

Vincent Zhu

Research engineer - University of Pennsylvania

Philadelphia, PA - Email me on Indeed: [indeed.com/r/Vincent-Zhu/ff913fae01a5f5ea](https://www.indeed.com/r/Vincent-Zhu/ff913fae01a5f5ea)

WORK EXPERIENCE

Research engineer

University of Pennsylvania - Philadelphia, PA - January 2012 to September 2012

- = Conducting experiments of Layer-by-Layer Nano-Encapsulation of microbes. Investigating the effects of biofilm growth based on presence of different types of polyelectrolyte clusters at capsule surface.
- = Evaluated the viability of the cells during LBL process, and analyzed the mechanism of bio-film growth, capsule architectures and stability. Determined how these aspects affect the recognition properties of system.
- = Cultivated algae in photobioreactor, measured ammonia/nitrite/nitrate/COD concentration, isolated nitrifying bacteria from activated sludge, and investigated the performance of an aerobic/anaerobic hybrid bioreactor under different C:N ratios and low F/M conditions.

Senior Design Projects Leader

University of Arizona - Tucson, AZ - August 2010 to May 2011

- = Designed and developed process improvements for refrigeration cycle, bio-diesel and wastewater treatment plants safety, quality, productivity, and energy efficiency by performing the engineering analysis and simulation on CHEMCAD.
- = Assessed the capital costs and net present values associated with the plant. Optimized the plant based on the economic analysis and tradeoffs that were made to arrive at the piece of equipment chosen, in order to improve the system performance and lower the cost.
- = Organized every weekly meeting, finalized the agenda, and divided work to each group member.
- = Experiences also includes use of process control (PID) equipment, control simulation in MATLAB Simulink, drawing P&ID and PFD, writing and analyzing HAZOP, and strong knowledge of OSHA standards, and EPA regulations.

Research engineer

University of Arizona - Tucson, AZ - January 2010 to May 2011

- = Prepared experiments to quantify the destruction of organic contaminants in water by using solar photolysis of hydrogen peroxide, and determined the viability of advanced oxidation processes for the degradation.
- = Improved UV/H₂O₂ processes by the optimization of key parameters such as light intensity and H₂O₂ dosages.
- = Developed a kinetics model by MATLAB to predict the degradation of target compounds in real UV industrial reactors.
- = Reviewed the effectiveness of wastewater treatment plants to remove organic trace contaminants. Reviewed laboratory, pilot and full-scale studies leading to evaluation of different treatment processes (biological, chemical and physical). This work was reported to Gary Klečka, science advisory board at The Dow Chemical Company, and prepared for the International Joint Commission. Co-authored two published papers.
- = Presented findings at the Graduate and Professional Student Council Showcase, and the Water Sustainability Program Water Forum in 2010.
- = Provided technical assistance to pilot plant operators. Supervised and trained 2 GK-12 high school science teachers, and a group of 8 GK-12 graduate students in laboratory procedures and use of equipment.

Tutor/Mentor - Worked

University of Arizona - ThinkTank - Tucson, AZ - September 2008 to May 2011

- = Worked in a team of 20 to answer undergraduate questions related to math, physics, and chemistry.
- = Provided one-on-one and group sessions to enable students to connect knowledge from the textbooks to real-life situations, and developed strong interpersonal communication skills by helping students achieve their goals through on-going support.
- = Mentored new incoming tutors with continued support either on problem solving or tutoring strategies, and led tutor enrichment sessions once a week.
- = Presented as Level III master tutor at Think Tank Tutor Panel to talk and share tutoring and mentoring experiences.

Research engineer

University of Arizona - Tucson, AZ - September 2007 to September 2008

- = Used computational chemistry approaches (Gaussian 98) to investigate gas-phase reactions of potential hydrofluoroether degradation byproducts thought to generate environmental harm. Evaluated heat of reaction data.
- = Investigated novel chemicals being introduced into use through intensive peer reviewed literature surveys.

