Dr. NIMISHA N. P.
Ph.D. in Chemistry (Heterogeneous Catalysis & Zeolite Chemistry)
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1. PROFILE & RESEARCH SPECIALIZATION

Materials chemist with specialized expertise in zeolite framework synthesis, hierarchical architecture engineering (MWW, MFI, BEA), surface acid-base tailoring, and heterogeneous catalytic processes. Extensive track record in developing high-performance bifunctional catalytic systems for biomass valorization, hydrotreating of lignin-derived platform chemicals, and hydrocarbon isomerization. Experienced in operating continuous-flow fixed-bed reactors and high-pressure batch autoclaves, combined with extensive spectroscopic and temperature-programmed characterization techniques.

2. EDUCATIONAL QUALIFICATIONS

Degree	Institution / University	Period	Marks / Honors
Ph.D. Chemistry	Central University of Kerala, Kasaragod, India	2021–2026	DST-INSPIRE Doctoral Fellow
M.Sc. Chemistry	Central University of Kerala, India	2017–2019	**86.8% (University First Rank)**
B.Sc. Chemistry	Govt. College Kasaragod, Kannur University	2014–2017	**95.8% (University First Rank)**

Ph.D. Thesis: *"Tailoring of Acid-base, Redox and Textural Properties in MWW Family of Zeolites: Promising Catalyst for Valorization of Biomass Derived Components"*
Supervisor: Prof. (Dr.) A. Sakthivel, FRSC, FICS | **Doctoral Fellowship:** DST-INSPIRE, Govt. of India

3. TEACHING & MENTORING EXPERIENCE

Guest Faculty in Chemistry **Sept. 2026 – Present**
Department of Chemistry, Government College Kasaragod (Affiliated to Kannur University)

- Delivering comprehensive undergraduate theoretical lectures across core branches (Physical, Inorganic, and Organic Chemistry) aligned with university syllabi.
- Supervising undergraduate chemistry laboratory practicals, quantitative/qualitative wet analysis, and laboratory safety protocols.
- Formulating lecture modules, continuous evaluation exams, and unit-wise question banks for students.

Research Fellow & Postgraduate Project Mentor **2021 – 2026**
Department of Chemistry, Central University of Kerala

- Mentored Master's students (M.Sc. and Integrated M.Sc.) during their final-year dissertations and internships in research design, data deconvolution, and catalysis.
- Instructed semester-wise Physical, Inorganic, and Analytical practical laboratories and instrument calibration.

Guest Lecturer in Chemistry **2020**
Department of Applied Sciences, LBS College of Engineering, Kasaragod

- Delivered Engineering Chemistry theory lectures and laboratory modules under KTU curriculum

standards.

4. HONORS, AWARDS & FELLOWSHIPS

- **DST-INSPIRE Doctoral Fellowship:** Highly competitive national fellowship awarded by Department of Science & Technology, Govt. of India (2021–2026).
- **University First Rank & Gold Medal:** M.Sc. Chemistry, Central University of Kerala (2019).
- **University First Rank & Gold Medal:** B.Sc. Chemistry, Kannur University (2017).
- **Best Oral Presentation Award:** National Conference on Frontiers in Chemical Sciences (FCS 2023), University of Calicut.
- **Best Poster Presentation Award:** National Workshop on Futuristic Catalysts & Catalytic Processes (NWFCCP-2024), Central University of Kerala.
- **Best Poster Presentation Award:** National Science Day Symposium, Department of Chemistry, Central University of Kerala (2024).
- **Kerala State Science Fair Research Project:** 'A' Grade (State Level Recognition).

5. RESEARCH OUTPUT & INTELLECTUAL PROPERTY

Summary: Total Peer-Reviewed Publications: **14** | First-Author Articles: **5** |

Granted Patent: **1 Granted Patent:**

> Nimisha N. P., Sakthivel A., Narendranath S. B. (2026). *"Method for the Preparation of ITQ-2 Metal Oxy-hydroxide Composite Materials Thereof"*. **Indian Patent No. 596368 (Granted)**.

Selected First-Author Publications:

1. **Nimisha N. P.**, Narendranath S. B., Sakthivel A. (2024). In-situ preparation of a nickel-oxy-hydroxide decorated ITQ-2 composite: a hydrodeoxygenation catalyst. *Chemical Communications*, 60(11), 1480–1483.

2. **Nimisha N. P.**, Vivekanand A., Sahu A., Manikandan M., Raja T., Sakthivel A. (2026). In-Situ Engineering of MWW Zeolite to ITQ-2-M Composites for Conversion of Biomass Derived Molecules. *ChemCatChem*, 18(17), e71042.

3. **Nimisha N. P.**, Narendranath S. B., Shabana K. K., Ansiya C. P., Swetha C. K., Kothari A. C., Sahu A., Bal R., Sakthivel A. (2025). Decarboxylation of fatty acids to fuel additives over a ruthenium-dispersed MWW zeolite framework. *Sustainable Energy & Fuels*, 9(20), 5601–5611.

4. **Nimisha N. P.**, Sahu A., Sakthivel A. (2026). Sustainable valorization of furfuryl alcohol to ethyl levulinate using alumina and zirconia pillared MCM-22. *Applied Catalysis A: General*, 724, 121062.

5. **Nimisha N. P.**, Narendranath S. B., Ganesh V., Sakthivel A. (2024). Ru loaded MCM-22: A potential catalyst for the isomerization and cracking of 1-dodecene. *Catalysis Letters*, 154(4), 1694–1714.

6. PROFESSIONAL MEMBERSHIPS & ACADEMIC SERVICE

- **Chemical Research Society of India (CRSI):** Elected Life Member.
- **Organizing Committee / Student Coordinator:** International Symposium on Materials for Biomass Valorization towards Circular Economy (ISMBVCE 2026), Central University of Kerala.
- **Technical Volunteer:** National Workshop on Futuristic Catalysts and Catalytic Processes (NWFCCP 2024).

- **Event Coordinator:** National Science Day Celebrations (2024), Central University of Kerala.
- **Mentor & Laboratory Instructor:** INSPIRE-Summer Student Programme (Dec 2018).