



Cornell University

**Aram Jongnam Chung**

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## **EDUCATION**

**Cornell University**, Ithaca, NY, USA (Dec. 2010 expected)

**Ph.D.** Candidate in Mechanical Engineering / Minor: Biomedical Engineering

Sibley School of Mechanical and Aerospace Engineering

Dissertation: "Microfluidically Enabled Biological and Photonic Systems"

Supervisor: Prof. David Erickson

**Cornell University**, Ithaca, NY, USA (Aug. 2009)

**M.Sc.** in Mechanical Engineering

Sibley School of Mechanical and Aerospace Engineering

Supervisor: Prof. David Erickson

**Seoul National University Seoul**, Republic of Korea (Feb. 2006)

**B.Sc.** in Mechanical and Aerospace Engineering

Department of Mechanical and Aerospace Engineering

## **RESEARCH & WORK EXPERIENCE**

**Research Assistant** (Nov. 2006 – present)

Integrated Micro- and Nanofluidic Systems Lab, Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY

Research Topics:

Microfluidic Control over Insect Flight/Neuromuscular Locomotion

Implantable Microfluidic Devices for Autonomous Microsystems

Optofluidic Waveguides for Reconfigurable Photonic Systems

Optofluidic Electroactive Microwell based Surface Enhanced Raman Spectroscopy (SERS) Devices

**Undergrad Researcher** (Mar. 2005 – Dec. 2005)

Digital Automotive Lab, AARC (Advanced Automotive Research Center) in Seoul National University, Seoul, Republic of Korea

Research Topic: 1D Simulation of premixed hydrogen combustion by HCCI (Homogeneous Charge Compression Ignition)

**Trainee** (Jan. 2005)

Samsung Electronics–Seoul National University Collaborative Industrial Academic Program, Samsung High Technology Training Center, Suwon, Republic of Korea

Project: Optimization and analysis of stress distribution of Samsung cellular phones

**Summer Intern** (Jul. 2004 – Aug. 2004)

SK Computer & Communication, Seoul, Republic of Korea

Project: IT outsourcing / System Integration / Consulting over developing new CRM (Customer Relationship Management) systems

**Administrative Clerk** (71L) (May. 2001 – May. 2003)

U.S. Armed Forces, Orderly Room, HHC (Headquarters Headquarters Company), 19th TSC (Theater Support Command), EUSA (Eighth United States Army), Camp Walker, Republic of Korea, Honorable discharge from the Army as a Non-Commissioned Officer, Sergeant (E5)

## **TEACHING EXPERIENCE**

**Teaching Assistant** (Aug. 2008 – Dec. 2008 / Aug. 2009 – Dec. 2009)

Full-time Teaching Assistant, Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca NY

Course: Introductory Fluid Mechanics (MAE 3230)

Instructor: Prof. Charles Williamson

Responsibilities: Holding office hours, conducting weekly recitations, class demonstrations, and grading duties for a class of over 100 undergraduate students

## **JOURNAL PUBLICATIONS**

**Chung, A. J.**, Huh, Y. S. and Erickson, D., “A robust, electrochemically driven microwell drug delivery system for controlled vasopressin release”, *Biomedical Microdevices*, 11, 861-867 (2009)

**Chung, A. J.** and Erickson, D., “Engineering insect flight metabolics using immature stage implanted microfluidics”, *Lab-on-a-Chip*, 9, 669-676, (2009)  
(Featured as a "hot article" in "Lab on a Chip" journal, Spotlighted in "Chemistry World" magazine on January 2009 issue, and Spotlighted in "TCE today" magazine)

Huh, Y. S., **Chung, A. J.** and Erickson, D., “Review: Surface enhanced Raman spectroscopy and its application to molecular and cellular analysis”, *Microfluidics and Nanofluidics*, 6, 285-297 (2009)

Huh, Y. S., **Chung, A. J.**, Cordovez, B. and Erickson, D., “Enhanced on-chip SERS based biomolecular detection using electrokinetically active microwells”, *Lab-on-a-Chip*, 9, 433-439, (2009)

**Chung, A. J.**, Kim D. and Erickson, D., “Electrokinetic microfluidic devices for rapid, low power drug delivery in autonomous microsystems”, *Lab-on-a-Chip*, 8, 330-338, (2008)

## **CONFERENCE PROCEEDINGS**

**Chung, A. J.**, Jung, E., and Erickson, D., “A new form of reconfigurable photonic material using optofluidic waveguides”, Micro-Total Analysis Systems (*microTAS*) 2009: The 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Jeju, Republic of Korea, November 2009

**Chung, A. J.**, Cordovez B., Reissman T., MacCurdy, R., Garcia, E. and Erickson, D., “Chemically controlled insect cyborgs using implantable multi-reservoir microfluidic device”, Micro-Total Analysis Systems (*microTAS*) 2009: The 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Jeju, Republic of Korea, November 2009

Huh, Y. S., Lowe, A. J. **Chung, A. J.**, Cordovez, B., Strickland, A. D., Batt, C., and Erickson, D., “Optofluidic surface enhanced Raman scattering based detection of single nucleotide polymorphism”, Micro-Total Analysis Systems (*microTAS*) 2009: The 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Jeju, Republic of Korea, November 2009

Huh, Y. S., Lowe, A. J. **Chung, A. J.**, Cordovez, B., Strickland, A. D., Batt, C., and Erickson, D., “Surface Enhanced Raman Scattering Based Biomolecular Sensing Techniques in Optofluidic Device”, American Institute of Chemical Engineers (*AIChE*) Annual Meeting, Nashville, TN, November 2009

