

# AMY J. WILLIAMS

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## Education

### **PhD in Geology**

University of California, Davis - September 2014  
Advisor: Dr. Dawn Y. Sumner

### **MSc in Earth and Planetary Sciences**

University of New Mexico - August 2009  
Advisor: Dr. Laura J. Crossey

### **B.S., Earth & Environmental Science**

Furman University - June 2007  
Advisor: Dr. C. Brannon Andersen

## Professional Experience

### **Assistant Professor**

*Department of Geological Sciences, University of Florida, 2018-present.*

### **Assistant Professor**

*Department of Physics, Astronomy, and Geosciences, Towson University, 2015-2018.*

### **Collaborator, Sample Analysis at Mars (SAM) Instrument team, NASA Mars Science Laboratory rover**

*NASA Goddard Space Flight Center, 2015 - present.*

Currently serve on the NASA Mars Science Laboratory (Curiosity) rover mission as a science team member and member of the SAM instrument team. Conduct organic geochemistry experiments to determine the preservation of organic biosignatures in Mars analogous substrates and environments investigated by the Curiosity rover. Group lead on the TMAH thermochemolysis wet chemistry experiment onboard the SAM instrument.

### **Mars sedimentology and stratigraphy**

*NASA Curiosity rover science team member, 2009 - present.*

Used the rover Curiosity, remote sensing images, and terrestrial analog sites to constrain sedimentary processes on Mars and to interpret the geological history of Gale Crater. Co-I on the Curiosity mission with the following specific responsibilities:

- Glen Torridon (Clay Unit) Campaign Planning Group (2017-2019)
- Vera Rubin (Hematite) Ridge Campaign Planning Group (2017-2018)
- Rock Classification Working Group, member (2014)
- Gale Mapping Working Group, member (2012)
- Landing Site Working Group, member (2010-2011)

**Science Team Member, Miniaturized Variable Pressure Scanning Electron Microscope (MVP-SEM)**

*NASA Marshall Space Flight Center, 2017-present.*

**Postdoctoral Research Associate**

*NASA Goddard Space Flight Center, 2014 - 2015.*

Served on the NASA Mars Science Laboratory (Curiosity) rover mission as a science team member and member of the SAM instrument team. Conducted organic geochemistry experiments to determine the preservation of chemical biosignatures in iron-dominated environments as an analog for martian environments investigated by the Curiosity rover.

**Awards &  
Honors**

**Maryland Academy of Sciences Outstanding Young Scientist Award Nomination, 2017**

**Best Oral Presentation Award**

Interdisciplinary Graduate and Professional Student Symposium Dean's Prize, Division of Mathematical and Physical Sciences, UC Davis, 2012

**Astrobiology Science Conference Travel Award, 2012**

**Graduate Student Association Travel Award, UC Davis, 2011**

**Lunar & Planetary Institute Career Development Award, 2011**

**First International Conference on Mars Sedimentology and Stratigraphy Travel Award, 2010**

**Wanek Graduate Scholarship Award, UNM, 2009**

**Graduate and Professional Student Association Scholar Award, UNM, 2009**

**New Mexico Geological Society Best Student Poster Award, 2009**

**Earth & Planetary Sciences Outstanding TA Award, UNM, 2009**

**Susan Deese-Roberts Teaching Assistant of the Year Award Nomination, UNM, 2009**

**American Geophysical Union, Hydrology Section Outstanding Student Paper Award, 2009**

**Earth & Planetary Sciences Geology Alumni Scholarship Award, UNM, 2008**

**Earth & Environmental Sciences Research Award, Furman University, 2007**

**Proposals,  
Grants, &  
Fellowships**

**Total Funding Obtained (2011-present) \$1,340, 734**

**NSF IUUSE: GEOPATHS Program**

“GP-GO: GeoScientists Promoting Accessible Collaborative Education (GEOSPACE)”. Co-PI – AJ Williams – 2020-2022, Total budget \$391,538.

**Florida Space Institute Space Research Initiative**

“TMSH Thermochemolysis: The Next Generation in Extraterrestrial Organic Molecule Detection”. PI – AJ Williams – 2019-2020, Total budget \$68,702

**NASA Exobiology Program**

“Discovering biosignatures in manganese deposits on Mars with rover payload Instruments”. Co-I – AJ Williams – 2018-2019, Total budget \$200,000.

