Sohum Patel
Phone: 708-518-9891 Email: sohum.patel@yale.edu

EDUCATION

Yale University **August 2018 - Present**
Ph.D. in Chemical and Environmental Engineering

University of Illinois at Urbana-Champaign **August 2013- May 2017**
Bachelor of Science in Chemical Engineering *GPA: 3.91/4.00*

WORK EXPERIENCE

Elimelech Research Group **August 2018-Present**
Graduate Research Assistant

- Assisted in full scale modeling to compare energy consumption of reverse osmosis and capacitive deionization (CDI)
- Investigating electrode materials and modifications for selective boron removal via CDI

Argonne National Laboratory **December 2017-August 2018**
Research Assistant

- Synthesized and characterized novel Li-ion battery cathode materials aimed at improving thermal stability
- Scaled up synthesis reactions in continuous stirred tank reactor to validate potential for high volume manufacturing
- Altered reactor process conditions and applied coatings and dopant materials to produce cathodes of varying properties

Cusick Research Group **June 2016-May 2017**
Undergraduate Research Assistant

- Investigated use of a microbial electrolysis cell (MEC) cathode as a method of pH regulation for nutrient recovery
- Designed and performed struvite precipitation experiments in a fluidized bed reactor using MEC alkali generation
- Demonstrated up to eight times cost savings from using MEC cathode for pH adjustment rather than chemical dosage
- Operated MEC with pulsed current to demonstrate potential for cathode scaling prevention and greater energy efficiency

Senior Design Project **January 2017- May 2017**

- Designed a 1.5 MGD capacity seawater desalination plant to alleviate drinking water scarcity in Southern California
- Determined and sized all equipment for seawater intake, pretreatment, reverse osmosis (RO), and post treatment
- Optimized RO system design with respect to power consumption and salt rejection (using RO simulation software)
- Performed safety, environmental, and economic analyses on designed process

UIUC Department of Chemistry - CHEM 105, 203, 205 **January 2016-May 2017**
Teaching Assistant

- Presented general chemistry concepts to students before each lab period and provided office hours for further assistance
- Ensured the use of safe lab technique and proper PPE at all times
- Graded students' lab reports, pre-labs, and other course assignments

Bunge Loders Croklaan **May 2015-August 2015**

Engineering Intern

- Scoped cost effective applications to recycle treated wastewater and reduce annual plant water consumption by ~10%
- Fully designed several water reuse systems (pumps, piping, treatment equipment, heat tracing, etc.)
- Completed cost analysis on each proposed system to select the most economic option
- Contacted and led meeting with contractors to obtain bids on selected system
- Wrote and submitted a project report to request the capital funds to implement the water recycle project

PUBLICATIONS

- Qin, M., Deshmukh, A., Epsztein, R., **Patel, S.K**., Owoseni, O.M., Walker, W.S., Elimelech, M. "Comparison of energy consumption in desalination by capacitive deionization and reverse osmosis" *Desalination*, 2019, in press.

- Skinn, B., Southworth, L., **Patel, S.K.**, Snyder, S., Cusick, R.D., Taylor, E.J., Inman, M.E. "Coupled Microbial Electrolysis Cells and Struvite Precipitation for Enhanced Nutrient Recovery from Wastewater" *ECS Meeting Abstracts* 23, 1044-1044, Sept. 2017

ORGANIZATIONS

Research Center for Nanotechnology Enabled Water Treatment (NEWT) **2018-Present**
Tau-Beta-Pi Engineering Honors Society **2015-Present**
American Chemical Society **2015- Present**
UIUC REACT Program **2014-2016**

AWARDS/HONORS

Magna Cum Laude with Highest Departmental Distinction **2017**
Thomas and Yolanda Stein Chemical Engineering Award **2017**
Excellent Teaching Award **2016-2017**
UIUC Dean's List **2013-2017**
UIUC James Scholar **2013-2017**
UIUC Chemistry Department Minn Award **2014**

SKILLS

Computer Skills: Python, R, MATLAB, ChemCAD, Microsoft Visio, Microsoft Office

Language: Fluent in English and Gujarati, Intermediate in Spanish and Hindi