Jason Miech

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NASA Langley Research Center
Science Directorate
Chemistry Dynamics Branch
Hampton, VA 23666

Graduate Education:

Arizona State University, Tempe, AZ. — Cumulative GPA: 4.00
Chemistry Ph.D. — Thesis Defense: June 14, 2023

Undergraduate Education:

Emmanuel College, Boston, MA. — Graduated: May 2018
B.S. Chemistry (magna cum laude) — Cumulative GPA: 3.834
Minor: Catholic Studies

Honors and Awards:

- International Global Atmospheric Chemistry Project Early Career Short Course Participant — Fall 2024
- American Association for Aerosol Research US Student Travel Grant — Fall 2022
- Arizona State University School of Molecular Sciences John Holloway Memorial Scholarship — May 2022
- Arizona State University Graduate and Professional Association Travel Grant — Spring 2022
- Emmanuel College Department of Chemistry and Physics Outstanding Graduating Senior — May 2018
- Emmanuel College's American Institute of Chemists Student Award — May 2018
- Emmanuel College Distinction in the Field of Chemistry — May 2018
- Sigma Xi Colleges of the Fenway Research Honor Society — Spring 2017
- Gamma Sigma Epsilon Emmanuel College Chemistry Honor Society — Spring 2016
- Emmanuel College Dean's List — Fall 2014-Spring 2018

Work Experience:

NASA Postdoctoral Program Fellow — Hampton, VA.
NASA Langley Research Center — *December 2023-Present*
Analyzed greenhouse gas data from airborne science campaigns using Igor software. Participated in the ASIA-AQ campaign and assisted with trace gas measurements aboard the DC-8 airborne science platform. Operated Picarro CRDS instruments on NASA Langley Aerosols Research Group's mobile lab. Developed several data products for the ASIA-AQ data archive. Presented work at several international scientific conferences and science team meetings.

Arizona State University Postdoctoral Research Scholar — Tempe, AZ.
School of Molecular Sciences — *August 2023-November 2023*
Analyzed data from low-cost particulate sensors in a dust mitigation project. Visualized dust storm progress with PM_{10} data using Python software. Wrote up findings in publication-ready manuscripts.

Arizona State University Research Assistant — Tempe, AZ.
School of Molecular Sciences — *January 2021-August 2023*
Analyzed water and particulate matter samples in an environmental chemistry lab for trace ions and molecular markers with Ion Chromatography and GC-MS. Managed and analyzed air quality data from a county-wide sensor network. Calibrated and maintained high-volume air samplers for use in the field. Summarized preliminary findings in weekly presentations and provided monthly written reports on the status of the project to managers. Collaborated with local air quality departments and government agencies.

Emmanuel College Research Assistant Boston, MA.

February 2015-May 2018

Dr. Aren Gerdon Research Lab: "Integrating microfluidics and Quartz Crystal Microbalance to study the kinetics of the biomineralization of hydroxyapatite"

Biomineralization is one of the most important biological and chemical processes on Earth, yet its kinetics are not well understood. The proposed method for analyzing the biomineralization mechanism in real time is the use of a microfluidic flow cell to control the ion distribution in solution, while monitoring the mineral formation with a Quartz Crystal Balance (QCM) and optical microscopy. This research builds on knowledge acquired through my analytical chemistry course such as experimental design, statistical analysis, and making measurements, and requires knowledge of the physics principle of fluid dynamics.

Outreach and Extracurricular Activities:

Review Panelist, NASA Earth Sciences Division *Spring 2025*

Peer Reviewer for Journal of Geophysical Research – Atmospheres *Fall 2024*

NASA Small Business Innovation Research Program Reviewer *Spring 2024-Present*

Peer Reviewer for Atmospheric Measurement Techniques (AMT) journal *June 2022-Present*

Arizona State University Pandemic Community Response Team *Winter 2021*

Volunteered to construct Corsi-Rosenthal boxes to improve indoor air filtration in local classrooms.

Publications:

1. Miech, J.A.; Aker, S.; Zhang, Z.; Ozer, H.; Fraser, M.P.; Herckes, P. Tire Wear Emissions by Highways: Impact of Season and Surface Type. *Atmosphere* **2024**, *15*, 1122. https://doi.org/10.3390/atmos15091122
2. Miech, J.; Aker, S.; Fraser, M.; Herckes, P.; Kaloush, K. E.; Campillo, J. M.; Ozer, H.; Grandy, M. The Impact of Diamond Grind Pavement Resurfacing on PM10 Emissions. **2024**, No. SPR 000-1(023) 775. Arizona Department of Transportation Technical Report.
3. Miech, J.A.; Herckes, P.; Fraser, M.P.; Arellano, A.F.; Mirrezaei, M.A.; Guo, Y. Evaluating Phoenix Metropolitan Area Ozone Behavior Using Ground-Based Sampling, Modeling, and Satellite Retrievals. *Atmosphere* **2024**, *15*, 555. https://doi.org/10.3390/atmos15050555
4. Miech, J.A.; Stanton, L.; Gao, M.; Micalizzi, P.; Uebelherr, J.; Herckes, P.; Fraser, M.P. In-situ Drift Correction for a Low-cost NO_2 Sensor Network. *Environmental Science Atmospheres* **2023***, 3,* 894-904. https://doi.org/10.1039/D2EA00145D
5. Ochkur, S.; Iijima, K.; Gibson, J.; Miech, J.A.; Molar, J.; Fraser, M.P; Jacobsen, E.; Wright, B.; Kita, H.; Herckes, P.; & Rank, M. Ozone and Nitrogen Oxide enhance the Immunogenicity of Ragweed Pollen. *Journal of Allergy and Clinical Immunology*, **2022**, *149(2)*, AB29–AB29. https://doi.org/10.1016/j.jaci.2021.12.130
6. Miech, J.A.; Stanton, L.; Gao, M.; Micalizzi, P.; Uebelherr, J.; Herckes, P.; Fraser, M.P. Calibration of Low-Cost NO_2 Sensors through Environmental Factor Correction. *Toxics* **2021**, *9*, 281. https://doi.org/10.3390/toxics9110281
7. Miech, J.A.; Herckes, P.; Fraser, M.P. Effect of COVID-19 Travel Restrictions on Phoenix Air Quality after Accounting for Boundary Layer Variations. *Atmospheric Environment: X* **2021**, *10*,: 100105–100105. https://doi.org/10.1016/j.aeaoa.2021.100105