**Towson University Faculty Development and Research Committee (FDRC) Award**

“Molecular Structure of a Metabolic Biosignature”. PI – AJ Williams – 2017-2018, Total Budget \$5,592

**Fisher College of Science and Mathematics General Endowment Funds**

“Developing interdisciplinary authentic research experiences in urban environments with geoscience and environmental science courses”. PI – AJ Williams 2017-2018, Total budget \$20,000

**Fisher College of Science and Mathematics Research Equipment Funds**

For purchase of a Cressington 108 Auto Sputter Coater. PI- AJ Williams 2017, Total budget \$8,500

**Fisher College of Science and Mathematics General Endowment Funds**

“Building a collaborative culture and developing resources for interdisciplinary environmental and earth science research in urban environments”. PI- AJ Williams 2016-2017, Total budget \$25,857

**National Science Foundation Major Research Instrumentation Award**

“MRI: Acquisition of a Field Emission Scanning Electron Microscope with STEM and EDS Capabilities for Interdisciplinary Research and Education at Towson University”. Co-I AJ Williams 2016-2019, Total budget \$530,545

**NASA Earth and Space Sciences Fellowship**

“Geobiology of Acid-Saline Systems: Implications for Early Martian Habitats” 2011-2014, Total budget \$90,000

**Durrell Funds Award**

UC Davis Earth & Planetary Sciences, 2010-2013

**Sevilleta Long Term Ecological Research program Graduate Student Fellowship (Twice)**

2008-2009, Total budget \$6,000

**New Mexico Geological Society Grants-in-Aid Award**

2008-2009

**Graduate and Professional Student Association Student Research Allocations Committee Award, and Office of Graduate Studies Research, Project and Travel Grant Award**

University of New Mexico, both in 2009

**New Mexico Water Resources Research Institute Graduate Student Fellowship**

2008, Total budget \$5,000

**Publications**   [Link to Google Scholar](#)   [Link to Thomson-Reuters ResercherID](#)

**Journal Articles**

- 31)** Millan, M. Teinturier, S. Malespin, C., Bonnet, J.-Y., Buch, A., Dworkin, J., Eigenbrode, J., Freissinet, C., Glavin, D., Navarro-Gonzalez, R., Srivastava, A., Stern, J., Sutter, B., Szopa, C., **Williams, A.J.**, Williams, R., Wong, G., Mahaffy, P., Johnson, S., 2020. Detection of Organic Molecules on Mars using the Curiosity Rover's Derivatization Experiment, *submitted to Nature Astronomy*.
- 30)** He, Y., Buch, A., Szopa, C., Millan, M., Freissinet, C., Navarro-Gonzalez, R., Johnson, S.S., Glavin, D., **Williams, A.J.**, Eigenbrode, J., Teinturier, S., Malespin, C., Guzman, M., Coscia, D., Bonnet, J.-Y., Lu, P., Cabane, M., Mahaffy, P., 2020. Influence of calcium perchlorate on the search for Martian organic compounds with MTBSTFA/DMF derivatization, *submitted to Astrobiology*.
- 29)** **Williams, A.J.**, J. Moore, J. Becraft, D. Capparuccini, S. Dobbis, R. Grams, K. Leonzo, T. Pearson, M. Rogers, T. Van Ness, N. Werps, 2020. Dilution and Drainage Basin Controls on Urban Stream Syndrome Along an Urban to Rural Gradient, *in review at Applied Geochemistry*.
- 28)** Navarro-González, R., Navarro, K.F., Urrutia-Fucugauchi, J., McKay, C.P., Pérez-Cruz, L., Coll, P., Eigenbrode, J.L., Malespin, C.A., Mahaffy, P.R., Martín-Torres, F.J., Zorzano-Mier, M.-P., Prats, B., Vasavada, A., Archer Jr., D.P., Buch, A., Cabane, M., Coscia, D., Franz, H.B., Freissinet, C., Glavin, D.P., McAdam, A.C., Ming, D.W., Millan, M., Raulin, F., Rodríguez-Manfredi, J.A., Steele, A., Stern, J.C., Summons, R.E., Sutter, B., Szopa, C., **Williams, A.J.**, 2020. Surface temperature trends recorded in thiophene from two impact craters: Chicxulub and Gale, *submitted to Science Advances*.
- 27)** Bennett, K.A., Rivera-Hernandez, F., Tinker, C., Horgan, B., Fey, D.M. Edwards, C., Edgar, L.A., Kronyak, R., Edgett, K.S., Fraeman, A., Kah, L.C., Henderson, M., Stein, N., Dehouck, E., **Williams, A.J.**, 2020. Extensive diagenesis revealed by fine-scale features at Vera Rubin ridge, Gale crater, Mars, *in review with Journal of Geophysical Research, Planets, special issue on Vera Rubin ridge*.
- 26)** **Williams, A.J.**, Craft, K.L., Millan, M., Johnson, S.S., Knudson, C.A., Juarez Rivera, M., McAdam, A.C., Tobler, D., Skok, J.R., 2020. Fatty Acid Preservation in Active, Inactive, and Relict Siliceous Sinter Hot Spring Deposits in Iceland, with Implications for Organics Detection on Mars, *Astrobiology Hot Spring Special Issue, accepted*.
- 25)** He, Y., A. Buch, C. Szopa, **A.J. Williams**, M. Millan, C. Malespin, D. Glavin, C. Freissinet, J. Eigenbrode, S. Teinturier, D. Coscia, J.Y. Bonnet, J. Stern, F. Stalport, M. Guzman, N. Chaouche, P.

