

# SHIN HUM CHO

## Address

100 E. 24th Street NHB 6.356  
Austin TX 78712

**Email:** shinhum@utexas.edu

## EDUCATION

### B.S.

#### **KAIST (Korea Advanced Institute of Science and Technology)**

Department of Chemical & Biomolecular Engineering Major (2009 ~ 2015)

Department of Chemistry Dual Major (2010 ~ 2015)

Graduation with Honors: Cum Laude

### Ph.D Student

#### **University of Texas at Austin**

McKetta Department of Chemical Engineering Graduate Program (2015 ~ Present)

Advisor: Professor Delia Milliron

Fulbright Scholarship Grantee (2015~2017)

## RESEARCH EXPERIENCE

### • Korea Institute of Science and Technology (KIST)

Natural Medicine Center Research Assistant · Gangneung, South Korea Nov 2012 – Feb 2013  
Advisor: Dr. Jungyeob Ham

- *Organic Chemistry*
- Marine Chemomics Laboratory; natural cancer drug synthesis.
- Total synthesis of Justicidine B bioactive natural organic compounds through Suzuki-Miyaura reaction; Synthesizing aryl-fluoroborate compound chemical library for compound modification

### • KAIST Electronic Nanomaterial & Devices Laboratory

Undergraduate Researcher · Daejeon, Korea Jul 2013 – Aug 2015  
Advisor: Professor Doh Chang Lee

- *Nanotechnology*
- Independent undergraduate research program; design stable and energy efficient electronic materials for display devices.
- Inorganic nanomaterials research for design and synthesis of oxidation stable quantum dots for QLED displays; Core-shell CdSe/ZnS/ZnO nanocrystal synthesis.
- CdSe/CdS dot-in-rod nanoparticle thermal stability studies.

### • Harvard-MIT Health Sciences & Technology, Wellman Center for Photomedicine

Student Research Intern · Boston, Massachusetts Jun 2014 - Aug 2014  
Advisor: Professor Seemantini Nadkarni

- *Laser Optics*
- Summer 2014 Biomedical Optics Program Student Intern; Optical thromboelastography (OTEG) research; Laser speckle imaging device for noninvasive detection of thrombosis.
- Blood coagulation parameter extraction through MATLAB in blood sample subjected to rivaroxaban factor X inhibitor and argatroban compounds.

- **KAIST ab initio Molecular Simulation Laboratory**

Undergraduate Researcher · Daejeon, Korea

Sep 2014 – Dec 2014

Advisor: Professor Woo Youn Kim

- *Computational Chemistry*
- Advanced Chemistry Lab Course; Computation of organic trioctylphosphine oxide ligand binding energy on CdS and ZnS dot-in-rod nanocrystal surface.

## PAST ENROLLED COURSES

- **Chemistry:**

Physical Chemistry I, II,  
Molecular Spectroscopy  
Quantum Chemistry  
Advanced Quantum Mechanics  
Physical Organic Chemistry  
Organic Chemistry I, II  
Organic Synthesis I  
Biochemistry  
Molecular Biology  
Inorganic Chemistry I  
Advanced Inorganic Chemistry  
Analytical Chemistry  
Chemistry Major Lab

- **Chemical Engineering:**

Chemical and Biomolecular Engineering Analysis  
Thermodynamic and Energy Systems  
Reaction Engineering  
Heat and Molecular Transfer  
Fluid Mechanics  
Nanochemical Technology  
Nanobiotechnology  
Chemical and Biomolecular Engineering Laboratory  
Molecular Engineering Laboratory  
Macromolecular Engineering  
Materials Science and Engineering  
Process Simulation and Control  
Introduction to Programming

## TECHNICAL SKILLS

### Experimental Skills:

- *Nanocrystals*: Visible light emitting CdSe quantum dot, CdSe/ZnS core shell QD, Alloyed CdSeS core shell QD, CdSe/CdS dot-in-rod aspect ratio control, InP cadmium free QD, Hot-injection method, SILAR method, Stober method (SiO<sub>2</sub> nanoparticle), SERS active Ag nanoparticle
- *Organic Chemistry*: Natural compound total synthesis (Justicidine B), Aryl-fluoroborate compound, Palladium catalyzed Suzuki cross coupling reaction, Grubbs catalyst metathesis
- *Computational Chemistry*: Organic ligand binding energy computation (Gaussian, LANL08 Basis Set)
- *Process Engineering*: Process flow diagram design of tert-butanol production process with AspenPlus
- *Biochemistry*: Drug compound test in red blood cell (Argatroban, Rivaroxaban)

### Instrument Skills:

- *Instruments*: NMR, TEM, AFM, EDX, UV/IR, Raman Spectroscopy, PL Spectroscopy, DLS Spectroscopy, Ultrafast Laser Spectroscopy (TCSPC), HPLC, TLC, Column Chromatography, Cyclic Voltammetry, Laser Speckle Imaging, Thromboelastography
- *Programs*: AspenPlus, MATLAB, ChemDraw, Avogadro, GaussView, Gaussian, Python, C, Java

## AWARDS

- **Dean's List (KAIST Department of Chemical and Biomolecular Engineering)**, KAIST College of Engineering, Spring 2014
- **KAIST Undergraduate Research Project 2013, Award of Excellence**, *Ultra-stable CdSe/ZnS/ZnO Core Shell Quantum Dots for Next-Generation QD-LED Display Devices*
- **American Institute of Chemical Engineers, KAIST-AIChE Student Chapter President**, Academic Year 2014-2015
- **Korea Foundation for the Advancement of Science and Creativity (KOFAC)**, 2013 Life of a Scientist Exhibition Award

