**Ece Zeynep Ayla**

**480-369-1937 ayla2@illinois.edu**

**EDUCATION**

University of Illinois at Urbana-Champaign; Urbana, IL **2017-2022 (Expected)**

PhD. in Chemical and Biomolecular Engineering

Ph.D. Advisor: David W. Flaherty, Ph.D.

*SURGE Fellow*

Barrett, The Honors College, Arizona State University, Tempe, AZ **2013-2017**

B.S. in Chemical Engineering; Minor in Sustainability

*FURI Fellow, Bidstrup Fellow*

**RESEARCH EXPERIENCE**

**Graduate Student Researcher Oct. 2017-Present**

* Synthesis and characterization of isolated groups 4-6 metal oxide catalysts for green oxidations with hydrogen peroxide
* Designed and built a plug-flow reactor system for gas-phase epoxidation catalysis
* Developed kinetic models to understand how hydrogen peroxide is activated to form active forms of oxygen for environment-friendly oxidation reactions
* Used time-resolved *in situ* Raman, infrared, and UV-vis spectroscopy to observe the active intermediates formed on single-site catalysts.
* Trained and mentored two undergraduate engineering students to aid in the progression of the liquid- and gas-phase epoxidation projects

**Undergraduate Research Assistant Jan. 2015-May 2017**

* Explored amino acid cross-feeding strategies in support of stable co-culture growth in E. coli
* Engineered a co-culture system for enhanced lignocellulose-derived sugar mixture utilization
* Developed skills in lab safety, cell culture media prep, fermentation, flask inocculation, HPLC/GC, PCR, DNA transformation

**AWARDS AND HONORS**

SURGE Fellowship **2017-2022**

ASU Dean’s List (7 semesters) **2013-2017**

ASU New American University Scholar - President's Award (Full Tuition)  **2013-2017**

Bidstrup Fellowship **2016-2017**

Six Sigma Green/Black-belt **2017**

Engineering Faculty-Directed Study Abroad Scholarship **2015**

**PUBLICATIONS**

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| 7. | **Ayla, E.Z.;** Potts, D.S.; Bregante, D.T.; Flaherty, D.W.; “Linear Free Energy Relationships Describe Alkene Oxidations with H2O2 over Groups 4-6 Metal-Substituted Zeolites” *ACS Catalysis, Submitted.* |
| 6. | Bregante, D.T.;Potts, D.S.; Kwon, O.; **Ayla, E.Z.;** Tan, J.Z.; Flaherty, D.W.; “Effects of Hydrofluoric Acid Concentration on the Density of Silanol Groups and Water Adsorption in Hydrothermally Synthesized Transition Metal Substituted Silicalite-1” *Chemistry of Materials,* ***2020,*** 32, 17, 7425-7437*.* |
| 5. | Bregante, D.T.;Tan, J.Z.; Schultz, R.L.; Potts, D.S.; **Ayla, E.Z.;** Torres, C.; Flaherty, D.W.; “Catalytic Consequences of Oxidant, Alkene, and Pore Structure on Alkene Epoxidations within Titanium Silicates” *ACS Catalysis,* ***2020,*** 10, 17, 10169-10184. |
| 4. | Tan, J.Z.; Bregante, D.T.; **Ayla, E.Z.;** Flaherty, D.W.; “Role of Solvation in Alkene Epoxidation over Titanium Silicates in Acetonitrile and Methanol Solvents” *Journal of Catalysis, To be submitted.* |
| 3.  2. | Flores, A; Choi, Hyun; Martinez, Rodrigo; Onyeabor, Moses; **Ayla, E.Z.;** Godar, Amanda; Machas, Michael;Nielsen, D.R.; Wang, X.; *Frontiers in Bioengineering and Biotechnology,* **2020**, 8, 329.  Bregante, D.T.; Johnson, A.M.; Patel, A. Y.; **Ayla, E.Z.;** Cordon, M.J.; Bukowski, B.C.; Greely, J.; Gounder, R.; Flaherty, D.W.; “Cooperative Effects between Hydrophilic Pores and Solvents: Catalytic Consequences of Hydrogen-Bonding on Alkene Epoxidation in Zeolites” *Journal of the American Chemical Society,* **2019**, *141*, 7302 – 7319. |
| 1. | Flores, A.D.; **Ayla, E.Z.;** Wang, X.; Nielsen, D.R.; “Engineering a Synthetic, Catabolically Orthogonal Coculture System for Enhanced Conversion of Lignocellulose-Derived Sugars to Ethanol” *ACS Synthetic Biology,* **2019**, 8, 5, 1089 – 1099. |