**Chung, A. J.** and Erickson, D., “Microfluidic control of insect neuromuscular systems”, American Institute of Chemical Engineers (*AIChE*) Annual Meeting, Philadelphia, PA, November 2008

**Chung, A. J.** and Erickson, D., “Microfluidic control of insect Micro-Air-Vehicle”, American Society of Mechanical Engineers-International Mechanical Engineering Congress and Exposition (*ASME-IMECE*), Boston, MA, October 2008

Huh, Y. S., **Chung, A. J.**, Cordovez, B. and Erickson, D., “Optofluidic surface enhanced Raman scattering chip for detection of dengue virus”, American Society of Mechanical Engineers-International Mechanical Engineering Congress and Exposition (*ASME-IMECE*), Boston, MA, October 2008

**Chung, A.**, Kim D., Chen, L., Akhmechet, R., Cordovez, B. and Erickson, D., “Electroactive microfluidic devices for control of insect cyborg neuromuscular systems”, Micro-Total Analysis Systems (*microTAS*) 2007: The 11th International Conference on Miniaturized Systems for Chemistry and Life Sciences, Paris, France, October 2007 (**Podium**)

## **OTHER PRESENTATIONS**

**Chung, A. J.** and Erickson, D., “Fluid Dynamically Reconfigurable Photonics and Matter”, Lockheed Martin Nanotechnology Workshop, *Cornell University*, Ithaca, NY, August 2009

**Chung, A. J.** and Erickson, D. “Microfluidic devices for engineering insect locomotor activity”, Cornell Engineering Research Conference (CERC), *Cornell University*, Ithaca, NY, April 2009

**Chung, A.**, Kim D., Chen, L., Akhmechet, R., Cordovez, B. and Erickson, D., “Electroactive microfluidic devices for control of insect cyborg neuromuscular systems”, The Future of Nanotechnology: Cornell Nanoscale science & technology Facility (CNF) 30th Anniversary Symposium, *Cornell University*, Ithaca, NY, June 2007

## INVITED TALKS

### **Chung, A. J.**

Insect-Micro Air Vehicles enabled by Microfluidic Technologies, *Konkuk University*, Seoul, Republic of Korea, January 2009

### **Chung, A. J.**

SiGMA (*Sibley Graduates in Mechanical and Aerospace Engineering*) Student Seminar, "Electrokinetic microfluidic drug delivery devices for chemical control of insect cyborg neuromuscular systems", *Cornell University*, Ithaca, NY, April 2008

## AWARDS / HONORS / FELLOWSHIPS

### **Grand Prize for the poster at ASME 3rd Micro/Nanotechnology Society-wide Forum**

Grand Prize for the poster at ASME 3rd Micro- and Nanotechnology Society-wide Forum, IMECE, Boston, MA, October 2008

### **Samsung Human-Tech Thesis Prize, Silver Prize**

Selected for a creative and driven young scientist who will lead the field of science into the future and increase the awareness of the importance of technology in society  
Samsung Electronics, Seoul, Republic of Korea, February 2008  
(Cash Prize: ~\$5,000)

### **Best Poster Award at CNF 30th Anniversary Symposium**

The Future of Nanotechnology: Cornell Nanoscale science & technology Facility (CNF) 30th Anniversary Symposium, Cornell University, Ithaca, NY, June 2007  
(Cash Prize: \$250)

### **McMullen Fellowship**

One-year fellowship for 2006-2007 which includes a 12-month stipend of \$24,900, full tuition of \$32,800 and university-funded health insurance coverage valued at \$1,346 per year (Total: \$59,106), Cornell University, Ithaca, NY, August 2006

### **Graduation Honor**

Seoul National University, Seoul, Republic of Korea  
February 2006

### **Academic Honor Scholarships (8 semesters)**

Merit-based scholarship, Seoul National University, Seoul, Republic of Korea  
Full tuition of \$ 2,478, Fall 2005  
Full tuition of \$ 2,574, Spring 2005  
Full tuition of \$ 2,297, Fall 2004  
Full tuition of \$ 2,440, Spring 2004  
Full tuition of \$ 1,716, Spring 2001  
Full tuition of \$ 1,684, Fall 2000  
Full tuition of \$ 1,366, Spring 2000  
Full tuition of \$ 1,625, Fall 1999

## **SOCIETY MEMBERSHIPS**

Student Member, American Society of Mechanical Engineers (ASME)  
Student Member, American Institute of Chemical Engineers (AIChE)

## **LEADERSHIP EXPERIENCE**

Research mentor  
Donn D. Kim (November 2006-May 2007)  
Master of Engineering, Electrical and Computer Engineering, Cornell University Project: Design & Manufacture of an integrated, insect borne drug delivery system using electroactive microwell structures

## **LANGUAGES**

English (fluent written and spoken)  
Korean (fluent written and spoken)

## **REFERENCES**

David Erickson, Ph.D.  
Sibley School of Mechanical and Aerospace Engineering,  
Cornell University, Ithaca, NY, USA

Abraham Stroock, Ph.D.  
School of Chemical and Biomolecular Engineering  
Cornell University, Ithaca, NY, USA

Ephraim Garcia, Ph.D.  
Sibley School of Mechanical and Aerospace Engineering,  
Cornell University, Ithaca, NY, USA

Kahp-Yang Suh, Ph.D.  
School of Mechanical and Aerospace Engineering  
Seoul National University, Seoul, Republic of Korea