Rachana Singhal

M.Tech. Scholar
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EDUCATIONAL QUALIFICATIONS:

Qualification	College/School	BOARD/ UNIVERSITY	Year of Study	CGPA/%
M. Tech. (Chemical Engineering)	IIT Gandhinagar	IIT Gandhinagar	2019-present	8.60
B. Tech. (Chemical Engineering)	MNIT Jaipur	NIT Jaipur	2014-18	7.90
Intermediate(+2)	Shiv Jyoti Senior Sec. School Kota	BSER Ajmer	2012-13	81.40%
Matriculation	Nehru Public Senior Sec. School Suroth	BSER Ajmer	2010-11	88.67%

ACADEMIC INTEREST:

- ✓ Heat and Mass Transfer Operations
- ✓ Advanced Thermodynamics and Chemical Reaction Engineering
- ✓ Reactor Design and Modelling
- ✓ Fluid Mechanics

INTERNSHIP:

Organization: Indian Oil Corporation Limited (**IOCL)**, Mathura (U.P.)
Duration: 45 Days
Description:

- ✓ Identified the bottleneck processes and functional units for refinery operation
- ✓ Detailed study of the processes in Motor Spirit Quality Upgradation unit (MSQU)

PROJECTS:

1**)** Design of Fuel Ethanol Manufacturing Reactor and Economic Analysis
Description:

- ✓ Study of fuel blending using ethanol and possible usage
- ✓ Developed a flowsheet in **ASPEN PLUS** software
- ✓ Optimized mass and energy balances verified in software and the size and specifications of the reactor
- ✓ Calculated the monetary value of the entire plant and profits

2) Experimental and Modeling Studies of Neem Oil Coated Urea in the Soil Environment
Description:

- ✓ Study of properties of neem oil coated urea
- ✓ Performed experiments: sieve analysis, dissolution rate, refractive index, specific gravity,and bulk density to compare neem oil coated urea and uncoated urea
- ✓ Observed improvement in the soil property with neem oil coated urea

3**)** Methanol Packed Bed Reactor Design and Modeling
Description:

- ✓ Compared reactor designs for different kinetic models and feed compositions
- ✓ Calculated heat exchange rates and pressure drops
- ✓ Used **MATLAB** for modeling

4**)** Influence of Heating and pH change on Ovalbumin Stabilized Soybean Oil-Water Emulsion Gels
Description:

- ✓ Stabilizing the emulsions and pattern their size distribution using **DLS, FTIR, and Zeta Potential**
- ✓ Rheology of emulsions
- ✓ Characterization at the material interface for Confirmational Changes
- ✓ Microscopic analysis using Optical and Confocal Microscopy

POSITION OF RESPONSIBILITY:

- ✓ Coordinator at Vigyan society MNIT Jaipur, managing a social service team
- ✓ Member of Event Manager Team at MNIT Jaipur

ACHIEVEMENTS:

- ✓ **JEE mains 2014**: Score- **215**, AIR-**11923**, All India Percentile Score: **99.44**
- ✓ **GATE 2020**: Rank- **269** out of 14296 in Chemical Engineering
- ✓ Presented a poster on "Fibrillation and Gelation behavior of Ovalbumin at the Oil-Water Interface to Stabilize Emulsions" at **Complex Fluids 2020**
- ✓ Presented a talk on " Influence of Heating and pH change on Ovalbumin Stabilized Soyabean Oil- water Emulsion Gels" at **International Virtual Conference on Formulations in Food and Healthcare 2021**

SKILL SUMMARY:

- ✓ MS Office
- ✓ MATLAB for numerical computations and reactor design
- ✓ ASPEN PLUS: Process modeling
- ✓ ASPEN-HSYS: Petroleum assays and oil characterization
- ✓ Python for optimization of developing water resource systems
- ✓ AutoCAD
- ✓ Instrument: Rheometer, DLS, Optical Microscope, Surface Tensiometer and 3D Bioprinter