

Dr. Priyanka Nair

Senior Scientist, Green Chemistry

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PROFILE

Synthetic chemist designing cleaner catalysts and solvent-free routes for pharmaceutical intermediates. Three processes from her group have been scaled to pilot plants with industry partners.

Research interests: Photocatalysis · metal-organic frameworks · flow chemistry · process scale-up

RESEARCH EXPERIENCE

Senior Scientist · 2019 – Present

National Laboratory for Interdisciplinary Chemistry

- Lead a 10-person group on solvent-free catalysis; 2 processes licensed to drug makers.
- Set up a continuous-flow photoreactor facility shared by 6 groups.

Scientist · 2016 – 2019

National Laboratory for Interdisciplinary Chemistry

- Developed MOF sorbents capturing 4.1 mmol/g CO₂ at room temperature (sample data).

Postdoctoral Researcher · 2015 – 2016

Rhinevale University of Technology

- Worked on cobalt catalysts for hydrogen evolution.

EDUCATION

Ph.D., Chemistry · 2010 – 2015

Malabar Institute of Chemical Sciences

Thesis: Visible-light photocatalysts from earth-abundant metals

M.Sc., Chemistry · 2008 – 2010

Kerala Coast University

First Rank

B.Sc., Chemistry · 2005 – 2008

Kerala Coast University

GRANTS, AWARDS & HONOURS

- PI, industry-sponsored flow chemistry project (2021–2024), ₹1.8 crore
- Women Scientist Award, national chemical society (2022)
- Two Indian patents on photocatalyst compositions (2020, 2023)

TEACHING

- Advanced Organic Synthesis (Ph.D. coursework)
- Green Chemistry Principles (short course for industry chemists)

PUBLICATIONS

Iyer, M., **Nair, P.**, Okafor, D., & Fischer, A. (2026). Revisiting asymmetric organocatalysis. *Organic Synthesis Letters*, 11(9), 212–232.

Nair, P., & Menon, V. (2026). Measuring photocatalytic water splitting. *Proceedings of the National Symposium on Green Chemistry*, pp. 112–122.

Kim, J., & **Nair, P.** (2026). Scaling biodegradable polymer synthesis. *Inorganic Materials Chemistry*, 28(11), 162–175.

- Fischer, A., & **Nair, P.** (2025). Designing for asymmetric organocatalysis. *Proceedings of the National Symposium on Green Chemistry*, pp. 798–809.
- Okafor, D., & **Nair, P.** (2025). Evidence on electrochemical nitrogen reduction. *Journal of Sustainable Catalysis*, 20(5), 430–440.
- Kim, J., **Nair, P.**, & Mensah, K. (2025). A study of metal-organic frameworks for CO₂ capture. *Proceedings of the National Symposium on Green Chemistry*, pp. 491–502.
- Kim, J., **Nair, P.**, Mensah, K., & Fischer, A. (2024). Designing for photocatalytic water splitting. *Organic Synthesis Letters*, 34(11), 875–886.
- Haddad, N., Banerjee, P., & **Nair, P.** (2024). Designing for asymmetric organocatalysis. *Inorganic Materials Chemistry*, 47(2), 109–130.
- Haddad, N., & **Nair, P.** (2024). Evidence on biodegradable polymer synthesis. *Proceedings of the National Symposium on Green Chemistry*, pp. 155–167.
- Kim, J., Chen, L., & **Nair, P.** (2023). Measuring flow chemistry for drug intermediates. *Journal of Sustainable Catalysis*, 37(4), 119–133.
- Banerjee, P., Menon, V., Gupta, R., & **Nair, P.** (2023). Scaling electrochemical nitrogen reduction. *Proceedings of the National Symposium on Green Chemistry*, pp. 723–732.
- Nair, P.**, & Gupta, R. (2023). Measuring metal-organic frameworks for CO₂ capture. *Proceedings of the National Symposium on Green Chemistry*, pp. 492–504.
- Haddad, N., Chen, L., Rao, S., & **Nair, P.** (2022). Understanding metal-organic frameworks for CO₂ capture. *Proceedings of the National Symposium on Green Chemistry*, pp. 372–381.
- Chen, L., Menon, V., & **Nair, P.** (2022). Evidence on electrochemical nitrogen reduction. *Inorganic Materials Chemistry*, 47(7), 313–329.
- Kim, J., Haddad, N., & **Nair, P.** (2022). Towards asymmetric organocatalysis. *Proceedings of the National Symposium on Green Chemistry*, pp. 421–430.
- Haddad, N., & **Nair, P.** (2021). Towards electrochemical nitrogen reduction. *Inorganic Materials Chemistry*, 22(9), 539–554.
- Iyer, M., Chen, L., & **Nair, P.** (2021). Rethinking electrochemical nitrogen reduction. *Organic Synthesis Letters*, 9(12), 542–561.
- Menon, V., & **Nair, P.** (2021). New approaches to metal-organic frameworks for CO₂ capture. *Organic Synthesis Letters*, 6(5), 290–299.
- Sato, Y., **Nair, P.**, Rao, S., & Haddad, N. (2020). Evidence on metal-organic frameworks for CO₂ capture. *Proceedings of the National Symposium on Green Chemistry*, pp. 492–500.
- Rao, S., Fischer, A., & **Nair, P.** (2020). Revisiting asymmetric organocatalysis. *Inorganic Materials Chemistry*, 12(1), 299–317.
- Mensah, K., Okafor, D., & **Nair, P.** (2020). Revisiting photocatalytic water splitting. *Journal of Sustainable Catalysis*, 42(9), 373–393.

CONFERENCE PRESENTATIONS & INVITED TALKS

- Invited talk: “Evidence on photocatalytic water splitting”, Organic Synthesis Letters, Boston, 2026.
- Contributed talk: “Designing for flow chemistry for drug intermediates”, Proceedings of the National Symposium on Green Chemistry, Toronto, 2026.
- Poster: “Rethinking photocatalytic water splitting”, Symposium on Sustainable Catalysis, Berlin, 2025.
- Contributed talk: “A study of electrochemical nitrogen reduction”, Organic Synthesis Letters, Hyderabad, 2025.
- Keynote: “Scaling biodegradable polymer synthesis”, Inorganic Materials Chemistry, Berlin, 2024.
- Keynote: “Scaling biodegradable polymer synthesis”, Symposium on Sustainable Catalysis, New Delhi, 2024.
- Keynote: “Scaling asymmetric organocatalysis”, Proceedings of the National Symposium on Green Chemistry, Bengaluru, 2023.
- Keynote: “New approaches to biodegradable polymer synthesis”, Proceedings of the National Symposium on Green Chemistry, Toronto, 2023.

PROFESSIONAL SERVICE

- Associate editor, Journal of Sustainable Catalysis (2023–present)

- Science outreach for 40 government schools under a lab-on-wheels scheme

SKILLS

Synthesis: Photoredox catalysis, MOF synthesis, flow reactors, scale-up to 5 L

Analysis: NMR, XRD, BET, GC-MS, HPLC

Languages: Malayalam (native), English, Hindi, Tamil

REFERENCES

Dr. R. Varghese

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Prof. K. Albrecht

Professor, Rhinevale University of Technology

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