Engineering Ambassador

University of Arizona - 北京市 - June 2008 to July 2008

- = Educated and advised middle and high school students about the diversity of engineering studies.
- = Demonstrated various projects such as enthalpy of neutralization and Pka of an indicator; used visually based acid-base chemistry indicators to train 40 students in fundamental chemistry principles; instructed students on the effects of concentration on rates of reaction in a hands-on chemistry laboratory; collaborated with 3 team members to safely manage chemical hazards with novice users.

EDUCATION

Master of Science in Chemical and Biomolecular Engineering

University of Pennsylvania - Philadelphia, PA

2011 to 2012

Bachelor of Science in Chemical and Environmental Engineering

University of Arizona - Tucson, AZ

2007 to 2011

SKILLS

HMS Series Slide Stainer, Ellipsometer, Electron microscope, Sonicator, UV-VIS, GC-MS, ICP-MS, HPLC, Spectrofluorometer, TLC, Column Chromatography, GC, IR, NMR, Autoclave, Osmometer, PH meters, Analytical balances, Centrifuge, Batch Reactor, CSTR, PFR, Heat exchanger, Distillation column, Reverse osmosis, Titration. Advanced oxidation processes, Layer-by-layer deposition, Cell/Algae culturing, Isolation of nitrifying bacteria from activated sludge, Ammonia/Nitrate measurement. Computer: C programming, HTML, Visual Basic, MATLAB, CHEMCAD, Solid Works, Gaussian 98 Microsoft Access, Excel, FrontPage, PowerPoint, Visio, Word Adobe After Effects, Photoshop, Premiere; Sony Vegas, Cinema 4D, FL Studio
Languages: Fluent in English and Mandarin

AWARDS

University of Arizona, College of Engineering, Academic Distinction

January 2007

University of Arizona, College of Engineering, Academic Distinction

January 2008

University of Arizona, College of Engineering, Academic Distinction

January 2009

University of Arizona Honor student (Cum Laude and Honors)

January 2011

Loerpabel, William H Scholarship

January 2011

Tucker, Harriet M Scholarship

January 2011

Laura and Arch Brown Honors Scholarship

January 2011

CERTIFICATIONS

College Reading and Learning Association Master Tutoring Certificate, Certified Tutor Level III

2011 to Present

PUBLICATIONS

Advanced Oxidation of Trace Organics in Water by Hydrogen Peroxide Solar Photolysis

October 1, 2011

Mario R. Rojas, Cary Leung, Daniel Whitley, Yan Zhu, R.G. Arnold, and A.E. Sáez, Advanced Oxidation of Trace Organics in Water by Hydrogen Peroxide Solar Photolysis, Ind. Eng. Chem. Res., 50 (22), 12479–12487 (2011).

Assessment of the Effectiveness of Secondary Wastewater Treatment Technologies to Remove Trace Chemicals of Emerging Concern

Mario R. Rojas, Cary Leung, Fabian Bonk, Yan Zhu, Leah Edwards, R.G. Arnold, and A.E. Sáez, Assessment of the Effectiveness of Secondary Wastewater Treatment Technologies to Remove Trace Chemicals of Emerging Concern, In review.

ADDITIONAL INFORMATION

Computer: C programming, HTML, Visual Basic, MATLAB, CHEMCAD, Solid Works, Gaussian 98

Microsoft Access, Excel, FrontPage, PowerPoint, Visio, Word

Adobe After Effects, Photoshop, Premiere; Sony Vegas, FL Studio

Languages: Fluent in English and Mandarin

PROFESSIONAL SOCIETIES:

American Institute of Chemical Engineers, member since 2007

Tau Beta Pi Engineering Honor Society, member since 2009

Omega Chi Epsilon Chemical Engineering Honor Society, member since 2009

Sigma Alpha Lambda, National Leadership and Honors Organization, member since 2008

ACTIVITIES/INTERESTS:

The Graduate and Professional Student Council Showcase 2010, presenter

The Water Sustainability Program Water Forum 2010, presenter

Freestyle slalom skating, snowboarding, table tennis, swimming, making static and radio-controlled model, cooking