- Lu, R. Navarro-Gonzalez, S. Johnson, M. Cabane, P. Mahaffy, 2020. Influence of perchlorate on the search for organics on Mars with TMAH thermochemolysis, *Astrobiology*, *accepted*.
- 24) Fraeman, A., J. G. Catalano, L. Edgar, C. Fedo, E. Rampe, R.V. Morris, A. R. Vasavada, V. Z. Sun, R. E. Arvidson, A. Bryk, S. Banham, K. Bennett, J.C. Bridges, W. Dietrich, C.E. Edwards, W.W. Fischer, V. Fox, J. Frydenvang, C. Hardgrove, J.P. Grotzinger, S. Gupta, B. Horgan, C. House, S. Johnson, S. Jacob, J. Johnson, J. L'Haridon, N. Mangold, D. Rubin, M. Salvatore, S.P. Schwenzer, K. Siebach, N.T. Stein, K.M. Stack, L. Thompson, D. Wellington, **A.J. Williams**, S. Turner. The Origin of Vera Rubin Ridge: Overview and Results from Curiosity's Exploration Campaign, *Journal of Geophysical Research, Planets, special issue on Vera Rubin ridge*, *accepted*. [Link to Article](#)
- 23) McAdam, A.C., Sutter, B., Archer, P.D., Franz, H.B., Wong, G.M., Lewis, J.M.T., Eigenbrode, J.L., Stern, J.C., Knudson, C.A., Clark, J.V., Andrejkovičová, S., Ming, D.W., Morris, R.V., Achilles, C.N., Rampe, E.B., Bristow, T.F., Navarro-González, R., Mahaffy, P.R., Thompson, L.M., Gellert, R., **Williams, A.J.**, House, C.H., Johnson, S.S., 2020. Constraints on the Mineralogy and Geochemistry of the Vera Rubin ridge, Gale crater, Mars, from Mars Science Laboratory Sample Analysis at Mars Evolved Gas Analyses, *Journal of Geophysical Research, Planets, special issue on Vera Rubin ridge*, *accepted*. [Link to Article](#)
- 22) He, Y., Buch, A., Szopa, C., **Williams, A.J.**, Milan, M., Freissinet, C., Malespin, C., Glavin, D.P., Eigenbrode, J.L., Coscia, D., Teinturier, S., Lu, P., Cabane, M., Mahaffy, P.R., 2020. The Search for organic compounds with TMAH thermochemolysis: from the Earth to space experiment exploration, *Trends in Analytical Chemistry*, 127. [Link to Article](#)
- 21) Carrier, B.L., D. W. Beaty, M. A. Meyer, J. G. Blank, L. Chou, S. DasSarma, D. J. Des Marais, J. L. Eigenbrode, N. Grefenstette, N. L. Lanza, A. C. Schuerger, P. Schwendner, H. D. Smith, C. R. Stoker, J. D. Tarnas, K. D. Webster, C. Bakermans, B. K. Baxter, M. S. Bell, S. A. Benner, H. H. Bolivar Torres, P. J. Boston, R. Bruner, B. C. Clark, P. DasSarma, A. E. Engelhart, Z. E. Gallegos, Z. K. Garvin, P. J. Gasda, J. H. Green, R. L. Harris, M. E. Hoffman, T. Kieft, A. H. D. Koeppel, P. A. Lee, X. Li, K. L. Lynch, R. Mackelprang, P. R. Mahaffy, L. H. Matthies, M. A. Nellesen, H. E. Newsom, D. E. Northup, B. R. W. O'Connor, S. M. Perl, R. C. Quinn, L. A. Rowe, B. Sauterey, M. A. Schneegurt, D. Schulze-Makuch, L. A. Scuderi, M. N. Spilde, V. Stamenković, J. A. Torres Celis, D. Viola, B. D. Wade, C. J. Walker, R. C. Wiens, **A. J. Williams**, J. M. Williams, J. Xu, 2020. Mars Extant Life: What's Next? Conference Report, *Astrobiology*, 20 (6), 785-814. [Link to Article](#)
- 20) Johnson, S.S., Millan, M., Graham, H., Benison, K.C., **Williams, A.J.**, McAdam, A., Knudson, C.S., Andrejkovicova, S., Achilles, C., 2020. Lipid Biomarkers in Ephemeral Acid Salt Lake Mudflat/Sandflat Sediments: Implications for Mars, *Astrobiology*, 20 (2), 167-178. [Link to Article](#)
- 19) Hood, D.R., Karunatillake, S., Gasnault, O., **Williams, A.J.**, Dutrow, B., Ojha, L., Kobs, S., Kim, K., Heldmann, J., Fralick, C., 2019. Contrasting Regional Soil Hydration Processes across the Topographic Dichotomy of Mars, *Geophysical Research Letters*, 46, 13,668-13,677. <https://doi.org/10.1029/2019GL084483>. [Link to Article](#)
- 18) He, Y., Buch, A., Morisson, M., Szopa, C., Freissinet, C., **Williams, A. J.**, Millan, M., Guzman, M., Navarro-González, R., Bonnet, J. Y., Coscia, D., Eigenbrode, J.L., Malespin, C.A., Mahaffy, P.R., Glavin, D.P., Dworkin, J.P., Lu, P., Johnson, S.S., 2019. Application of TMAH thermochemolysis to the detection of nucleobases: application to the MOMA and SAM space experiment, *Talanta*, 204, 802-811. [Link to Article](#)

