Christine Cheng

Phone: (510)386-4123 Email: chengchr@usc.edu linkedin.com/in/christinexcheng

Education

University of Southern California, Los Angeles, CA **Aug 2015-present**
Ph.D. Student in Chemical Engineering, Advisor: Malancha Gupta
M.S. in Chemical Engineering, expected

California Institute of Technology, Pasadena, CA **Sep 2010-June 2014**
B.S., Chemical Engineering (Materials)

Work Experience

Gupta Polymers Lab, University of Southern California **Aug 2015-present**
Chemical Engineering Research Assistant

- Used initiated chemical vapor deposition (iCVD) to synthesize polymer thin film coatings on substrates
- Developed and optimized a novel technique for grafting (covalently attaching) hydrophilic and responsive polymer coatings onto hydrophobic substrates by using an oxygen plasma to generate surface free radicals, with applications for medical devices
- Coated 3D printed substrates with complex morphologies via iCVD, and demonstrated facile switching of surface hydrophilicity
- Characterized coatings using contact angle goniometry and X-ray photoelectron spectroscopy

Northrop Grumman Corporation, Space Systems Technology, Manhattan Beach, CA **Jan-Aug 2015**
Process Engineer in Microelectronics & Semiconductors

- Supported metal evaporation processes in the foundry, developed novel processes for evaporation of metals (W, Mo) requiring high evaporation power
- Optimized Au evaporation processes by working on evaporation mask development, thus doubling throughput and reducing Au usage ($1.5M/yr)
- Characterized metal layers using techniques including surface profilometry and sheet resistance measurement

Prof. Robert H. Grubbs (2005 Nobel Laureate) Research Group, Caltech **June 2013-June 2014**
Ronan Armaan Mack Summer Undergraduate Research Fellow

- Synthesized bio-inspired and reversible adhesive polymers for medical applications
- Developed polymers for wet adhesion, with cross-linkable and gel-forming functionalities

California Institute of Technology **Apr 2013-June 2014**
Howard Hughes Medical Institute Teaching Fellow, California Institute of Technology Teaching Fellow

- Supervised and evaluated undergraduate laboratory sections for chemical synthesis and characterization

Prof. Theodor Agapie Research Group, California Institute of Technology **Mar 2011-Nov 2012**
Sidney R. and Nancy M. Petersen Summer Undergraduate Research Fellow

- Investigated reactivity of molybdenum complexes supported by a *p*-terphenyl diphosphine pincer ligand

Edward W. Hughes Summer Undergraduate Research Fellow

- Designed and synthesized nickel complexes of novel redox-active protic ligands for CO_2 reduction

Peer-Reviewed Publications and Awards

- **Cheng, C.**; Gupta, M. "Surface functionalization of 3D-printed plastics via initiated chemical vapor deposition." *Beilstein J. Nanotehcnol.*, **2017**, *8*, 1629-1636.
- Buss, J.A.; Edouard, G.A.; **Cheng, C.**; Shi, J.; Agapie, T. "Molybdenum Catalyzed Ammonia Borane Dehydrogenation: Oxidation State Specific Mechanisms." *J. Am. Chem. Soc.*, **2014**, *136*, 11272-11275.
- Achievement Rewards for College Scientists Foundation Award, 2017

Skills

- Strong collaboration and teamwork abilities, dexterity in learning new fields
- Synthesis: initiated chemical vapor deposition, 3D printing, air-sensitive & micro/nanofabrication techniques
- Spectroscopy and chemical characterization: XPS, NMR, FTIR, GC, GPC, contact angle goniometry, ellipsometry
- Technical: MATLAB, Mathematica, C, Python, FORTRAN, COMSOL, HTML, MS Office, LaTeX