Rakesh Ravirala

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Qualification Summary

Accomplished professional adept at designing, optimizing, and implementing innovative chemical processes to enhance efficiency and sustainability. Recognized for expertise in flow cytometry assays, maintaining QA standards, and leading R&D projects. Skilled in microreactor technology, automation, and control systems, aligning with green chemistry principles. Experienced in optimizing processes, solving complex challenges, and driving efficiency. Proficient in supervising trials, crafting SOPs, and evaluating critical parameters. Strong project management skills, proficient in ChemCAD and Minitab for analysis and problem-solving.

Areas of Expertise

- Continuous-Flow System Designing
- Chemical Process Scaling
- Research & Development
- Reporting & Documentation
- Project Management
- Process Engineering & Automation
- MaterialHandling &Modelling Tools
- Regulatory Safety Compliance
- Analytical Skills
- Quality Control & Assurance
- Innovative Problem Solving
- Cross-functional Collaboration

Career Experience

Process Engineer - Virupaksha Organics Limited, India **Dec 2019 – Dec 2021**

- Led experiments to optimize flow cytometry assays for new product launches. Utilized microreactor technology for sustainable processes, and automation for reliability. Specialized in high-throughput API synthesis.
- Spearheaded Multi-stage Synthesis - AZC Synthesis, achieving 96.1% yield and 96.10% purity in Diphenylmethanamine. Developed and maintained SOP documentation, ensuring cGMP/GLP compliance. Led Multi-stage Synthesis - LCZ Synthesis, achieving a 99.79% yield for LCZ-03. Implemented PLCs for automation, enhancing production efficiency.
- Conducted FMEA to mitigate potential failures, optimizing synthetic routes. Ensured compliance with Process Safety Management (PSM) regulations and implemented SQDCP metrics for process improvement.

Chemical Engineering Intern - Honor Laboratories, India **July 2019 - Dec 2019**

- Collaborated with production team to improve manufacturing processes, resulting in a 15% increase in production efficiency. Implemented strategic adjustments and optimizations to streamline operations and maximize resource utilization for productivity gains.
- Proficient in utilizing Statistical Process Control (SPC) and Failure Mode and Effects Analysis (FMEA) to enhance process control and elevate product quality standards. Led root cause analyses and implemented corrective measures, resulting in a 20% decrease in downtime within manufacturing operations.

Projects

Three-Phase Fluidization-Hydrodynamic Studies

- Implemented advanced techniques such as PIV and Pressure Transducers to capture real-time hydrodynamic data. Performed three-step simulation process, encompassing pre-processing to define input conditions, solving mathematical equations through solver, and conducting graphical analysis in post-processing phase.
- Created and updated Process Flow Diagrams (PFDs) to visualize and communicate the steps involved in chemical processes, facilitating understanding and optimization. Designed and maintained Piping and Instrumentation Diagrams (P&IDs) to illustrate

the instrumentation and control systems used in chemical processes.Established Routing Monitoring Points (RMPs) to monitor and optimize process flows, identifying bottlenecks and inefficiencies.

- Analyzed and quantified the fluidization characteristics, including bed expansion, bubble dynamics, and particle mixing, by conducting CFD simulations under varying operating conditions. Optimized experiment results by showcasing that velocity of all phases achieve peak at center compared to walls.

Revolutionizing Methanol: Atmospheric C02 Capture and PCMSR- Powered Production Analysis

- Designed atmospheric CO2 capture system using advanced adsorbents and membranes, optimizing chemical processes via modeling tools. Managed Laboratory Information Management Systems (LIMS) for efficient data analysis and reporting.
- Spearheaded integration of Power Conversion Molten Salt Reactor (PCMSR) for efficient generation of high-temperature heat required in methanol synthesis. Developed multifaceted approach resulting in generation of 86.74 MWe of excess electricity, showcasing ability to optimize processes and deliver significant economic benefits.

Solar Energy Integration in High-Rise Buildings

- This project focuses on integrating solar energy systems into high-rise buildings to enhance energy efficiency and sustainability. It involves estimating heating, hot water, cooling, and lighting loads, along with determining solar insolation for the site. Through detailed calculations and analysis, the project proposes solar water heating, solar pool heating, and photovoltaic electrical generation systems to meet the buildings' energy needs.
- Economic analysis demonstrates the cost-effectiveness of these systems, highlighting significant long-term savings and relatively short payback periods. Overall, the project emphasizes the viability and benefits of harnessing solar energy to reduce utility costs and environmental impact in high-rise buildings.

Education

Master of Science in Information Technology Management, Indiana Wesleyan University, KY **May 2023 - Present**

Relevant Courses: Information System Security, Inform Systems Infrastructure, Marketing Management

Masters of Science in chemical ENGINEERING, USF , FL **Jan 2022 to May 2023**

Relevant Courses: Sustaining the Earth, Chemical Engineering Kinetics, Electron Microscopy, Molecular Thermodynamics, Math Methods for Chem Eng, Solar Energy Fund & Appl.

Bachelor of Technology in Chemical Engineering, Dr.B.V.Raju Institute of Technology, India **2017 - 2021**

Relevant Courses: Chemical Engineering Thermodynamics, Transport Phenomena, Organic Chemistry, Fluid Mechanics, Chemical Reaction Engineering, Process Modeling and Simulation, Analytical Chemistry, Environmental Science, Supply Chain Management, Entrepreneurship , Management Science, Food Processing Technology, Process Heat & Mass transfer

Technical Skills

C Programming, ChemCAD, MATLAB, AutoCAD, Visio, Minitab, SolidWorks, Tableau, Ms Excel, Ms Word, Ms Power Point, Aspen plus.

License & Certifications

- Lean Six Sigma Green belt (CSSGB) – International Six Sigma Institute
- Occupational Safety and Hazard Communication.
- Project Management Foundations: Quality