- 17) **Williams, A.J.**, Eigenbrode, J., Floyd, M., Wilhelm, M.B., O'Reilly, S., Johnson, S.S., Craft, K., Knudson, C.A., Andrejkovičová, S., Lewis, J.M.T., Buch, A., Glavin, D.P., Freissinet, C., Summons, R., McAdam, A., Benison, K., Navarro-González, R., Malespin, C., Mahaffy, P.R., 2019. Optimization of the Recovery of Fatty Acids from Mars Analogs by TMAH Thermochemolysis for the Sample Analysis at Mars Wet Chemistry Experiment on the Curiosity Rover, *Astrobiology* 19, 522-546, DOI: 10.1089/ast.2018.1819. [Link to Article](#)
- 16) Sun, V.Z., Stack, K.M., Kah, L.C., Thompson, L., Fischer, W., **Williams, A.J.**, Johnson, S.S., Wiens, R.C., Kronyak, R.E., Nachon, M., House, C.H., VanBommel, S., 2019. Late-stage diagenetic concretions in the Murray formation, Gale Crater, Mars, *Icarus*, 321, 866-890, DOI: 10.1016/j.icarus.2018.12.030. [Link to Article](#)
- 15) Rivera-Hernandez, F., Sumner, D.Y., Newsom, H., Gasnault, O., Maurice, S., Stack Morgan, K., **Williams, A.J.**, Wiens, R., Nachon, M., L'Haridon, J., Forni, O., Mangold, N., 2019. Using ChemCam LIBS data to constrain grain size in rocks on Mars: Proof of concept and application to rocks at Yellowknife Bay and Pahrump Hills, Gale crater, *Icarus*, 321, 82-98, DOI: 10.1016/j.icarus.2018.10.023. [Link to Article](#)
- 14) Floyd, M.M., **Williams, A.J.**, Grubisic, A., Emerson, D., 2019. Metabolic Processes Preserved as Biosignatures in Iron-Oxidizing Organisms: Implications for Biosignature Detection on Mars, *Astrobiology*, 19(1), 40-52, DOI: 10.1089/ast.2017.1745. [Link to Article](#)
- 13) Cousin, A., Dehouck, E., Meslin, P.-Y., Forni, O., **Williams, A.J.**, Stein, N., Gasnault, O., Bridges, N., Ehlmann, B., Schröder, S., Payré, V., Rapin, W., Pinet, P., Sautter, V., Maurice, S., Wiens, R.C., 2017. Geochemistry of the Bagnold Dune Field as observed by ChemCam, and comparison with other aeolian deposits at Gale crater. *Journal of Geophysical Research, Planets*, 122, doi: 10.1002/2017JE005261. [Link to Article](#)
- 12) Edgar, L.A., Gupta, S., Rubin, D.M., Lewis, K.W., Kocurek, G.A., Anderson, R.B., Bell III, J.F., Dromart, G., Edgett, K.S., Grotzinger, J.P., Hardgrove, C., Kah, L.C., Leveille, R., Malin, M.C., Mangold, N., Milliken, R.E., Minitti, M., Palucis, M. Rice, M., Rowland, S.K., Schieber, J., Stack, K.M., Sumner, D.Y., Wiens, R.C., Williams, R.M.E., **Williams, A.J.**, 2017. Shaler: In Situ Analysis of a Fluvial Sedimentary Deposit on Mars. *Sedimentology*, doi: 10.1111/sed.12370. [Link to Article](#)
- 11) Hays, L.E., Graham, H.V., Des Marais, D.J., Hausrath, E., Horgan, B., McCollom, T.M., Parenteau, M.N., Potter-McIntyre, S.L., **Williams, A.J.**, Lynch, K.L., 2017. Biosignature Preservation and Detection in Mars Analog Environments. *Astrobiology*, 17(4), 363-400, doi: 10.1089/ast.2016.1627. [Link to Article](#)
- 10) Wilhelm, M.B., Davila, A.F., Eigenbrode, J.L., Parenteau, M.N., Jahnke, L.L., Liu X.-L., Summons, R.E., Wray, J.J., Stamos, B.N., O'Reilly, S.S., **Williams, A.J.**, 2017. Xeropreservation of functionalized lipid biomarkers in hyperarid soils in the Atacama Desert. *Organic Geochemistry*, doi: http://dx.doi.org/10.1016/j.orggeochem.2016.10.015. [Link to Article](#)
- 9) **Williams, A.J.**, Alpers, C.N., Sumner, D.Y., Campbell, K., 2017. Filamentous Hydrous Ferric Oxide Biosignatures in a Pipeline Carrying Acid Mine Drainage at Iron Mountain Mine, California, *Geomicrobiology Journal*, 34:3, 193-206 doi: 10.1080/01490451.2016.1155679. [Link to Article](#)
- 8) Mangold, M., Schmidt, M.E., Fisk, M., Forni, O., McLennan, S., Ming, D., Sautter, V., Sumner, D., **Williams, A.J.**, Clegg, S., Cousin, A., Gasnault, O., Gellert, R., Grotzinger, J.P., Wiens, R., 2016.

