YASH SHRIPAD DESHPANDE

SENIOR PHARMACEUTICAL PROCESS ENGINEER | FORMULATION & SCALE-UP SPECIALIST

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PROFILE SUMMARY

Dynamic and results-oriented **Pharmaceutical Process Engineer** with over **4 years** of experience in **drug product development**, **technology transfer**, and process optimization across top-tier organizations including **Moderna**, **Viatris**, and **Cadila Pharmaceuticals**. Proven track record in **scaling mRNA** and complex **injectable formulations** from **R&D** to commercial scale. Skilled in leveraging simulation tools like **Ansys** and **Aspen**, and applying **DOE** principles to ensure **efficient**, **compliant**, and **cost-effective** processes. Recognized for **innovation**, **leadership**, and cross-functional collaboration in **high-impact** projects. Recognized with **'Star of the Month'** award at **Viatris** for delivering high-impact **business value** and demonstrating strong leadership.

EDUCATION

Master of Science in Chemical Engineering | Purdue University, West Lafayette, IN **| GPA:** 3.63 **May 2025**

Bachelor of Technology in Chemical Engineering | Pune University, India **| GPA:** 8.73 **May 2019**

EXPERIENCE

Co-op Technical Development (Drug Product Development) | Moderna, Norwood, MA **Jan 2024 - Aug 2024**

- Successfully scaled Moderna-Vertex mRNA Cystic Fibrosis drug from lab to Phase 3, rapidly advancing regulatory readiness in 8 months
- Used representative scale-down model with precise geometric ratios, reducing development time and cost by 40% over traditional methods
- Optimized scale-up using Ansys simulations and 25+ DOE experiments, ensuring seamless production and full USFDA regulatory compliance
- Characterized 10+ batches using DLS, mRNA encapsulation, and Coulter counter to ensure product quality matched all required parameters

Research Scientist (Process Engineering & MSAT) | Viatris Ltd., India **May 2021 - Aug 2023**

- Developed drug delivery systems and engineered scalable processes using Dynochem and Aspen, accelerating technology transfer readiness
- Converted complex injectable batch process to continuous manufacturing, reducing costs by 30% and increasing yield by 22%
- Led a cross-functional team to reduce nanoemulsion production time by 20%, generating $10M projected revenue in Q1 2022
- Characterized 10+ batches using DLS, mRNA encapsulation, and Coulter counter to ensure product quality met regulatory and performance standards
- Optimized TFF purification for lipid therapeutics by improving efficiency, scalability, and regulatory compliance through process innovations

Senior Executive (Technology Transfer) | Cadila Pharmaceuticals, India **Jun 2020 - Oct 2020**

- Successfully led technology transfer and scale-up of Remdesivir API from R&D to commercialization, enabling timely COVID-19 drug availability
- Reduced production downtime by 10% through process improvements, ensuring consistent supply to meet high market demand
- Streamlined manufacturing processes, enhancing efficiency and supporting regulatory compliance for commercial-scale API production
- Collaborated with cross-functional teams to accelerate project delivery, contributing to on-time launch during critical pandemic response

Technical Engineer III | Ecolab Ltd, India **Jul 2019 - Jun 2020**

- Managed quality assurance for water technologies including cooling water, reverse osmosis, and secondary disinfection systems
- Analyzed offsite utility system data to proactively optimize critical asset health, achieving a 12% reduction in customer downtime
- Delivered consistently outstanding client service at Ecolab, earning the prestigious 'System Assurance Star Award' for excellence

ACADEMIC PROJECT

Investigating Heat of Reaction for Complex Reaction Types, Purdue University, West Lafayette **Aug 2024 - Dec 2024**

- Leading a collaborative initiative with GSK, Vertex, Merck, and Purdue to study reaction heats using advanced instrumentation
- Optimizing and reconciling results from in-house TCIT software with ASTM-approved CHETAH for accurate thermochemical data analysis

EXTRA CURRICULAR ACTIVITES

External Examiner for Undergraduate Mentoring Program, Vishwakarma Institute of Technology, India **Jun 2022**

- Mentored 200 undergraduates on engineering projects and guided 30 high school students in career and professional development

PUBLICATIONS & CERTIFICATIONS

- 'PAC 3/PAC M/PAC 1 Certifications': Ecolab Ltd, Pune **Mar 2020**
- Published a research paper titled 'Synthesis of Furfural from Bagasse' **May 2017**

International Journal of Emerging Technology and Advanced Engineering (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 7, Issue 7, July 2017)

TECHNICAL SKILLS

- **Formulation Types:** Liposomes, Microspheres, Nanoemulsions, Complex Injectables, mRNA-based therapeutics
- **Process Tools:** DOE, Fluid Dynamics Simulation, TFF (Tangential Flow Filtration), Membrane Separation
- **Analytical Techniques:** Dynamic Light Scattering, Coulter Counter, mRNA Encapsulation
- **Regulatory/QA:** USFDA Compliance, Technology Transfer Protocols, GMP Standards
- **Software Tools:** Ansys (CFD), Aspen, Dynochem, JMP, MATLAB

CORE COMPETENCIES

Formulation Development | Process Scale-Up & Commercialization | Technology Transfer & MSAT | Drug Product Characterization | Continuous vs. Batch Process Conversion | Process Analytical Technology (PAT) | Heat of Reaction & Reaction Engineering | Cross-Functional Project Leadership | Regulatory Compliance & Documentation | Process Innovation & Cost Reduction | Data-Driven Process Optimization | Fluid Mechanics & Equipment Design | Advanced Analytical Problem Solving | Strategic Process Validation | Strong Communication & Presentation | Leadership & Mentorship | Analytical Thinking & Innovation | Collaborative Teamwork | Attention to Detail | Time Management & Prioritization | Adaptability