

EDUCATION

Carnegie Mellon University	Pittsburgh, PA	Dec. 2016
<ul style="list-style-type: none"> Master of Science in Chemical Engineering Overall GPA: 3.95/4, Major GPA: 4/4 Selected Courses: Analysis and Modeling of Transport Phenomenon, Process Systems Modeling, Mathematical Modeling of Chemical Engineering Processes, Molecular Simulation 		
Dalian University of Technology	Dalian, China	Jul. 2015
<ul style="list-style-type: none"> Bachelor of Science in Chemical Engineering and Technology Overall GPA: 90.4/100, Major GPA: 91.1/100 Selected Courses: Thermodynamics, Unit Operation, Chemical Reaction Engineering 		

RESEARCH & INDUSTRIAL EXPERIENCE

Graduate Thesis	Carnegie Mellon University, PA	Jan. 2016–Present
<ul style="list-style-type: none"> Study of machine learned atomic metal potential energy surface Implemented density functional theory (DFT) and nudged elastic band (NEB) calculations using Vienna <i>Ab initio</i> Simulation Package (VASP). Applied a high dimensional neural networks (NN) method to model Pd potential energies surface and performed large time scale molecular dynamics (MD) simulations. Achieved an excellent accuracy of modeling ground and transit state potential energies at a speed several order faster than DFT calculations. 		
Course Project	Carnegie Mellon University, PA	Mar. 2016–May 2016
<ul style="list-style-type: none"> Optimization of profit for Aspirin manufacture process Simulated Aspirin manufacture process in ASPEN and optimized profit using GAMS. Implemented a PID controller on the crystallizer to stabilize reactor temperature. 		
Undergraduate Thesis	State Key Laboratory of Fine Chemicals, China	Sept. 2014–May 2015
<ul style="list-style-type: none"> Study on coated bimetallic nanocatalyst preparation and application Prepared silica coated CuNi bimetallic nanoparticles from reverse microemulsion by modified co-reduction method and characterized particles composition, size and morphology. Investigated catalysis activities of various compositions and sizes for <i>p</i>-nitrophenol reduction. Enhanced catalytic activity and selectivity compared to monometallic particles and studied bimetal synergetic effects. 		
Research Assistant	State Key Laboratory of Fine Chemicals, China	Apr. 2013–May 2014
<ul style="list-style-type: none"> Highly enhanced photocatalytic activity of Ag/AgCl/TiO₂ by CuO co-catalyst Synthesized TiO₂ coated Cu/Ag/AgCl nanoparticles in a reverse microemulsion system. Evaluated photocatalytic activity by degradation of methyl orange and phenol under visible light. Improved photocatalytic efficiency significantly and studied mechanism through band gap theory and surface plasma resonance. 		
Intern, Group Leader	Shenyang Research Institute of Chemical Industry, China	June 2014–July 2014
<ul style="list-style-type: none"> Simulated and optimized propylene-propane distillation process and designed affiliated facilities. Experimented in a diazols dye synthesis and studied the process of industrialized scale up. 		

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, \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 submission by the end of Oct.