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## BIOGRAPHICAL SKETCH

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NAME

**Sasha Alden**

POSITION TITLE

**PhD Candidate**

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### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
Texas A&M University (College Station, TX) *moved with group from IU	Ph.D.	Expected 2023	Analytical Chemistry
Western Washington University (Bellingham, WA)	B.S.	6/18	Chemistry

### A. Personal Statement

In the fall of 2018, I joined the Baker group to pursue fabrication of carbon microelectrode arrays. With these arrays, I developed the Array Microcell Method (AMCM). AMCM employs a droplet, in contact with a single nanoelectrode, at the tip of a solution filled glass micropipette (inner diameter ~30  $\mu\text{m}$ ) as a micro electrochemical cell. During the first few years of my PhD I focused on developing the instrumentation and programming to allow automated scanning and measurements by AMCM. Since then, I have worked with nanoelectrode arrays (which are fabricated in collaboration with Oakridge National Lab), electrochemistry with red blood cells, and molecular functionalization of electrodes by AMCM.

Before graduate school I received my B.S. in Chemistry in 2018 from Western Washington University in Bellingham, WA. I worked as an undergraduate researcher for two years with Dr. David Rider. My research included development of photocathodes for fuel catalysis and characterization of nanoparticle-microgel composites.

### B. Honors

2020 Society of Electroanalytical Chemists (SEAC) Travel Award

2017 Outstanding Poster Award WWU Scholars Week Symposium

2017 Verna Alexander Price Scholarship for Academic Merit and Continuation in Chemistry

2017 WWU Research for Undergraduates Experience Summer Internal Student (NSF-REU)  
2017 WWU RSP Creative Opportunities Research Grant  
2016 WWU RSP Creative Opportunities Research Grant

### C. Professional Activities

2021-Present Committee Member SEAC Student Group  
2021-2022 Secretary IU Student Chapter of the Electrochemistry Society  
2020- Present Member: International Society of Electrochemistry (ISE)  
2019- 2020 Member: American Heart Association (AHS)  
2018- Present Member: Society of Electroanalytical Chemistry (SEAC)  
2018- Present Member: Electrochemical Society (ECS)

### D. Publications

5. Alanis, K.; Alden, S.E.; Baker, L.A.; Satheesan, A.E.; Jetmore, H.D.; Shen, M. (**Accepted January 2022**) Chapter 17: Micro and Nanopipettes for Electrochemical Imaging and Measurement. Scanning Electrochemical Microscopy (3<sup>rd</sup> ed.). CRC Press.
4. Siepser, N.P.; Choi, M.; Alden, S.E.; Baker, L.A. Single-Entity Electrocatalysis at Electrode Ensembles Prepared by Template Synthesis **2021** *J. Electrochem. Soc.*, 168, 126526.
3. Alden, S.E.; Siepser, N.P.; Patterson, J.A.; Jagdale, G.S.; Choi, M.; Baker, L.A. Array Microcell Method (AMCM) for Serial Electroanalysis *ChemElectroChem*, **2020**, 7, 1084.
2. Butler, T.; Alden, S. E.; Taylor, M.; Deese, S.; Rider, D. A.; Laskoski, M. Oligomeric Phthalonitriles and Tetrakis(Phenylethynyl)Benzene Blend with Improved Processing and Thermal Properties. *J. Polym. Sci., Part A: Polym. Chem.* **2018**, 56, 2630-2640.
1. Curtis, T.; Taylor, A. K.; Alden, S. E.; Swanson, C.; Lo, J.; Knight, L.; Gates, B. D.; Emory, S. R.; and Rider, D. A. Synthesis and Characterization of Tunable, pH-Responsive Nanoparticle-Microgel Composites for Surface-Enhanced Raman Scattering Detection. *ACS Omega*. **2018**, 3, 10572-10588.

### E. Presentations

#### Oral Presentations

1. "Array Microcell Method Coupled with Microfluidics Cell Traps for Single-Cell Quantification". Alden, S.E.; Lavrik, N.V.; Baker, L.A. Pittcon Conference, 2021.

#### Posters Presentations

9. High-Throughput Nanoelectrochemistry: Individual Nanoelectrodes Investigated via the Array Microcell Method (AMCM). Alden, S.E.; Zhang, L.; Lavrik, N.V.; Wang, Y.; Baker, L.A. Faraday Discussion: Nanoelectrochemistry, 2021
8. Array Microcell Method (AMCM) for Serial Electroanalysis. S.E. Alden, N.P. Siepser, J.A. Patterson, Jagdale, G.S.; Choi, M.; Baker, L.A. 71<sup>st</sup> Annual Meeting of the International Society of Electrochemistry

Belgrade Online, 2020.

7. Micropipettes for Serial Electrochemical Array Analysis. S.E. Alden, N.P. Siepser, J.A. Patterson, Jagdale, G.S.; Choi, M.; L.A. Baker. Pittcon Conference, Chicago, IL. 2020.
6. Micropipettes for Serial Electrochemical Array Analysis. S.E. Alden, N.P. Siepser, J.A. Patterson, Baker, L.A. Turkey Run Analytical Chemistry Conference, Marshall, IN, 2019.
5. Pyrolyzed Photoresist Film Microelectrode Arrays as Substrates to Probe Catalytic Activity. S.E. Alden, N.P. Siepser, J.A. Patterson, L.A. Baker. 6th Annual Materials Research Symposium, Indiana University Bloomington, 2019.
4. Titania Stabilized Cuprous Oxide Photocatalyst for the Reduction of Carbon Dioxide. S. Alden & D.A. Rider. 255<sup>th</sup> ACS National Conference in New Orleans, LA. 2018
3. A Titania Stabilized Cuprous Oxide Photocatalyst for the Synthesis of Solar Fuels. S. Alden & D.A. Rider. WWU NSF Research Experience for Undergraduates Symposium in Bellingham, WA. 2017
2. Highly Active Cuprous Oxide Photocathode for the Selective Photoelectrochemical Reduction of Carbon Dioxide: The Development of a Stable Nano Catalyst for Water Splitting." S. Alden & D.A. Rider 253<sup>rd</sup> ACS National Conference in San Francisco, CA. Apr. 2017
1. Highly Active Cuprous Oxide Photocathode for the Selective Photoelectrochemical Reduction of Carbon Dioxide. S. Alden & D.A. Rider. Linus Pauling Medal Symposium at Pacific Lutheran University in Tacoma, WA. Nov. 2016