Classification scheme for sedimentary and igneous rocks in Gale crater, Mars. *Icarus*, <http://dx.doi.org/10.1016/j.icarus.2016.11.005>. [Link to Article](#)

- 7) Blomgren, V., **Williams, A.J.**, Crossey, L.J., Karlstrom, K.E., Goff, F., 2016. Identifying the sources of CO<sub>2</sub> in carbonic springs in the Albuquerque-Belen basin. in: *Guidebook 67 - Geology of the Belen Area*, Eds: Frey, Bonnie A.; Karlstrom, Karl E.; Lucas, Spencer G.; Williams, Shannon; Ziegler, Kate; McLemore, Virginia; Ulmer-Scholle, Dana S., New Mexico Geological Society 67th Annual Fall Field Conference Guidebook, pp. 419-427. [Link to Field Guide](#)
- 6) Oehler, D.Z, Mangold, N., Hallet, B., Fairén, A.G., Le Deit, L., **Williams, A.J.**, Sletten, R.S., Martínez-Frías, J., 2016. Origin and Significance of Decameter-Scale Polygons in the Lower Peace Vallis Fan of Gale Crater, Mars. *Icarus*, 277, 56-72, [doi.org/10.1016/j.icarus.2016.04.038](http://dx.doi.org/10.1016/j.icarus.2016.04.038). [Link to Article](#)
- 5) Mangold, N., Thompson, L., Forni, O., Fabre, C., Le Deit, L., Wiens, R., **Williams, A.J.**, Williams, R., Anderson, R., Blaney, D., Calef, F., Cousin, A., Clegg, S., Dromart, G., Dietrich, W., Edgett, K., Fisk, M.R., Gasnault, O., Gellert, R., Grotzinger, J., Kah, L., Le Mouélic, S., McLennan, S., Maurice, S., Meslin, P.-Y., Newsom, H.E., Palucis, M., Rapin, W., Sautter, V., Siebach, K., Stack, K., Sumner, D., Yingst, R.A. 2016. Composition of conglomerates analyzed by the Curiosity rover: Implications for Gale crater crust and sediment sources, *Journal of Geophysical Research, Planets*, 353-387, [doi:10.1002/2015JE004977](http://dx.doi.org/10.1002/2015JE004977). [Link to Article](#)
- 4) **Williams, A.J.**, Sumner, D.Y., Alpers, C.N., Karunatillake, S., Hofmann, B.A., 2015. Preserved filamentous microbial biosignatures in the Brick Flat gossan, Iron Mountain, CA, *Astrobiology*, v.15 (8), p.637-668. [Link to Article](#)
- 3) Anderson, R., Bridges, J.C., **Williams, A.J.**, Edgar, L., Ollila, A., Williams, J., Nachon, M., Mangold, N., Schieber, J., Gupta, S., Dromart, G.; Wiens, R., Le Mouélic, S., Forni, O., Lanza, N., Mezzacappa, A., Sautter, V., Fisk, M., Blaney, D., Clark, B., Clegg, S., Gasnault, O., Lasue, J., Lèveillé, R., Lewin, E., Lewis, K., Maurice, S., Newsom, H., Schwenzer, S., Vaniman, D., 2015. ChemCam Results from the Shaler Outcrop in Gale Crater, Mars, *Icarus*, v. 249, p. 2-21, [doi: 10.1016/j.icarus.2014.07.025](http://dx.doi.org/10.1016/j.icarus.2014.07.025). [Link to Article](#)
- 2) **Williams, A.J.**, Crossey, L.J., Karlstrom, K.E., Newell, D., Person, M., Woosley, E., 2013. "Hydrogeochemistry of the Middle Rio Grande aquifer system - fluid mixing and salinization of the Rio Grande due to fault inputs", *Chemical Geology*, v. 351, p. 281-298, [doi: 10.1016/j.chemgeo.2013.05.029](http://dx.doi.org/10.1016/j.chemgeo.2013.05.029). [Link to Article](#)
- 1) **Williams, A.J.**, Andersen, C.B., and Lewis, G.P., 2009. "Evaluating the Effects of Sample Processing Treatments on Alkalinity Measurements", *Journal of Hydrology*, v. 377, p. 455-464, [doi: 10.1016/j.jhydrol.2009.09.007](http://dx.doi.org/10.1016/j.jhydrol.2009.09.007). [Link to Article](#)