**PRESENTATIONS (Presenter Underlined)**

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| 8.  7. | **Ayla, E.Z.;** Potts, D. S.; Bregante, D.T.; Flaherty, D.W.; “Linear Free Energy Relationships for Alkene Oxidations with H­2O2 over Groups 4 – 6 M-BEA” Catalysis Club of Chicago Symposium, Summer 2020; Virtual – *Poster Presentation, Poster Prize Winner*  **Ayla, E.Z.;** Bregante, D.T.; Flaherty, D.W.; “Role of Electronic Properties of Active Metal in Alkene Oxidations with H­2O2 over Groups 4 – 6 Substituted BEA Catalysts” 2020 International Congress of Catalysis; Summer 2020; San Diego, CA – *Poster Presentation* (Canceled due to COVID-19) |  |
| 6.  5.  4.  3. | **Ayla, E.Z.;** Bregante, D.; Flaherty, W..; “Reaction Pathways and Reactive Surface Intermediates Responsible for Alkene Oxidations with H2O2 over Groups 4-6 Metal-Substituted Zeolites” 26th North American Catalysis Society Meeting, Summer 2019; Chicago, IL – *Oral Presentation*  **Ayla, E.Z.;** Bregante, D.; Flaherty, W..; “Reaction Pathways Responsible for Alkene Oxidations with H2O2 over Groups 4-6 M-BEA Catalysts” Catalysis Club of Chicago Symposium, Spring 2019; Naperville, IL – *Poster Presentation*  **Ayla, Z.;** Bregante, D.; Flaherty, W..; “Green Epoxidations on Atomically Dispersed Groups 4-6 Metal Catalysts with H2O2” Catalysis Club of Chicago Symposium, Spring 2018; Naperville, IL – *Poster Presentation*  Flores, A.; **Ayla, Z.;** Nielsen, D.; Wang, X..; “Engineering A Synthetic Co-Culture System for Enhanced Co-Utilization of Lignocellulose-Derived Sugar Mixtures” Honors Thesis Defense; Spring 2017; Tempe, AZ – *Oral Presentation* |  |
| 2. | Flores, A.; **Ayla, Z.;** Nielsen, D.; Wang, X..; “Engineering A Synthetic Co-Culture System for Enhanced Co-Utilization of Lignocellulose-Derived Sugar Mixtures” Fulton Undergraduate Research Symposium; Spring 2016; Tempe, AZ – *Poster Presentation* |  |
| 1. | Dookeran, Z.; **Ayla, Z.;** Nielsen, D.; “Exploring Amino Acid Cross-feeding Strategies in Support of Stable Co-Culture Growth” Fulton Undergraduate Research Initiative; Fall 2015; Tempe, AZ – *Poster Presentation* |  |

**ACADEMIC AND LEADERSHIP ACTIVITIES**

**Society of Women Engineers – Illinois GradSWE Chapter Fall 2018-Present**

* Part of the organizing committee for the weSTEM (Women Empowered in STEM) conference, designed to inspire and connect current and aspiring STEM leaders, graduate students, academic, and industry professionals, hosted annually by GradSWE at UIUC
* weSTEM 2021 - Attendee Relations Coordinator **May 2020-Present**
* weSTEM 2020 - Logistics Coordinator **May 2019-May 2020**

**Engineering Graduate Student Advisory Council – ChBE Representative June-May 2019**

* Collaborated with the Graduate College’s Dean of Engineering and the administrative team to define the college’s mission and advise on the 5-year strategic plan to shape the future of the college and university
* Planned and led campus-wide activities to foster active engagement to enhance the experience of current and future graduate students at UIUC

**CURIE@Illinois Camp Activity Leader and Panelist July 2018, 2019**

* Organized and led a catalysis-based hands-on activity for a group of 25 female high school students to encourage a STEM-directed college career
* Panelist in “Women Engineers” panel for aspiring female engineering students to discuss challenges in academia as a part of an underrepresented population

**Chemical & Biomolecular Eng. Graduate Student Advisory Council - VP June 2018-May 2019**

* Led the organization of orientation and networking events for first-year graduate students
* Worked in a team to organize departmental recruitment, networking events and a research symposium

**Grand Challenge Scholars Program August 2013-May 2017**

* Grand Challenge Scholar as recognized by the National Academy of Engineering (NAE)
* Focusing on sustainability, worked individually and in teams to discover solutions to the Grand Challenges of Engineering as defined by NAE through coursework, community service, and research projects

**TEACHING AND MENTORSHIP**

**Graduate Teaching Assistant 2018-2019**

* List of Teachers Ranked as “Excellent”
* Courses: Chemical Reaction Engineering (ChBE 424), Principles of Chemical Engineering (ChBE 221), Cross Course Design (ChBE 321)

**Illinois Promise Mentor August 2019-Present**

* Guided new undergraduate students in academic, personal, and professional matters
* Support with career planning, industry career fair preparation, on-campus research groups search

**MERGE Ambassador September 2017-Present**

* Mentored new and prospective engineering graduate students from underrepresented communities
* Led lab and campus tours and attended networking events to recruit prospective engineering graduate students