

# Quynh Tran

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## EDUCATION

University of California San Diego (UCSD), Jacobs School of Engineering

**Master of Science (M.S.) in Chemical Engineering** | ABET-accredited program

Sep 2024 - Jun 2025

**Bachelor of Science (B.S.) in Chemical Engineering** | Nanotechnology Specialization

Sep 2020 - Jun 2024

## SKILLS & CERTIFICATIONS

- Programming & Analytics:** Python (NumPy, pandas, scikit-learn, TensorFlow, PyTorch), MATLAB, LabVIEW, Minitab, SPC (Statistical Process Control), Excel, Data Visualization (Tableau, matplotlib, seaborn), SQL (Structured Query Language)
- Process & Modeling:** Aspen Plus, HYSYS, AutoCAD, Simulink, Process Hazard Analysis (HAZOP, PFD, P&ID)
- Certifications:** [FE Chemical](#) - NCEES; [Machine Learning Specialization](#) - DeepLearning.AI; [Lean Six Sigma Green Belt](#) - CSSC

## WORK EXPERIENCE

**Physics/ Chemistry/ Astronomy Expert** - Mercor, Remote

Oct 2025-Present

- Conduct data quality and validation reviews for 200+ STEM Olympiad case problems, correcting inaccuracies and standardizing structure to improve AI model reasoning reliability.
- Collaborate cross-functionally with project leads and content teams through Airtable and Overleaf to resolve formatting issues, align on requirements, and consistently deliver accurate, high-quality outputs on time.

**Quality Assurance/ Quality Control (QA/QC) Wastewater Intern** - Cleantech Co., LTD., Vietnam

Jun-Sep 2023

- Analyzed 100+ wastewater samples weekly and supported 30+ QA inspections to ensure compliance with national water standards, reducing non-compliance incidents by 10%.
- Optimized ultrafiltration and reverse osmosis systems through troubleshooting and process adjustments, increasing filtration efficiency by 15% and enhancing system reliability for consistent water quality.

## INDUSTRY PROJECTS

**Tetraethyl Orthosilicate (TEOS) Purification Capstone Design** - EMD Electronics

Jan - Jun 2024

- Designed and validated batch and continuous distillation processes to purify TEOS to **99.99%** for 1,000 metric tons/year semiconductor production, achieving **92.2% yield** and **4x efficiency** improvement of continuous over batch processing.
- Utilized Aspen Plus for **process simulations, equipment sizing calculations** & linear regression. Performed **Economic Data Analysis** to calculate a Net Present Value of \$7.34 billion over a 10-year plant life.
- Conducted comprehensive **process safety and control** evaluations (HAZOP, PFD, P&ID) to ensure compliance with semiconductor manufacturing standards and alignment of design with cost and safety objectives.

**Ethanol Production Optimization Project** - AIChE at UCSD

Jan 2022 - Jan 2023

- Designed a scalable 2G bio-ethanol fermentation prototype using lignocellulosic biomass as a sustainable fossil fuel alternative, collaborating with international teams in Malaysia and Brazil to refine experimental setups and optimize production parameters.

## ACADEMIC PROJECTS

**Machine Learning for Materials Properties** - UCSD ([github link](#))

Mar - Jun 2025

- Queried and filtered **60k+ inorganic materials** from the **MatPES database** using **SQL**, integrating with **Python** (pandas, scikit-learn) to engineer 90+ structural and compositional features.
- Trained and optimized **Ridge Regression** and **Gradient Boosting** models for cohesive energy prediction, achieving a **0.072 eV/atom MSE** and outperforming baseline models by **88%**.
- Applied **matplotlib** and **seaborn** for advanced **data visualization**, analyzing feature correlations, residual distributions, and structure–property trends to interpret model performance and material stability.

**Chemical Engineering Experimental Methods** - UCSD

Jan - Jun 2024

- pH Controller:** Developed and tuned a **non-linear PID controller** in **LabVIEW** using direct synthesis, achieving **10x faster** response with minimal offset and no oscillation, outperforming traditional IAE tuning.
- Methylene Blue Degradation:** Determined the photocatalytic degradation kinetics of methylene blue in a UV reactor by using a calibrated **spectrophotometer** to analyze changes in absorbance and assess the catalytic efficiency of hydrogen peroxide.
- Nanoparticle Size Reduction:** Assessed liposome nanoparticle size and polydispersity index using **Dynamic Light Scattering**, reduced the average size to 100 nm by optimizing extrusion cycles and cholesterol concentration.

**Capstone - Solar Thermal Collector (Chemical Engineering Experimental Methods)** - UCSD

Mar - Jun 2023

- Simulated solar collector performance using **MATLAB**, **Arduino**, and **Capstone**; applied **ASHRAE standards** to optimize thermal efficiency and improved prediction accuracy by 15%.