#### Mars Curiosity Rover Science Team Journal Articles

- 14) Farley, K.A., Malespin, C., Mahaffy, P., Grotzinger, J.P., Vasconcelos, P.M., Milliken, R.E., Malin, M., Edgett, K.S., Pavlov, A.A., Hurowitz, J.A., Grant, J.A., Miller, H.B., Arvidson, R., Beegle, L., Calef, F., Conrad, P.G., Dietrich, W.E., Eigenbrode, J., Gellert, R., Gupta, S., Hamilton, V., Hassler, D.M., Lewis, K.W., McLennan, S.M., Ming, D., Navarro-González, R., Schwenzer, S.P., Steele, A., Stolper, E.M., Sumner, D.Y., Vaniman, D., Vasavada, A., Williford, K., Wimmer-Schweingruber, R.F., the MSL Science Team (including **Williams, A.J.**), 2014. *In Situ* Radiometric and Exposure Age Dating of the Martian Surface. *Science* (80). 343. [Link to Article](#)

- 13)** McLennan, S.M., Anderson, R.B., Bell, J.F., Bridges, J.C., Calef, F., Campbell, J.L., Clark, B.C., Clegg, S., Conrad, P., Cousin, A., Des Marais, D.J., Dromart, G., Dyar, M.D., Edgar, L.A., Ehlmann, B.L., Fabre, C., Forni, O., Gasnault, O., Gellert, R., Gordon, S., Grant, J.A., Grotzinger, J.P., Gupta, S., Herkenhoff, K.E., Hurowitz, J.A., King, P.L., Le Mouelic, S., Leshin, L.A., Leveille, R., Lewis, K.W., Mangold, N., Maurice, S., Ming, D.W., Morris, R. V., Nachon, M., Newsom, H.E., Ollila, A.M., Perrett, G.M., Rice, M.S., Schmidt, M.E., Schwenzer, S.P., Stack, K., Stolper, E.M., Sumner, D.Y., Treiman, A.H., VanBommel, S., Vaniman, D.T., Vasavada, A., Wiens, R.C., Yingst, R.A., the MSL Science Team (including **Williams, A.J.**), 2014. Elemental Geochemistry of Sedimentary Rocks at Yellowknife Bay, Gale Crater, Mars. *Science* (80). 343, 1244734–1244734. doi:10.1126/science.1244734. [Link to Article](#)
- 12)** Ming, D.W., Archer, P.D., Glavin, D.P., Eigenbrode, J.L., Franz, H.B., Sutter, B., Brunner, A.E., Stern, J.C., Freissinet, C., McAdam, A.C., Mahaffy, P.R., Cabane, M., Coll, P., Campbell, J.L., Atreya, S.K., Niles, P.B., Bell, J.F., Bish, D.L., Brinckerhoff, W.B., Buch, A., Conrad, P.G., Des Marais, D.J., Ehlmann, B.L., Fairén, A.G., Farley, K., Flesch, G.J., Francois, P., Gellert, R., Grant, J.A., Grotzinger, J.P., Gupta, S., Herkenhoff, K.E., Hurowitz, J.A., Leshin, L.A., Lewis, K.W., McLennan, S.M., Miller, K.E., Moersch, J., Morris, R. V., Navarro-González, R., Pavlov, A.A., Perrett, G.M., Pradler, I., Squyres, S.W., Summons, R.E., Steele, A., Stolper, E.M., Sumner, D.Y., Szopa, C., Teinturier, S., Trainer, M.G., Treiman, A.H., Vaniman, D.T., Vasavada, A.R., Webster, C.R., Wray, J.J., Yingst, R.A., the MSL Science Team (including **Williams, A.J.**), 2014. Volatile and Organic Compositions of Sedimentary Rocks in Yellowknife Bay, Gale Crater, Mars. *Science* (80). 343. [Link to Article](#)
