

Sheng-Jer Chen

samchen1999@gmail.com | (+886) 928400847

Education

Chang Gung University, Taoyuan City, Taiwan

Sep. 2017- Jun. 2021

- *Bachelor of Science in Chemical and material engineering*
- *GPA: 3.95 / 4.0*

National Taiwan University, Taipei City, Taiwan

Sep. 2021- Present

- *Master program in Chemical engineering*
- *GPA: 3.63 / 4.3*

Research Experience

Process Engineering Lab

Sep. 2020 - Jun. 2021

Research Assistant

- Design air separation unit (ASU) for ultra-high purity nitrogen and oxygen for industrial use
- Develop a hybrid membrane/ASU custom model with several types of membranes in the industry or experimental stage and find suitable high-permeability membranes
- Experience in using simulated annealing (SA) algorithm on reaction kinetic regression fitting

Complex Fluid Theory Lab

Sep. 2021- Present

Graduate Research Assistant

- Parallel programming technique by semi-implicit Fourier spectral method in solving large scale problems in phase field theory
- Develop multivariate time series and spatial-temporal deep learning models for predicting the evolution of morphology and find appropriate models.
- Familiar with newly developed physics-informed neural network model (PINN) in forward and inverse problems.

Research Interest

- Process Design and Control in gas separation
- Hollow fiber membrane unit modeling
- Phase-field theory in spinodal decomposition microstructure dynamics
- Polymer self-consistent field theory
- Physics-informed machine learning and sparse identification of nonlinear dynamics (SINDy)
- Spatial-Temporal and multi-variate time series machine learning

Publications

- Chen, S. J., & Yu, B. Y. (2021). Rigorous simulation and techno-economic evaluation on the hybrid membrane/cryogenic distillation processes for air separation. Journal of the Taiwan Institute of Chemical Engineers, 127, 56-68.

Manuscript / in preparation

- Chen, S. J., & Hsiu-Yu Yu (2022) Innovative Machine Learning Approaches for Predicting the Dynamics of the Phase-Field Microstructures (manuscript)

Simulation & programming Skills

- Aspen Plus (AP), Dynamics (AD), Custom Modeler (ACM)
 - Research in developing air separation unit (AP) and custom membrane (ACM)
- Python
 - Machine learning multivariate time-series model by Pytorch and Tensorflow
- C
 - Parallel programming by MPI in solving phase-field model
 - CUDA programming in GPU parallel design
- MATLAB
 - Simulated annealing algorithm (SA)

Honor & Awards

2017 – 2019 Two Academic Excellence Award

2021 2nd place, process design competition by Taiwan Institute of Chemical Engineers

2021 Excellent presentation reward in conference of Thermodynamics and Process Systems Engineering

Internship Experience

Fuburg company, Taiwan

Jun. 2020 – Sep. 2020

Intern

- Experiment and improvement on superabsorbent polymer product
- competitor analysis and data collection of company product

Leadership Experience

Piano club in Chang Gung University

Sep. 2018 – Sep. 2019

Vice Director

- host university Piano recital
- held a volunteer program and piano recital in Chang Gung Health and Culture Village