SUNSHINE ZHOU

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Allen, TX 75013

EDUCATION

Massachusetts Institute of Technology (MIT) *Cambridge, MA*

Candidate for B.S. in Chemical Engineering, June 2011
Candidate for B.S. in Physics, June 2011
Cumulative GPA: 4.6/5.0 Chemical Engineering GPA: 4.8/5.0 Physics GPA: 4.3/5.0
Relevant coursework:
Chemical Engineering: Polymers Laboratory, Distillation and Separations, Reactor Design, Chemical Engineering Project Laboratory, Transport Processes, Chemistry Lab, Introduction to Sustainable Energy, Chemical Engineering Thermodynamics, Fluid Mechanics, Thermodynamics and Kinetics, Introduction to Chemical Engineering, Organic Chemistry, Principles of Chemical Science
Physics: Physics Laboratory, Physics of Energy, Quantum Mechanics, Thermodynamics and Statistical Mechanics, Vibrations and Waves, Introduction to Special Relativity, Electricity and Magnetism
Other: Introductory Biology, Multivariable Calculus, Differential Equations

Plano Senior High School *Plano, TX*

GPA: 4.51/4.0; Graduated 5 out of 1250, June 2007

EXPERIENCE

Mar 2010 – present **Characterization of Dye-Sensitized Solar Cells** *Hammond Lab, MIT, Cambridge, MA*
Experimented with layer-by-layer coated meshes while varying different parameters (thickness, pH of layers, pore sizes, etc.) to optimize the electrical current harvested from a dye-sensitized solar cell.

Jun – Aug 2010 **Bubble Movement in Thermocapillary Microfluidics** *Tabeling Lab, ESPCI, Paris, France*
Investigated thermocapillary effects on bubble movement in microfluidic systems of different shapes and sizes. Parameters varied include surfactant concentration, velocity of moving bubble, direction of motion, dilation effects, bubble injection method. Attempted to quantitatively describe bubble movement.

Jun – Aug 2009 **Catalyst Characterization for Desulfurization of Jet Fuels** *Aerodyne Research Inc., Billerica, MA*
Reviewed literature and investigated activated carbon catalyst effectiveness in oxidative desulfurization of jet fuels using a GC/MS. Performed Boehm titrations on various catalysts to characterize surface properties.

Jun 08 –May 09 **Investigating Parameters in Powder Blending** *Cooney Lab, MIT, Cambridge, MA*
Blended caffeine, acetaminophen, and excipients at different parameters to see how blend uniformity and residence time are affected. Tested dissolution properties of tablets made of caffeine and polyethylene glycol.

May – Aug 2006 **Enantioselectivity of Biocatalysts** *Southern Methodist University, Dallas, TX*
Transformed bacteria and purified enzymes to be used in the biocatalysis of aldo-keto reductases. Studied the enantioselectivity of different enzymes with different substrates and temperatures and was responsible for transforming, growing, and harvesting cells and purifying the proteins.

EXTRACURRICULARS

MIT: Habitat for Humanity Executive Board, Women's Initiative, Chemical Engineering Associate Advisor, Chemical Engineering Tutor, volunteer SAT II teacher

AWARDS

2007 **Intel Science Talent Search Semifinalist**
Paper: "The Effect of Temperature on Enantioselectivity and Specific Activity of an Alcohol Dehydrogenase"

2006 **Siemens Westinghouse Competition Semifinalist**
Paper: "The Effect of Temperature on Enantioselectivity and Specific Activity of an Alcohol Dehydrogenase"

2003-2007 **American Mathematics Competition**
Qualified for American Invitational Mathematics Examination (AIME)

SKILLS

Computer: MatLab, Microsoft Office, Aspen
Laboratory: Gas Chromatography, Mass Spectrometer, Double Screw Extruder, Near Infrared Spectrometer, Protein and DNA Gel Electrophoresis, Column Filters