

Curriculum Vitae

Ketan Maru (26/07/1992)

PhD Scholar, Department of Chemistry

Sardar Vallabhbhai National Institute of Technology, Surat, India

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Language: Proficient in English, Hindi, and Gujarati; Open to acquiring additional language skills as required

Hobbies: Experimental Chemistry, Exploring the Origin of Elements, Stargazing, Graphical Designs (TOC), Cycling, and Fitness Enthusiast



Thesis Title: “Strategically Designed MOFs for Catalytic Organic Transformations, Environmental Remediation, and Sensor Technologies” (**Synopsis Submitted, Publications: 11, and Patents: 4**)

Research Skill Set: A highly skilled PhD researcher with comprehensive expertise in the synthesis of organic and inorganic molecules, asymmetric methodologies, and the design and crystallization of metal-organic frameworks (MOFs). Proficient in AI-assisted high-throughput screening for MOF discovery, molecular design, catalysis, chemical sensing, and scientific and patent writing. Research focus includes environmental remediation, particularly radioactive iodine capture and wastewater treatment, along with in situ MOF-based electrode fabrication for water splitting applications.

Education

Ph.D. in Chemistry

- Sardar Vallabhbhai National Institute of Technology, Surat | 01/21-Present

M.Sc. in Chemistry

- Veer Narmad South Gujarat University, Surat | 06/2013-06/2015
- Specialization: Organic Chemistry

B.Sc. in Chemistry

- Veer Narmad South Gujarat University, Surat | 06/2010-06/2013

Awards & Achievements

- CSIR NET JRF | 12/2016
- GATE | 02/2017
- Junior Research Fellow | SVNIT | 01/2021-01/2023
- Senior Research Fellow | SVNIT | 01/2023-Present

Experience

- Production Chemist at Tata Rallis India, Ankleshwar | 08/2015-03/2016
- Junior Research Fellow at M.S. University, Baroda | Enzyme Catalyse Asymmetric Synthesis | 07/2017-01/2019

How are elements formed?

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- Assistant Professor at Bhagwan Mahavir College of Science and Technology, Surat | 01/2019-12/2020

Expertise

- **Applications of Materials**

Homogeneous and heterogeneous catalysis, membrane fabrication, bead preparation for filtration systems, wastewater treatment, dynamic filtration, biosensing, and dye adsorption.

- **Analysis-Characterisation and Purification Techniques**

FTIR, PXRD, BET surface area analysis, XPS, SEM, TEM, NMR, EPR, Raman spectroscopy, UV-Vis spectroscopy (solid and liquid state), Mass Spectroscopy, TGA, column chromatography, CombiFlash chromatography, single-crystal growth and crystallization techniques.

- **Instrument Handling**

FTIR spectrometer, Puriflash (CombiFlash system), UV-Vis spectrophotometer, TGA analyzer, PXRD diffractometer

- **Software and Writing**

Origin, Microsoft Office Suite, Mercury, Diamond, ORTEP, CasaXPS, MestReNova, Avogadro, ChemDraw, ImageJ, Blender. Proficient in patent drafting, scientific manuscript preparation, and research article reviewing.

Publications

1. **K. Maru**, S. Kalla, and R. Jangir, *Filtration-Based Iodine Capture Using MOF-Embedded PVDF Beads: A Sustainable Strategy for Multiphase Iodine Sequestration*. *ACS Applied Nano Materials*. **(Under Revision; ACS applied nano materials)**
2. **K. Maru**, S. Kalla, and R. Jangir, *Strategic Design of NH-Linked Ligand-Based Novel Zinc and Cadmium Metal-Organic Frameworks for Enhanced, Reversible, and Multi-Phase Iodine Sequestration*. *Small Methods*, 2025, DOI: 10.1002/smt.202500101. **(Wiley)**
3. **K. Maru**, S. Kalla, and R. Jangir, *Synthesis of Polyoxometalates-Loaded MOFs (POM@MOF) for Enhanced Dye Adsorption and Heterogeneous Catalysis*. *Dalton Transactions*, 2025, 54 (1), 298–317. **(RSC)**
4. **K. Maru**, A. Singh, K. Jangir and R. Jangir, *Amyloid Detection in Neurodegenerative Diseases through MOFs*. *Journal of Materials Chemistry B*, 2024, 12, 4553–4573. **(RSC)**
5. **K. Maru**, S. Kalla, and R. Jangir, *Facile and Rapid Extraction of Dyes from Waste Water using In-MOF-Immobilized PVDF Membranes with Selective Filtration for Enhanced Remediation*. *Langmuir*, 2024, 40, 15, 8144–8161. **(ACS)**
6. **K. Maru**, S. Kalla, S. Ghosh and R. Jangir, *Synthetic Strategies of Microcrystalline Indium (III)-Based MOF and Adsorptive Removal of Dyes*. *Research on Chemical Intermediates*, 2023. **(Springer)**
7. **K. Maru**, S. Kalla, and R. Jangir, *MOF/POM Hybrids as Catalysts for Organic Transformations*. *Dalton Transactions*, 2022, 51, 11952–11986. **(RSC)**

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8. **K. Maru**, S. Kalla, and R. Jangir, *Dye Contaminated Wastewater Treatment through Metal–Organic Framework (MOF) Based Materials*. ***New Journal of Chemistry***, 2022, 46, 3054–3072. (**RSC**)
9. **K. Maru**, S. Kalla, and R. Jangir, *Unraveling the Role of Catalyst Architecture in Chan–Evans–Lam Coupling: Discrete Complex vs. Coordination Polymer*. (**Under Review; *Journal of Materials Chemistry A*; RSC**)
10. **K. Maru**, S. Kalla, P. Pataniya, and R. Jangir, *MOF-Derived Electrocatalysts for Water Splitting: Comparative HER and OER Performance of SVNIT-1 and Cobalt-Based SVNIT-3 on Ni Foam*. (**Manuscript Completed**)
11. **K. Maru**, S. Kalla, K. Jangir, and R. Jangir, *Silver-Confined SVNIT-1 Metal-Organic Framework as a Promising H₂S Sensor for Early Asthma Diagnosis*. Manuscript Completed. (**Manuscript Completed**)

Patents

1. Indium (iii)-based MOF and synthetic strategies thereof and adsorptive removal of dyes.
Number: 554308
Patent Grant Date: 13/11/2024
2. A Microwave-based Method for Synthesis of Indium (III)-based MOF
Number: 555545
Patent Grant Date: 29/11/2024
3. Porous SVNIT@PVDF Beads for Efficient Multiphase Iodine Capture, Filtration, and Recovery (Status: Applied)
4. Design and Synthesis of Novel Copper-Based Discrete Complex and 1D Metal-Organic Coordination Polymer based Nano-Sheets for Heterogeneous Catalysts in Chan–Lam Coupling Reaction (Status: Applied)