Curriculum Vitae

Name: Dr. A. Naveen Kumar

Designation: DST-INSPIRE Faculty

Qualification: B. Tech, M. Tech, Ph.D.

Education

2010-2014	B. Tech (Mechanical) JNTU Hyderabad, India
2015-2017	M. Tech (Nanotechnology) JNTU Hyderabad, India
2018- 2024	Ph.D. (**Thesis: MXene and Borophene Based Chemiresistive Sensors for Selective Gas Sensing**) Indian Institute of Technology Roorkee (IIT Roorkee), India

Research Experience

09/2025-Till date	DST-INSPIRE Faculty Centre for Solar Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad, India
05/2025-08/2025	Research Associate Department of Textile and Fibre Engineering, Indian Institute of Technology Delhi (IIT Delhi), New Delhi, India
11/2024-02/2025	Research Associate Department of Electrical Engineering, Indian Institute of Technology Jammu (IIT Jammu), Jammu, India
07/2024-10/2024	Research Associate Department of Mechanical Engineering, Indian Institute of Technology Roorkee (IIT Roorkee), Roorkee, India
02/2018-05/2018	Project Associate Centre for Solar Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad, India

Awards and Honors

1 2025 – **Awarded DST-INSPIRE Faculty Fellowship from DST, Government of India**

2 2023 – **SERB International Travel Support (ITS) from SERB (ANRF), Government of India**

3 2022 – **Dean of Resources and Alumni Affairs (DORA) International Travel Support, IIT Roorkee**

4 2015 – **GATE (Graduate Aptitude Test in Engineering) fellowship from Government of India**

Research Areas of Interest

- ✓ Synthesis and characterization of nanomaterials, including MXene, MOFs and 2D materials
- ✓ Nanomaterials for self-powered sensors applications
- ✓ Nanomaterials for energy applications (triboelectric nanogenerators)
- ✓ Nanomaterials for hydrophobic coatings and self-cleaning applications

Research Expertise

- ➢ Development of self-powered gas sensors from triboelectric materials
- ➢ Development of flexible gas sensors from textile waste
- ➢ Development of wireless handheld gas sensor device for detecting NO_2, NH_3 gases
- ➢ Development of hydrophobic and self-cleaning coating on solar panels (Matt glass)
- ➢ Development of nanofluids using CNC for heat transfer application in solar thermal power plants

Research Publications

- Publications: Research articles in International Journals - 10
- Book Chapters -01
- Patent -01
- National and International conferences -03

Total citation: -285
h-index: -7

Sponsored Projects:

1. From Lab to Fab: Developing Self-Powered Portable Gas Sensors with Triboelectric Materials, ***2025- 30***, **Department of Science and Technology** (DST)-***Ongoing*** **[Principal Investigator]**

Prototypes Developed

1. Wireless handheld gas sensor device for detecting NO_2, NH_3 gases

Patent

1. K. Pal, **N.K. Arkoti**, K. Rathi, "A dual chamber gas analysing system and method for selective gas sensing"- Indian Patent No: IN396484, Grant Date: 09/05/2022

Book Chapters

1. S. Singh, **N.K. Arkoti**, V. Verma, K. Pal, "Nanomaterials and Their Distinguishing Features", In: Katiyar, J.K., Panwar, V., Ahlawat, N. (eds) Nanomaterials for Advanced Technologies. Springer, Singapore, pp1-18

List of Publications *(Total citation: 285, h-index: 7)*

1. S. Agrawal, A. Parveen, **N. K. Arkoti**, J. Bahadur, "Enhanced Dielectric and Magnetic properties of Sr and Co doped barium ferrite nanoparticles by microwave synthesis method", Materials Letter, 403, 2026, 139405, **(IF: 2.7)**

2. V. Yadav, **N. K. Arkoti**, S. K. Gautam, S. Kuppireddy, T. P. Yendrapati, S. Modem, H. D. Lee, S. Siddhanta, K. Jayarmaulu, "Recent Advances in Nanoporous NO_x Gas Sensors: Synergizing Raman Spectroscopy, IoT, and Machine Learning for High-Performance Detection", Nanoscale, 17, 2025, 20704-20733, **(IF: 5.1)**

3. **N.K. Arkoti**, K. Pal, "$Ti_3C_2T_x$ MXene-Derived Metal-Organic Frameworks for Room Temperature NO_2 Detection", ACS Applied Materials & Interfaces, 17, 21, 2025, 31316-31325, **(IF: 8.2)**

4. P. K. Karthik, **N. K. Arkoti**, N. K. Chundi, G. Elsa, M. Vijayakumar, M. Karthik, S. Sakthivel, "Dual Functional Superhydrophobic and Superorganophilic Porous Graphene Carbon Nanocomposite Electrodes for Unprecedented High-Voltage Supercapacitor with Superior Rate Capability", Chemical Engineering Journal, 513, 2025, 162859, **(IF: 13.2)**

5. **N.K. Arkoti**, K. Pal, "Selective Detection of NH_3 Gas by $Ti_3C_2T_x$ Sensor with PVDF-ZIF-67 Overlayer at Room Temperature", ACS Sensors, 9, 3, 2024,1465–1474, **(IF: 9.1)**

6. **N.K. Arkoti**, K. Pal, "Improved Selectivity of Borophene Sensor Towards NO_2 Gas With PEI-ZIF-8 Overlayer", Sensors and Actuators B: Chemical, 401, 2024, 135033, **(IF: 7.7)**

7. **N.K. Arkoti**, K. Pal, "Amine Functionalized Stable Nb_2CT_x MXene Towards Room Temperature Ultrasensitive NO_2 Gas Sensor", Materials Advances, 3, 2022, 5151-5162, **(IF: 4.7)**

8. K. Rathi, **N.K. Arkoti**, K. Pal, "Fabrication of Delaminated Two-Dimensional (2D) Metalcarbide MXenes (Nb_2CT_x) by CTAB Based NO_2 Gas Sensor with Enhanced Stability", Advanced Materials Interfaces, 9, 2022, 2200415, **(IF: 4.4)**

9. K. Rathi, **N.K. Arkoti**, K. Pal, "Fabrication of Flexible La-MoS_2 Hybrid-Heterostructure Based Sensor for NO_2 Gas Sensing at Room Temperature", Nanotechnology, 31, 39, 2020, 395504 **(IF: 2.8)**

10. D.K.N. Joshi, S.R. Atchuta, Y.L. Reddy, **N.K. Arkoti**, S. Sakthivel, "Super-Hydrophilic Broadband Anti-Reflective Coating with High Weather Stability for Solar and Optical Applications", Solar Energy Materials and Solar Cells, 200, 2019, 110023, **(IF: 6.3)**

Reviewer for International Publications

- Elsevier (Sensors and Actuators B: Chemical)
- IEEE Sensors Conference Proceedings

UG/PG Dissertation Mentored: Totally 4

1. Development of Mixed Matrix Membrane (PES - ZIF 8) for Selective gas sensing, by ***Mr. Vigil M Unnithan,*** **M.Tech: 2022-23.**
2. Materials for Low-Cost Hydrogen Generation, by ***Mr. Sachin Kumar***, **M. Tech: 2022-23.**
3. Preparation of Mixed Matrix Membrane (PEI - ZIF 11) for selective gas sensing, by ***Mr. Aritra Jana***, **B. Tech: 2022-22.**
4. Fabrication of La-MoS_2-based gas sensors towards NO_2 gas sensing, by Mr ***Aqshat Seth***, **B. Tech: 2022-22.**

Affiliation to Professional societies

- American Chemical Society (ACS)
- The Indian Carbon Society

Contact Information

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