- **ICISTS-KAIST 2009, Best Team Project Award**, Nano Clinic Workshop
- **KAIST Freshmen Design 2009, Poster Award**, *Design of Emergency Shelter for Earthquake in Indonesia*
- **KAIST Department of Humanities and Social Sciences Best Paper Award 2013**, *How Anonymous (Dangerously) Saved Wall Street Hacktivism, and a Path to Safer Internet Social Movement*, Second Prize

## PUBLICATIONS

### Domestic Journals:

- Cho S, Lee S, "Ultra-stable CdSe/ZnS/ZnO Core Shell Quantum Dots for Next-Generation QD-LED Display Devices", 2013 Summer-Fall Undergraduate Research Participation Program, 2014, KAIST

### Poster Presentations:

- Cho S, Tshikudi D, Tripathi M, Nadkarni S, "Optical Thromboelastography for Monitoring Anticoagulant Dosing", Harvard-MIT HST Summer Institute for Biomedical Optics Program, 2014

## FUNDINGS & SCHOLARSHIPS

### Current:

- **Fulbright Scholarship**, Fulbright Foreign Student Program (2015~2016)
- **University of Texas at Austin Graduate Dean's Prestigious Fellowship Supplement** (2015 Fall ~ 2016 Summer)
- **Thomas H. and Dorothy M. Timmins Endowed Graduate Fellowship in Chemical Engineering** (2015 Fall)

### Past:

- **Korea Student Aid Foundation, National Scholarship** Recipient (Feb. 2009~ Nov. 2014)
  - Full Tuition Funding      KRW 27,000,000 (\$26,300)
  - Expense Support          KRW 4,160,000 (\$4,000)
- **KAIST Undergraduate Research Continuous Fund** (Feb. ~ Dec. 2014)
  - Research Funding        KRW 10,000,000 (\$9,750)
- **KAIST Undergraduate Research Project 2013** (Jun. ~ Nov. 2013)
  - Research Funding        KRW 1,500,000 (\$1,460)
  - Research Scholarship    KRW 1,000,000 (\$975)
- **Harvard-MIT HST, Wellman Center for Photomedicine Intern Support Fund**, KAIST Leadership Center, (Jun. ~ Aug. 2014) - Intern Support Funding    KRW 2,500,000 (\$2,400)

## CONFERENCES

- **Harvard-MIT HST Summer Institute for Biomedical Optics Poster Presentation**, 2014, Boston
- **Quantum Dots: Promises and Challenges**, 2013, Daejeon, South Korea
- **9<sup>th</sup> World Congress of Chemical Engineering**, 2013, Seoul, South Korea
- **KAIST Undergraduate Research Participation (URP) Program**, Research Presenter
- **KAIST / Oxford University / UC Irvine 2013 MOU**, Student Press Reporter/Interviewer
- **ICISTS-KAIST 2012**, Age of Integration: Beyond the Borders of Knowledge
- **ICISTS-KAIST 2010**, Sustainable Energy, Organization Committee
- **Korea Student Aid Foundation, 2010 Mentor Program**, Mentee for KAIST President Nam Pyo Suh
- **ICISTS-KAIST 2009**, Nano Clinic Workshop
- **International Presidential Forum 2009**, Challenges to Global Research Universities, Student Press Reporter
- **Harvard Project for Asian and International Relations 2009**, Understanding Security Issues in East Asia

## PROFESSIONAL SOCIETY

- **ICISTS-KAIST (Sustainable Energy Workshop)**

Coordination & Planning · Daejeon, Korea

Feb 2010 - Sep 2010

International Conference for Integration of Science and Technology into Society (ICISTS) conference organizer. International conference for technological and socio-economic aspects on sustainable energy technology.

- **The KAIST Herald**

Senior Staff Reporter · Daejeon, Korea

Feb 2009 - Jun 2015

Official English newspaper of Korea Advanced Institute of Science and Technology; Reporter for Interviews, News, and Science & Technology Section; Exclusive interviews and coverage: 2002 Noble Chemistry Prize Laureate Kurt Wüthrich, 2005 Nobel Chemistry Prize Laureate Robert H. Grubbs, Oxford University Vice Chancellor Andrew Hamilton.

- **AIChE Student Chapter**

President, Founding Member · Daejeon, Korea

Feb 2014 - July 2015

Advisor: Professor Doh Chang Lee

Founding member and President for AIChE (American Institute of Chemical Engineers) Student Chapter in KAIST. Engagement in International Sister Chapter with Massachusetts Institute of Technology (MIT). Projects include directing students competing in annual AIChE Chem-E-Car Competition.

## MILITARY SERVICE

- **ROK Army**

Sergeant Operations Staff · 23<sup>rd</sup> Division 1607 Battalion · Gangneung, Korea

Feb 2011 - Nov 2012

Regional military reserve forces management; Local municipal administration; Regional defense operation.

## LANGUAGE SKILLS

- GRE : Verbal 157/170, Quantitative 170/170, Analytical Writing 3.5/6.0
- TOEFL : 116/120 (Reading 30, Listening 30, Speaking 28, Writing 28)
- TOEIC : 990/990