

Hyeonji Oh

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I believe that my responsibility as an engineer is to contribute to the greater good of the world and I have decided to devote myself to develop technologies for both improving human lives and the environment. For the past four years at Penn State, I acquired research skills as well as soft skills working as an undergraduate research assistant in Dr. Manish Kumar and Dr. Ralph Colby's lab, presenting my work, and getting involved in publishing papers. At UT Austin, I am continuing my research in designing and fabricating high performing membranes for water purification and exploring other solutions for energy/environmental challenges.

EDUCATION

Ph.D. Student

August 2019 - Present

Department of Chemical Engineering, The University of Texas at Austin, Austin, TX

Bachelor of Science

June 2014 – Dec 2018

Department of Chemical Engineering, The Pennsylvania State University, University Park, PA
Schreyer Honors College, The Pennsylvania State University, University Park, PA

Cumulative GPA: 3.96/4.00, Dean's list all semesters

RESEARCH EXPERIENCE

Research Assistant - Dr. Manish Kumar's Biomimetic membranes Lab

May 2017 – Present

Department of Chemical Engineering, The Pennsylvania State University, University Park, PA

- **Fabrication of thin-film composite membranes**

Fabricated thin-film composite membranes via interfacial polymerization and solvent-resistant support membranes via wet film casting / phase inversion

- **Development of a Detergent Scale for Enhanced Membrane Protein (MP) Purification**

Generated scale of size and relative hydrophobicity of commonly used surfactants for protein extraction and purification using fluorescence assay

- **Vesicle formation**

Fabricated hybrid lipid/block copolymer vesicles incorporating the light driven protein, halorhodopsin (pHR), to measure ion transport rate using a light-sensitive dye (pegylated MQAE) and a port-a-patch electrophysiological setup

Research Assistant - Dr. Ralph Colby's Rheology Lab

December 2015 – April 2017

Department of Material Science and Engineering, The Pennsylvania State University, University Park, PA

- **Rheological study of cellulose and chitosan solutions**

Studied rheological behavior of cellulose and chitosan in ionic liquids upon addition of water

PUBLICATIONS

1. Song, W., Tu, Y., **Oh, H.**, Samineni, L., Kumar, M. (2019). Hierarchical optimization for high performance biomimetic membranes, *Langmuir*, 35 (3), 589-607.
2. Feroz, H., Kwon, H., Peng, J., **Oh, H.**, Ferlez, B., Baker, C. S., ... & Kumar, M. (2018). Improving extraction and post-purification concentration of membrane proteins, *Analyst*, 143(6), 1378-1386.
3. Feroz, H., Ferlez, B., Ren, T., Baker, C.S., Brezovec, J., **Oh, H.**, ... & Kumar, M. (2018). Liposome-based measurement of light-driven chloride transport kinetics of halorhodopsin (co-author) – in preparation
4. **Oh, H.** (2019). Improving extraction, purification and evaluation of light-driven membrane proteins (Honors thesis)

PROFESSIONAL EXPERIENCE

Manufacturing Technology Co-op

January 2018 – June 2018

Bristol-Myers Squibb, Devens, MA

- Capability Analysis on Nova Bioprofile FLEX
- Lab-scale experiments to support upstream aspect of manufacturing process
- Historical Data Analysis using advanced statistical methods
- Lean Six Sigma Yellow Belt Certified

ADDITIONAL WORK EXPERIENCE

Proctor

August 2016 – May 2018

Department of Chemistry, The Pennsylvania State University, University Park, PA

Department of Mathematics, The Pennsylvania State University, University Park, PA

Grader

August 2016 - present

Department of Mathematics, The Pennsylvania State University, University Park, PA

Department of Chemical Engineering, The Pennsylvania State University, University Park, PA

Teaching and Administrative Assistant

November 2012 – May 2014, Summer 2015, Summer 2016

Miracle Language Institute - Korean English School, Daegu, Republic of Korea

- Lectured for students with different level of English proficiency, held office hours, graded homework and exams
- Managed financial operations and coordinated event schedules

PRESENTATIONS

- **Oh Hyeonji**, Enhancement of membrane proteins extraction and post-purification, AIChE Undergraduate Poster Competition, Pittsburgh, PA, October 2018
- **Oh Hyeonji**, Enhancement of membrane proteins extraction and post-purification, Future leaders in Chemical engineering symposium, North Carolina State University, October 2018
- **Oh Hyeonji**, Is Nova capable of measuring ammonium in media?, Bristol-Myers Squibb Co-Op poster session, Devens, MA, June 2018
- **Oh Hyeonji**, Kwon Hyeyoung, Detergent Selection Criteria for Enhanced Membrane Protein (MP) Purification, REU Summer Research Symposium, The Pennsylvania State University, August 2017
- Koscelansky Connor, **Oh Hyeonji**, James Robinson, Julie Vitola, Characterization of biodiesel fuel and the effects of anti-chelating additive in low temperature conditions, Chemistry Laboratories Poster Symposium, The Pennsylvania State University, May 2017
- **Oh Hyeonji**, Solutions of ionic liquids and chitosan, Undergraduate Research Symposium, The Pennsylvania State University, April 2017

AWARDS

- Larry Duda Research Award (LDUDA) **Fall 2018**
- Future Leaders in Chemical Engineering Award (A National Award Symposium for Undergraduates) **Fall 2018**
- Chemical Engineering Research Experience for Undergraduate Students (REU) Biofellowship **Summer 2017**
- College of Engineering Research Initiative (CERI) scholarship **Spring 2017**
- Special International Grant-in-Aid (SIGIA) **Spring 2017**
- Leighton and Lorene Riess Scholarship in Chemical Engineering (RIESL) **Fall 2016 - Spring 2018**

SKILLS

Technical Skills:

Bradford Protein Assay, Dynamic Light Scattering (DLS), Spectrophotometry, Fluorescence Assay, UV Spectroscopy, Gas Chromatography-Mass Spectroscopy (GC-MS), Nuclear magnetic resonance Spectroscopy (NMR), Infrared Spectroscopy (IR), Differential Scanning Calorimetry (DSC), Fluorescence spectroscopy, Laser photolysis, Luminescence spectroscopy, TFC (film casting) & solvent resistant membrane fabrication, Vesicle formation, BioProfile FLEX, Cedex Bio HT, Discovery Hybrid Rheometer 3

Software Skills:

Wolfram Mathematica, MATLAB, CAD SolidWorks, CAD SketchUp, Moldflow, Adobe Photoshop, Minitab, JMP, Discoverant