MOHAMMAD SHOEB

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PhD researcher in Chemistry with a background in Organic Chemistry, focusing on **amine degradation and CO_2 capture**. Interested in developing expertise in **sustainable chemistry** and currently seeking **R&D industrial roles** or **postdoctoral research.**

EDUCATION

- **PhD in Chemistry,** *IFP Energies Nouvelles, Lyon, France* | 2022- Nov 2025 (ongoing)
  THESIS: "IMPACT OF NOX ON AMINE DEGRADATION DURING POST-COMBUSTION CO_2 CAPTURE"
- **Master 2 in Chemistry** *Université Claude Bernard Lyon 1, France* | 2021 – 2022
  TITLE: "SYNTHESIS, CATALYSIS AND SUSTAINABLE CHEMISTRY"
- **M.Sc. in Organic Chemistry** *Aligarh Muslim University (AMU), India* | 2019 – 2021
- **B.Sc. in Chemistry** *Aligarh Muslim University (AMU), India* | 2016 – 2019

RESEARCH & PROFESSIONAL EXPERIENCE

PHD RESEARCHER | IFP ENERGIES NOUVELLES, LYON, FRANCE | 2022- PRESENT

Thesis: Impact of NOx on amine degradation during post-combustion CO_2 capture

- Designed and executed controlled degradation experiments on secondary amines using laboratory reactor unit under varied NOx conditions.
- Synthesised nitrosamine and nitramine standards to support accurate quantification of degradation products.
- Employed a **multi-technique analytical approach**, including, GC-FID/MS and ion chromatography (IC), for comprehensive identification, characterisation, and quantification of degradation products.
- Developed insights into reaction mechanisms of nitrosamine and nitramine formation during amine degradation.
- Investigated the **amine structural influence** on degradation pathways, providing insights into solvent stability and behaviour under NOx.
- Collaborated closely with **engineers, technicians, and colleagues** to ensure efficient experimental workflow, analysis and reactor maintenance.
- Contributed to **scientific dissemination**, including oral and poster presentations at international conferences, and workshops.

INTERNSHIP |ENS LYON | (2022) 6 MONTHS

Topic: Towards Viologen-Based Metal Organic Frameworks (MOFs) for CO_2 capture and activation

- Synthesized **Rhenium complexes and viologen ligands** for developing MOFs aimed at CO_2 capture and activation studies.
- Optimized synthesis process, achieving **higher yields and reduced time**.
- Characterized redox properties of Rhenium complexes via **Cyclic Voltammetry**.
- Produced gram-scale samples to meet collaborator requirements.

KEY ACHIEVEMENTS

- Qualified **GATE 2021** (National-level exam, India).
- Graduated with **First Division and Distinction** – M.Sc. in Chemistry.
- Ranked **4th in Master 2 Chemistry Program**.

CONFERENCES & WORKSHOPS

- **Invited Oral** | International Joint Meeting on Amine Chemistry (UT Austin – NTNU – SINTEF), Marseille, France | Sept 2024 (upcoming)
- **Oral** | Journée de l'ED 388, Paris, France | July 2024
- **Oral + Poster** | Doctoral–Industrial Partners Symposium, Nancy, France | June 2024
- **Oral** | Doctoral Workshops in Catalysis, Biocatalysis & Separation, Lyon, France | 2022–2024
- **Poster** | GHGT-17, Calgary, Canada | Oct 2024
- **Poster** | TCCS-13, Trondheim, Norway | June 2025

PUBLICATIONS

- New insight on the impact of NO_x on diethanolamine (DEA) degradation mechanisms, 2024, *conference proceeding (doi: 10.2139/ssrn.5069645)*
- Impact of amine structure on degradation by NO_2 (in progress)

TECHNICAL SKILLS

- **Analytical:** GC, IR, NMR, UV, Ionic chromatograph, Cyclic Voltammetry.
- **Research & Process:** Experimental design, chemical synthesis, reactor operation, data interpretation.
- **Professional:** Leadership, Problem solving, teamwork, adaptability, project management.

LANGUAGE

- Hindi (Native)
- Urdu (Intermediate)
- English (Fluent)
- French (B1 level)

ACTIVITIES AND INTERESTS

Hiking, basketball, travel, arts and drawing.