- 11)** Grotzinger, J.P., Sumner, D.Y., Kah, L.C., Stack, K., Gupta, S., Edgar, L., Rubin, D., Lewis, K., Schieber, J., Mangold, N., Milliken, R., Conrad, P.G., DesMarais, D., Farmer, J., Siebach, K., Calef, F., Hurowitz, J., McLennan, S.M., Ming, D., Vaniman, D., Crisp, J., Vasavada, A., Edgett, K.S., Malin, M., Blake, D., Gellert, R., Mahaffy, P., Wiens, R.C., Maurice, S., Grant, J.A., Wilson, S., Anderson, R.C., Beegle, L., Arvidson, R., Hallet, B., Sletten, R.S., Rice, M., Bell, J., Griffes, J., Ehlmann, B., Anderson, R.B., Bristow, T.F., Dietrich, W.E., Dromart, G., Eigenbrode, J., Fraeman, A., Hardgrove, C., Herkenhoff, K., Jandura, L., Kocurek, G., Lee, S., Leshin, L.A., Leveille, R., Limonadi, D., Maki, J., McCloskey, S., Meyer, M., Minitti, M., Newsom, H., Oehler, D., Okon, A., Palucis, M., Parker, T., Rowland, S., Schmidt, M., Squyres, S., Steele, A., Stolper, E., Summons, R., Treiman, A., Williams, R., Yingst, A., the MSL Science Team (including **Williams, A.J.**), 2014. A Habitable Fluvio-Lacustrine Environment at Yellowknife Bay, Gale Crater, Mars. *Science* (80). 343. [Link to Article](#)
- 10)** Hassler, D.M., Zeitlin, C., Wimmer-Schweingruber, R.F., Ehresmann, B., Rafkin, S., Eigenbrode, J.L., Brinza, D.E., Weigle, G., Böttcher, S., Böhm, E., Burmeister, S., Guo, J., Köhler, J., Martin, C., Reitz, G., Cucinotta, F.A., Kim, M.-H., Grinspoon, D., Bullock, M.A., Posner, A., Gómez-Elvira, J., Vasavada, A., Grotzinger, J.P., the MSL Science Team (including **Williams, A.J.**), 2014. Mars' Surface Radiation Environment Measured with the Mars Science Laboratory's Curiosity Rover. *Science* (80). 343. [Link to Article](#)
- 9)** Vaniman, D.T., Bish, D.L., Ming, D.W., Bristow, T.F., Morris, R. V., Blake, D.F., Chipera, S.J., Morrison, S.M., Treiman, A.H., Rampe, E.B., Rice, M., Achilles, C.N., Grotzinger, J., McLennan, S.M., Williams, J., Bell, J., Newsom, H., Downs, R.T., Maurice, S., Sarrazin, P., Yen, A.S., Morookian, J.M., Farmer, J.D., Stack, K., Milliken, R.E., Ehlmann, B., Sumner, D.Y., Berger, G., Crisp, J.A., Hurowitz, J.A., Anderson, R., Desmarais, D., Stolper, E.M., Edgett, K.S., Gupta, S., Spanovich, N., the MSL Science Team (including **Williams, A.J.**), 2013. Mineralogy of a Mudstone at Yellowknife Bay, Gale Crater, Mars. *Science* 343, 1243480. doi:10.1126/science.1243480. [Link to Article](#)