8. Shlaferman, J.; Paige, A.; Meserve, K.; Miech, J.A.; Gerdon, A.E. Selected DNA Aptamers Influence Kinetics and Morphology in Calcium Phosphate Mineralization, *ACS Biomater. Sci. Eng*. **2019**, *5(7)*, 3228−3236. https://doi.org/10.1021/acsbiomaterials.9b00308

9. Sanford, A.A.; Conklin, G.; Miech, J.A.; Gerdon, A.E. Solution Rheological Parameters Modulate Calcium Phosphate Mineralization in a Microfluidic Device, *Materials Science & Engineering C* **2019** *94*, 11-16. https://doi.org/10.1016/j.msec.2018.09.015

Presentations:

1. Miech, J.A.; DiGangi, J.P.; Diskin, G.S.; Choi, Y.; Moore, R.H.; Ziemba, L.D.; Gallo, F.; Jordan, C.E.; Shook, M.A.; Winstead, E.L.; Wiggins, E.; Roy, S.; Ball, K.; Lee, Y.R.; Crounse, J.D.; Wennberg, P.O.; Piel, F.; Swift, S.J.; Wojnowski, W.; Wisthaler, A. "Airborne Biomass Burning Influence Identification During the 2024 ASIA-AQ Campaign," American Geophysical Union Annual Meeting, **2024**. Poster.
2. Miech, J.A.; DiGangi, J.P.; Diskin, G.S.; Choi, Y. "Airborne Biomass Burning Influence Identification During the 2024 ASIA-AQ Campaign," NASA Postdoctoral Program Virtual Symposium, **2024**. Presentation.
3. Miech, J.A.; DiGangi, J.P.; Diskin, G.S.; Choi, Y.; Li, S.; Chayawat, C.; Koedkurang, K.; Cambaliza, M.O.; Simpas, J.B. "Biomass Burning and Fossil Fuel Apportionment via Greenhouse Gas Enhancement Ratios Over Southeast Asia as Measured During ASIA-AQ", 16th International Commission on Atmospheric Chemistry and Global Pollution Symposium and 18th International Global Atmospheric Chemistry Science Conference, **2024**. Poster.
4. Miech, J.A.; Herckes, P.; Fraser, M.P. "Effects of Different Dust Suppression Approaches on Ambient Aerosols," American Association for Aerosol Research 40th Annual Conference, **2022**. Platform Presentation.
5. Miech, J.A.; Herckes, P.; Fraser, M.P. "Bi-weekly low-cost NO_2 sensor collocation for improved calibration performance," Air Sensors International Conference, **2022**. Poster and Lighting Talk.
6. Miech, J.A.; Herckes, P.; Fraser, M.P. "Quantifying the Air Quality Benefit of a Novel Dust Suppression Technique," American Association for Aerosol Research 38th Annual Online Conference, **2020**. Platform Presentation.
7. Miech, J.A.; Gerdon, A.E. "Microfluidic platforms for analyzing the effect of biomimetic templates on calcium phosphate biomineralization," *Abstracts of Papers*, 255th National Meeting of the American Chemical Society, New Orleans, LA, **2018**; ANYL Poster. SCI-Mix Accepted.
8. Miech, J.A.; Gerdon, A.E. "Analyzing the Effectiveness of Surface-bound DNA as a Template for Calcium Phosphate Biomineralization Using Microfluidics," Emmanuel College Summer Research Presentations, Emmanuel College, Boston, MA, **2017**. Poster.
9. Luarasi, K.; Meserve, K.; Miech, J.A.; Gerdon, A.E. "Development of Methods for Kinetic Analysis of Templated and Untemplated Calcium Phosphate Mineralization," *Abstracts of Papers,* 253rd National Meeting of the American Chemical Society, San Francisco, CA, **2017**; ANYL Poster.
10. Miech, J.A.; Gerdon, A.E. "Analyzing the Effect of DNA Templates on the Biomineralization of Hydroxyapatite Using an Integrated Microfluidic Device," Emmanuel College Summer Research Presentations, Emmanuel College, Boston, MA, **2016**. Poster.
11. Miech, J.A.; Gerdon, A.E. "Development of New Microfluidic Platforms for Multi-Stream Solution Control for Mineralization Kinetic Analysis," 18th Annual Northeast Student Chemistry Research Conference, Boston, MA, **2016**. Poster.
12. Anderson, E.; Baillargeon, K.; Butman, H.; Fisher, E.; Meserve, K.; Miech, J.A.; O'Brien, M.; Gerdon, A.E. "Water hardness determination and heavy metal analysis of Muddy River water by EDTA titration and ICPAES," *Abstracts of Papers*, 9th Annual Muddy River Symposium, Colleges of the Fenway, Boston, MA, **2015**. (Certificate of Excellence) Poster.