

M. Farrukh Mehmood

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Education

2022–2024 **MS in Mechanical Engineering**, NUST, Islamabad,
2014–2018 **BSc. in Mechanical Engineering**, UET, Taxila,

Masters Thesis

title *Numerical Investigation of Airborne Particle Dynamics in Human Lungs Under Different Breathing Conditions*
supervisors Adnan Munir (NUST), Ming Zhao (WSU)
description Analyzed airborne particle deposition in human lungs using CFD and DPM, focusing on the impact of particle size, breathing patterns, and lung geometry.

Experience

2022–2024 **Graduate Research Assistant**, NRPV, HEC, Islamabad
Conducted CFD simulations and data analysis for lung particle deposition studies, driving model development and interpretation of results.

Workshop Delivered

Oct. 2024 , SMME, NUST
title *Predicting Particle Deposition in Lung Airways Using the Discrete Phase Model (DPM)*
Delivered a comprehensive workshop on modeling particle deposition in lung airways using DPM, covering theoretical foundations, simulation setup, and post-processing techniques. Emphasis on practical CFD applications with live simulation demonstrations and detailed interpretation of results for health-related aerosol studies.

Publications

Muhammad Farrukh Mehmood, Adnan Munir, et al. *Breath of impact: Unveiling the dynamics of exhalation-driven deposition of polydisperse particles in lung across varied physical activities*. *Powder Technology*, 2024.

Technical Skills

Programing Python, SQL, LATEX

Cloud AWS, Google Cloud

Plateforms

Frameworks PyTorch, TensorFlow, Sklearn, NLTK, FastAPI, SciPy, BS4, Langchain, LangGraph, LangSmith, Huggingface transformers

Databases MongoDB, sqlite3, Pincecone

———— Languages

English

Urdu

Chinese