

## EDUCATION

Sept. 2015– Present	<b>Carnegie Mellon University</b> Pittsburgh, PA <ul style="list-style-type: none"> <li>Master of Science in Chemical Engineering</li> <li><b>Overall GPA: 3.95/4, Major GPA: 4/4</b></li> <li>Selected Courses: analysis and modeling of transport phenomenon, process systems modeling, mathematical modeling of chemical engineering processes, molecular simulation</li> </ul>
Sept. 2011– Jul. 2015	<b>Dalian University of Technology</b> Dalian, China <ul style="list-style-type: none"> <li>Bachelor of Science in Chemical Engineering and Technology</li> <li><b>Overall GPA: 90.4/100, Major GPA: 91.1/100</b></li> <li>Selected Courses: thermodynamics, unit operation, chemical reaction engineering</li> </ul>

## RESEARCH &amp; INDUSTRIAL EXPERIENCE

Jan. 2016– Present	<b>Graduate Thesis</b> Carnegie Mellon University, PA <ul style="list-style-type: none"> <li>—Study of machine learned atomic metal potential energy surface</li> <li>Implemented density functional theory (DFT) and nudged elastic band (NEB) calculations using Vienna <i>Ab initio</i> Simulation Package (VASP).</li> <li>Applied a high dimensional neural networks (NN) method to model Pd potential energies surface and performed large time scale molecular dynamics (MD) simulations.</li> <li>Achieved an excellent accuracy of modeling ground and transit state potential energies at a speed several order faster than DFT calculations.</li> </ul>
Mar. 2016– May 2016	<b>Course Project</b> Carnegie Mellon University, PA <ul style="list-style-type: none"> <li>—Optimization of profit for Aspirin manufacture process</li> <li>Simulated Aspirin manufacture process in ASPEN and optimized profit using GAMS.</li> <li>Implemented a PID controller on the crystallizer to stabilize reactor temperature.</li> </ul>
Sept. 2014– May 2015	<b>Undergraduate Thesis</b> State Key Laboratory of Fine Chemicals, China <ul style="list-style-type: none"> <li>—Study on coated bimetallic nanocatalyst preparation and application</li> <li>Prepared silica coated CuNi bimetallic nanoparticles from reverse microemulsion by modified co-reduction method and characterized particles composition, size and morphology.</li> <li>Investigated catalysis activities of various compositions and sizes for <i>p</i>-nitrophenol reduction.</li> <li>Enhanced catalytic activity and selectivity compared to monometallic particles and studied bimetal synergetic effects.</li> </ul>
Apr. 2013– May 2014	<b>Research Assistant</b> State Key Laboratory of Fine Chemicals, China <ul style="list-style-type: none"> <li>—Highly enhanced photocatalytic activity of Ag/AgCl/TiO<sub>2</sub> by CuO co-catalyst</li> <li>Synthesized TiO<sub>2</sub> coated Cu/Ag/AgCl nanoparticles in a reverse microemulsion system.</li> <li>Evaluated photocatalytic activity by degradation of methyl orange and phenol under visible light.</li> <li>Improved photocatalytic efficiency significantly and studied mechanism through band gap theory and surface plasma resonance.</li> </ul>
June 2014– July 2014	<b>Intern, Group Leader</b> Shenyang Research Institute of Chemical Industry, China <ul style="list-style-type: none"> <li>Simulated and optimized propylene-propane distillation process and designed affiliated facilities.</li> <li>Experimented in a diazols dye synthesis and studied the process of industrialized scale up.</li> </ul>

## SKILLS

**Lab techniques:** Gas chromatography-mass spectrometry (GC-MS), high performance liquid chromatography (HPLC), ultraviolet-visible spectroscopy (UV-vis), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD)

**Software:** VASP, Aspen Plus, Aspen Customer Model, GAMS, COMSOL Multiphysics, Simulink, Microsoft Office, ChemOffice, Origin

**Programming Language:** Python, Matlab, C,  $\text{\LaTeX}$

## PUBLICATIONS

- Yuzhen Ge, **Tianyu Gao**, Cui Wang, Rongwen Lu, "Highly Efficient Silica Coated CuNi Bimetallic Nanocatalyst from Reverse Microemulsion", Journal of Colloid and Interface Science, In Press
- Tianyu Gao**, John Kitchin, "Neural Network, a Machine Learned Method for Metal Potential Energy surface", expected submitting by the end of Oct.