POLYTECHNIQUE MONTRÉAL
TECHNOLOGICAL UNIVERSITY

**Mohammad Khodabandehloo**
Email: mohammad.khodabandehloo@polymtl.ca
**LinkedIn**: www.linkedin.com/in/mohammad-khodabandehloo

## Education

- PhD, Chemical Engineering, Polytechnique Montreal, Montreal, Canada (**GPA: 4/4**). Since 2020
- M.Sc., Process Design-Chemical Engineering, University of Tehran, Tehran, Iran (**GPA: 3.88/4**). 2016-2018
- B.Sc., Chemical Engineering, Sharif University of Technology, Tehran, Iran (**GPA: 3.57/4**). 2012-2016

## Research and Work Interest

- Process modeling and simulation, process optimization, process design, fluidization and multiphase systems, mineral processing, urban mining, water and wastewater treatment, CFD and CFD-DEM modeling, membrane separation, waste conversion.

## Papers and Books

- Comparative process modeling and techno-economic evaluation of renewable hydrogen production by glycerol reforming in aqueous and gaseous phases, "Published-Energy Conversion and Management journal"
- Developing decision flowcharts and design considerations of reverse osmosis desalination plants for producing drinking water, "Accepted - international journal of environmental science and technology"
- Modular Simulation of a Fluidized Bed Membrane Reactor for Energy Applications, "Published- ENTECH 19"
- The economic feasibility study of Solar and fossil fuel Multi-Effect Desalination (in Persian), "Published-SUT"

## Work Experience

- K-UTEC, located in Germany as an intern in R&D team (2019). 3 months

*Main achievements:*

1. Experimental Analysis of different Membrane Separation in laboratory scale.
2. Optimization and Modeling of pilot plant of Membrane Separation.
3. Modeling of scaled up Nano Filtration System.
4. Thermal Design of Membrane Distillation.

- Member of R&D and Engineering team at MAPSA Company (2017). 10 months

*Main Achievements:*

1. Basic Design of Reverse Osmosis system, pretreatment, and post treatment.
2. Decision Analysis of the best method of desalination for each case.
3. Visiting and investigation of the best location for constructing a RO plant
4. Being part of a project management team

- Niroo Research Institute, Chemical and Process Engineering Department, in R&D team (2018). 7 months

*Main Achievements:*

1. Feasibility study and Techno Economic Analysis of Hydrogen as Renewable Energy.
2. Designing and experimental analysis of photo-catalytic reactor for conversion of $CO_2$ into fuel.

- Summer internship at Nafte Pars Mini-Refinery (2016). 3 months

*Main Achievement*: Experiencing working condition and operation of all units in a mini refinery.

## Programming and Computer skills

- MATLAB, Python.
- COMSOL Multiphysics, Ansys Fluent, Aspen and HYSYS, Aspen Exchanger Design and Rating, UniSim

## Selected Academic and Research Projects

- CFD modeling of hydrodynamic and kinetic behavior of fluidized bed with Ansys Fluent.
- CFD modeling of wind turbine with Ansys Fluent.
- CFD modeling of turbulent flow around the sphere and inside the tube with Ansys Fluent.
- CFD modeling of multiphase flow through the porous media with Ansys Fluent.
- Analysis of the thermodynamic properties of the mixtures with MATLAB.
- Numerical Analysis of 3D non-stationary heat conduction with MATLAB.
- Numerical Analysis of Fluid Flow and Heat Transfer in rectangular Microchannels with MATLAB
- Analytical and Numerical Analysis of conduction heat transfer for copper with MATLAB.
- Numerical Analysis of Conduction and Convection heat transfer in a tube with MATLAB.
- Othello game (Reversi) developed in Pascal.
- Simulation of a VCM plant by Aspen plus.
- Various mini projects with Aspen Plus and Aspen HYSYS.
- Thermal design of a Shell and Tube Heat Exchanger.
- Hydraulic design of a Distillation Tower.
- Design of a Cooling Tower.

## Awards and Honors

- **Rank 24** (more than 7,000 participants) in Nation-Wide Master Entrance exam of Iranian National University, in Chemical Engineering.
- **Top 0.5%** (around 260,000 participants), Nation-Wide Entrance exam of Iranian National Universities.

## Selected Courses at University

- Selected topics in transport phenomena (100/100), Computer Programming (94/100), Applied & Numerical Mathematics in Entrance Exam of MSc (85/100), Advanced Engineering Mathematics (89.5/100), Fluid Mechanics (85.5/100), Mass transfer (82.5/100), Advanced Mass transfer (82.5/100), Mineral processing (100/100), Computer aided Advanced Process Simulation (86/100), Chemical engineering thermodynamic (82/100), Advanced Chemical engineering thermodynamic (81/100), Industrial Unit Operation (90/100), Instrument and measurement systems (91.2/100), Designing of mass transfer and heat transfer equipment (91.5/100), Applied Heat Transfer (85/100), Pinch Technology (90/100), Exergy Analysis (94/100), Fundamental of electrical engineering (91/100), Petroleum lab (91/100), General chemistry lab (93/100), Fundamental of polymer engineering (90/100), Applied project management (87.5/100), Pre-feasibility study (85/100)

## Languages

- English: TOEFL iBT 100/120 (Reading: 27, Listening : 23, Speaking : 25, Writing :25 )
- Persian: Native
- French: Elementary
- Azari: Working proficiency