journal of Nanotechnology* **2016**, 7, 1684–1697. <https://doi.org/10.3762/bjnano.7.161>.
- 27 Sharma, V.; Gurunaryanan Harith; Kumar, S.; **Sharma, R.**; Kumbam Lingeswar Reddy; Ashish Bahuguna; Krishnan, V. Amorphous Titania Matrix Impregnated with Ag Nanoparticles as a Highly Efficient Visible- and Sunlight-Active Photocatalyst Material. *Materials technology* **2016**, 32 (8), 461–471. <https://doi.org/10.1080/10667857.2016.1271861>.
- 28 Yadav, A.; Kumar, H.; **Sharma, R.**; Kumari, R.; Kumar, G.; Ankit Dhayal; Yadav, A. Sulfate-Functionalized Ternary Metal Oxide/Polypyrrole Nanocomposites: Synergistic Enhancement in Photocatalytic, Corrosion Inhibition, Magnetic, and Electrical Properties. *Journal of molecular structure* **2024**, 1308, 138065–138065. <https://doi.org/10.1016/j.molstruc.2024.138065>.
- 29 Kumar, H.; **Sharma, R.**; Malik, A. K.; Sharma, A. K.; Kumar, P.; Singh, D. Advancements in Carbon Capture and Utilization Technologies: Transforming CO<sub>2</sub> into Valuable Resources for a Sustainable Carbon Economy. *Next Energy* 2026, 10, 100476–100476. <https://doi.org/10.1016/j.nxener.2025.100476>.
- 30 Kumar, G.; Kumar, H.; Kumari, R.; Tundwal, A.; Dhayal, A.; Yadav, A.; **Sharma, R.** Flexible rGO/Cu/Ni/ZnO Nanocomposites with Enhanced Optoelectronic, Anticorrosive, Photocatalytic, and Magnetic Properties. *Inorganic Chemistry Communications* 2025, 176, 114202–114202. <https://doi.org/10.1016/j.inoche.2025.114202>.
- 31 **Sharma, R.**; Kumar, H.; Kumari, R.; Kumar, G.; Swami, B.; Kumar, A.; Rani, G.; Kumar, R. Next-Generation Nanocomposites: Optimizing Al<sub>2</sub>O<sub>3</sub>-CuO-ZnO and Reduced Graphene Oxide for Enhanced Performance. *Next Nanotechnology* 2025, 7, 100119–100119. <https://doi.org/10.1016/j.nxnano.2024.10011>

#### (B) Books / Book Chapters

- Kumar, H.; Sharma, R.; Shukla, A. K. Reduced Graphene Oxide-Based Metal Nanocomposites as Advanced Functional Electrode Material for Ni/Fe Rechargeable Batteries. In Springer Proceedings in Energy; Springer: Singapore, 2022; pp 111–119.
- Kumar, H.; Kumar, G.; Sharma, R.; Yadav, A.; Kumari, R.; Tundwal, A.; Dhayal, A.; Yadav, A. Functionalized Nanomaterial-Based Polymer Nanocomposites for Flexible Electronics. In Functionalized Nanomaterial-Based Polymer Nanocomposites for Flexible Electronics; 2025; pp 165–193.

#### (C) Conference Papers:NA

#### 7. Research Projects / Grants:NA

#### 8. Conferences / FDPs / Workshops Attended

- International Conference on Green Technology: Issues and Challenges (ICGT-2022).
- IGU Thematic Conference 2022 organized by Central University of Haryana.
- Attended Faculty Induction Programme (FIP-25) organized by MMTTC Kumaun University, Nainital (22-05-2025 to 18-06-2025), awarded A+ grade.
- Delivered a lecture in one day national workshop on Applications of Advanced Software Tools in Chemical Sciences on date 05 March 2025 organized by Department of Chemistry, Gurugram University, Gurugram.

#### 9. Awards & Achievements

- Best Researcher Award, Central University of Haryana (2024)

- All India Rank 53 in CSIR-UGC NET Examination (Dec 2018)

#### **10. Skills**

- Nanomaterial Synthesis and Characterization
- Photocatalysis and Corrosion Studies
- Origin, ChemBioDraw, Microsoft Office
- Adobe Photoshop, Adobe Premiere Pro
- FORTRAN, HTML, CSS