

ALLEN HJ YANG

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OBEJECTIVE Obtain a research and development position working on chemical engineering, biomedical and/or nanotechnology applications.

EDUCATION **Cornell University**, Ithaca NY
Ph. D. - Chemical Engineering: Expected May 2010, GPA: 3.5
M. S. - Chemical Engineering: Jan. 2008
Carnegie Mellon University, Pittsburgh PA, GPA: 3.4
B. S. - Chemical Engineering: May 2005
Minor: Biomedical Engineering
Minor: Colloids, Polymers, and Surfaces

**RESEARCH/
WORK
EXPERIENCE** **Graduate Research Assistant** **Nov. 2005 – Present**
Cornell University, Ithaca, NY
Supervisor: Prof. David Erickson
Dissertation Project: Integrated Optofluidic Transport Architectures

- Developed prototype microfluidic-phonic Lab-on-a-chip devices for micro/nano scale optical transport using planar waveguiding structures.
- Created devices capable of trapping and transporting objects ranging in size from 3 micrometers to 50 nm single DNA biomolecules using only optical forces.
- Published research in high impact scientific journals including: **Nature magazine**, Nano Letters, and Optics Express.
- Research highlighted by scientific media including: National Science Foundation, Nature Methods, Cornell Chronicle, Lab-on-a-chip, Analytical Chemistry, Science Daily, New Scientist, and the Optical Society of America.

Research Assistant **Summer 2004**
Research Experience for Undergraduates (REU), Cornell University, Ithaca, NY
Supervisor: Prof. Abraham Stroock
Research Project: Fabrication and Assembly of Non-spherical Colloids for Self-Assembly

- Designed and implemented fabrication scheme for cylindrical polymeric colloids.
- Investigated assembly and interaction of colloids in surfactant/polymer system.

Undergraduate Researcher **Spring 2004 – Fall 2005**
Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA
Supervisor: Prof. Robert Tilton
Project: Colloidal aggregation with Poly acrylic acid (PAA) adsorption

- Investigated suspension stability of colloidal silica modified by PAA adsorption.

Demi Grand Pilot Plant Intern **Summer 2003**
L'oréal USA Research and Development, Clark, NJ
Project: Implementing cGMP protocols

- Developed procedures for integrating Demi-Grand pilot plant with cGMP regulations.
- Assisted in daily operation of the pilot plant mixing formulations including: powders, gels, solids, and creams.

SKILLS **Technical:** Microfluidics, Visible and NIR optics, Microfabrication: photolithography, etching, SEM
Software: Microsoft Office, Matlab, MathCAD, SolidWorks, ImageJ, Mathematica, COMSOL
Multiphysics
Language: Conversant in mandarin Chinese

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TEACHING EXPERIENCE **Teaching Assistant** **Fall 2009**
Course: Mass and Energy Balances
Instructor: Prof. Susan Daniel

- Developing and implementing mid-term biotechnology project to introduce students to non-traditional applications.
- Responsibilities include: Delivering guest lectures and managing teaching assistant staff of 7.

Teaching Assistant **Spring 2008**
Course: Intro to Process Dynamics and Control
Instructor: Prof. James Engstrom

- Held weekly office hours and review sessions for a class of 90 students.

ACTIVITIES/HONORS CERC Committee Website and Marketing Co-Chair **July 2008 – April 2009**
Research Poster Award: **June 2007**
 Cornell NanoScale Science & Technology Facility 30th Anniversary Convocation
American Society of Mechanical Engineers **2007 – Present**
American Institute of Chemical Engineering **2005 – Present**

SELECTED PUBLICATIONS

- **Yang, A. H. J.**, Lerdsuchatawanich, T., Erickson, D., “Forces and Transport Velocities for a Particle in a Slotted Waveguide,” *Nano Letters*, 9, 3, 1182-1188 (2009).
- **Yang, A. H. J.**, Moore, S. D., Schmidt, B. S., Klug, M., Lipson, M., Erickson, D., “Optical Manipulation of Nanoparticles and Biomolecules in Sub-Wavelength Slot Waveguides,” *Nature*, 457, 71-75 (2009).
- **Yang, A. H. J.**, Erickson, D., “Stability analysis of optofluidic transport on solid-core waveguiding structures,” *Nanotechnology*, 19, 045704 (2008).
- Erickson, D., **Yang, A. H. J.**, “Optofluidic Trapping and Transport Using Photonic Devices” in *Optofluidics* (S. Fainman, L. Lee, D. Psaltis, C. Yang Eds.), McGraw Hill, (2008).
- Schmidt, B. S., **Yang, A. H. J.**, Erickson, D., Lipson, M., “Optofluidic trapping and transport on solid core waveguides within a microfluidic device,” *Optics Express*, 15 (22), 14322-14334, (2007).

CONFERENCE PRESENTATIONS

- **Yang, A. H. J.**, “Nanoscale Optical Manipulation Using Integrated Optofluidic Waveguides”, *CNF Annual Meeting*, Ithaca, NY, September 2009. (**Invited**)
- **Yang, A. H. J.**, Schmidt, B., Lipson, M., Erickson, D., “Waveguide Based Particle Trapping on Integrated Microfluidic Devices” *AICHE Annual Meeting*, Salt Lake City, Utah, November 2007.
- **Yang, A. H. J.**, Schmidt, B., Mandal, S., Lipson, M., Erickson, D., “Optofluidic Transport - Optical Waveguides as Microfluidic “Train Tracks” *ASME International Mechanical Engineering Congress and Exposition*, Seattle, Washington, November 2007.
- **Yang, A. H. J.**, Mandal, S., Erickson, D., “Micro and Nanofluidic Transport Using Advanced Photonic Devices.” *2006 ASME International Mechanical Engineering Congress and Exposition*, Chicago, Ill., Nov. 2006.
- **Yang, A. H. J.**, Erickson, D., “Finite Element Analysis of Coupled Nanofluidic Dynamics and Silicon-on-Insulator Particle Trapping” *IEEE/LEOS Summer Topical on Optofluidics*, Quebec City, July 2006.