MOHAMMADSINA GHANBARIPAKDEHI

GitHub ◇ mohammadsina.ghanbaripakdehi@mail.polimi.it ◇ LinkedIn

Education

Politecnico di Milano **Sept. 2023 – Present**
M.Sc. Chemical Engineering - Energy and Environment Track

Sharif University of Technology **Sept. 2019 – Jul. 2023**
B.Sc. Chemical Engineering CGPA: 15.52/20
Thesis Title: Simulation of gaseous pollutant conversion on a TWC with a honeycomb structure

Experience

Iran University of Science and Tecnology *Research Assistant* **Jul. 2023 – Oct. 2023**
↪ Prof. Amin Bazyari
- Study on Catalytic Reverse Water-Gas Shift Reaction Modeling and Simulation
- Study on Surface Reactions on Active Catalyst Sites

Research Institute of Pteroleum Industry *Research intern* **Jul. 2022 – Sept. 2022**
↪ Prof. Alimorad Rashidi
- Synthesis of Cordierite phase and Thermal Operation of Monolith based on Cordierite for use in TWC
- Achiece the suitable monolith composition using Neural Networks
- Introduction to XRD, XRF, SEM, and TEM test

Iran's National Elites' Foundation *Research Assistant* **Jan 2022 - Sept 2022**
- Study on Nitrate and Lead treatment methods from industrial wastewater
- Find an efficient electrochemical method to eliminate Nitrate, Lead, and Copper from waste

Sharif University of Technology *Teaching Assistant*
- **Kinetics and Reactor Design** **Feb. 2023 – Jun. 2023**
  Instructur: Prof. Farhad Khorashe
- **Kinetics and Reactor Design** **Sep. 2022 – Feb. 2023**
  Instructur: Prof. Mohammad Kazemini
- **Numerical Methods** **Sep. 2022 – Feb. 2023**
  Instructur: Prof. Farhad Khorashe
- **Mass Transfer Operation** **Feb. 2022 – Jun. 2022**
  Instructur: Prof. Mohammad Kazemini

Publications

Ghanbaripakdehi, M. and Kazemini, M. (2023). "Investigation on Simulation of Methane Thermal Conversion and its Effective Factors in Syngas," proceedings of the 5^{th} *Int. Cong. on Chemistry and Chemical Engineering* **, Tehran, Iran** **Access Link**

Awards

Winner Iran's National Elites' Foundation Scholarship to Talented Students **2021, 2022**

Academic Projects

Conceptual Design and Economic Feasibility of Hydrodealkylation of Toluene Plant **Mar. 2024 – Apr. 2024**
↪ Process Systems Engineering
- involves simulating the hydrodealkylation of a toluene plant using MATLAB and Aspen HYSYS and conducting an economic assessment and feasibility analysis to determine the plant's profitability during an operating year (**More Details**)

Numerical Methods and Their Application in Chemical Engineering **Aug. 2023 – Present**
↪ Self Employed

- Explore the intersection of numerical methods and chemical engineering with our comprehensive repository, offering educational content, practical code samples, and real-world applications to enhance problem-solving skills and foster collaboration within the community. (**More Details**)

B.Sc. Thesis **Jul. 2022 – Jul. 2023**
↪ Prof. Tayebbeh Hamzehlouyan

- Investigated the conversion of Gaseous Pollutants in a catalytic converter to describe Mass Transport Phenomena through the Catalyst Channel for CO oxidation reaction. Additionally, the Optimized Kinetics Parameters have been calculated.
- This Simulation has been done by COMSOL Multiphysics and MATLAB. (**More Details**)

Technical and Financial Analysis of 2-Ethylhexyl Acrylate plant **Jan. 2023 – Feb. 2023**
↪ Prof. Saeed Eini

- Design and simulation of a 2-Ethylhexyl Acrylate plant using Aspen HYSYS - Design reaction, Separation, and Heat Integration systems
- Study on the market of 2-Ethylhexyl Acrylate - Calculating Financial Parameters such as NPV, IRR, ROI, and PBP during the lifetime of plant (30 years)

Design a PID Controller for a System of CSTR Reactors Using Python **Feb. 2023**
↪ Prof. MahmoudReza Pishvaie

- Achieving theSteady-State Parameters and plot them versus Time
- Achieving the optimized controller parameters using Levenberg–Marquardt Algorithm (**More Details**)

Design Of a PAB for Benzene Removal in Underground Water using COMSOL Multiphysics **Feb. 2023**
↪ Prof. Abbas Mousavi

- Simulation of Mass transfer and adsorption process (Longmuir Isotherm) in porous media
- Simulation in Steady and Unsteady state mode and performing Sensitivity Analysis on the selected parameters

Flash Distillation Tower Simulation in MATLAB **May 2022**
↪ Prof. Vahid Taghikhani

- Calculate vapor-liquid equilibrium for a binary flash distillation column using Antoine equation
- Determine product flow rates, compositions, and temperatures based on given feed conditions
- Compute preheater duty and steam requirement to achieve desired distillation (**More Details**)

Steady-state Heat Transfer Modeling the Finned-Plate Heat Exchanger with MATLAB **Jun. 2021 – Jul. 2021**
↪ Prof. Akbar Shojaei

- Derive Temperature Equations using Finite Difference method and apply boundary conditions whole the system
- Solve the system of linear equation for each plate and fin by Gauss-Seidel method and Calculate the SteadyState Temperature for each node
- Plotting the Temperature distribution of system - Calculating the Heat Loss of the system (**More Details**)

Technical Skills

Programming Languages	Python (Pandas, NumPy, SciPy etc.), R(ggplot2), MATLAB
Software	COMSOL Multiphysics, Aspen HYSYS, Microsoft Office, Git
Soft Skills	Time Management, Teamwork, Problem-solving, Documentation

Volunteering Experience

Sharif University Of Technology *Instructor* **Mar 2024 – Apr 2024**
↪ Kimia Scientific Group

- Hold a workshop for introducing MATLAB to undergraduate Chemical and Petroleum Engineering students (**More Details**)
- Hold the Elementary MATLAB course for undergraduate Chemical and Petroleum Engineering students (**More Details**)

References

Dr. Tayebeh Hamzehlouyan Assistant Professor, Sharif University of Technology, Tehran, Iran **Email Address**

Dr. Mohammad Kazemini Professor, Sharif University of Technology, Tehran, Iran **Email Address**