- 8) Stolper, E.M., Baker, M.B., Newcombe, M.E., Schmidt, M.E., Treiman, A.H., Cousin, A., Dyar, M.D., Fisk, M.R., Gellert, R., King, P.L., Leshin, L., Maurice, S., McLennan, S.M., Minitti, M.E., Perrett, G., Rowland, S., Sautter, V., Wiens, R.C., the MSL Science Team (including **Williams, A.J.**), 2013. The Petrochemistry of Jake\_M: A Martian Mugarite. *Science* (80). 341. [Link to Article](#)
- 7) Meslin, P.-Y., Gasnault, O., Forni, O., Schröder, S., Cousin, A., Berger, G., Clegg, S.M., Lasue, J., Maurice, S., Sautter, V., Le Mouélic, S., Wiens, R.C., Fabre, C., Goetz, W., Bish, D., Mangold, N., Ehlmann, B., Lanza, N., Harri, A.-M., Anderson, R., Rampe, E., McConnochie, T.H., Pinet, P., Blaney, D., Lévillé, R., Archer, D., Barraclough, B., Bender, S., Blake, D., Blank, J.G., Bridges, N., Clark, B.C., DeFlores, L., Delapp, D., Dromart, G., Dyar, M.D., Fisk, M., Gondet, B., Grotzinger, J., Herkenhoff, K., Johnson, J., Lacour, J.-L., Langevin, Y., Leshin, L., Lewin, E., Madsen, M.B., Melikechi, N., Mezzacappa, A., Mischna, M.A., Moores, J.E., Newsom, H., Ollila, A., Perez, R., Renno, N., Sirven, J.-B., Tokar, R., de la Torre, M., d'Uston, L., Vaniman, D., Yingst, A., the MSL Science Team (including **Williams, A.J.**), 2013. Soil Diversity and Hydration as Observed by ChemCam at Gale Crater, Mars. *Science* (80). 341. [Link to Article](#)
- 6) Bish, D.L., Blake, D.F., Vaniman, D.T., Chipera, S.J., Morris, R. V, Ming, D.W., Treiman, A.H., Sarrazin, P., Morrison, S.M., Downs, R.T., Achilles, C.N., Yen, A.S., Bristow, T.F., Crisp, J.A., Morookian, J.M., Farmer, J.D., Rampe, E.B., Stolper, E.M., Spanovich, N., the MSL Science Team (including **Williams, A.J.**), 2013. X-ray Diffraction Results from Mars Science Laboratory: Mineralogy of Rocknest at Gale Crater. *Science* (80). 341. [Link to Article](#)
- 5) Blake, D.F., Morris, R. V, Kocurek, G., Morrison, S.M., Downs, R.T., Bish, D., Ming, D.W., Edgett, K.S., Rubin, D., Goetz, W., Madsen, M.B., Sullivan, R., Gellert, R., Campbell, I., Treiman, A.H., McLennan, S.M., Yen, A.S., Grotzinger, J., Vaniman, D.T., Chipera, S.J., Achilles, C.N., Rampe, E.B., Sumner, D., Meslin, P.-Y., Maurice, S., Forni, O., Gasnault, O., Fisk, M., Schmidt, M., Mahaffy, P., Leshin, L.A., Glavin, D., Steele, A., Freissinet, C., Navarro-González, R., Yingst, R.A., Kah, L.C., Bridges, N., Lewis, K.W., Bristow, T.F., Farmer, J.D., Crisp, J.A., Stolper, E.M., Des Marais, D.J., Sarrazin, P., the MSL Science Team (including **Williams, A.J.**), 2013. Curiosity at Gale Crater, Mars: Characterization and Analysis of the Rocknest Sand Shadow. *Science* (80). 341. [Link to Article](#)
- 4) Leshin, L.A., Mahaffy, P.R., Webster, C.R., Cabane, M., Coll, P., Conrad, P.G., Archer, P.D., Atreya, S.K., Brunner, A.E., Buch, A., Eigenbrode, J.L., Flesch, G.J., Franz, H.B., Freissinet, C., Glavin, D.P., McAdam, A.C., Miller, K.E., Ming, D.W., Morris, R. V, Navarro-González, R., Niles, P.B., Owen, T., Pepin, R.O., Squyres, S., Steele, A., Stern, J.C., Summons, R.E., Sumner, D.Y., Sutter, B., Szopa, C., Teinturier, S., Trainer, M.G., Wray, J.J., Grotzinger, J.P., the MSL Science Team (including **Williams, A.J.**), 2013. Volatile, Isotope, and Organic Analysis of Martian Fines with the Mars Curiosity Rover. *Science* (80). 341. [Link to Article](#)
- 3) Webster, C.R., Mahaffy, P.R., Atreya, S.K., Flesch, G.J., Farley, K.A., the MSL Science Team (including **Williams, A.J.**), 2013. Low Upper Limit to Methane Abundance on Mars. *Science* (80). 342. [Link to Article](#)
- 2) Mahaffy, P.R., Webster, C.R., Atreya, S.K., Franz, H., Wong, M., Conrad, P.G., Harpold, D., Jones, J.J., Leshin, L.A., Manning, H., Owen, T., Pepin, R.O., Squyres, S., Trainer, M., the MSL Science Team (including **Williams, A.J.**), 2013. Abundance and Isotopic Composition of Gases in the Martian Atmosphere from the Curiosity Rover. *Science* (80). 341. [Link to Article](#)

- 1) Williams, R.M.E., Grotzinger, J.P., Dietrich, W.E., Gupta, S., Sumner, D.Y., Wiens, R.C., Mangold, N., Malin, M.C., Edgett, K.S., Maurice, S., Forni, O., Gasnault, O., Ollila, A., Newsom, H.E., Dromart, G., Palucis, M.C., Yingst, R.A., Anderson, R.B., Herkenhoff, K.E., Mouélic, S. Le, Goetz, W., Madsen, M.B., Koefoed, A., Jensen, J.K., Bridges, J.C., Schwenzer, S.P., Lewis, K.W., Stack, K.M., Rubin, D., Kah, L.C., III, J.F.B., Farmer, J.D., Sullivan, R., Beek, T. Van, Blaney, D.L., Pariser, O., Deen, R.G., the MSL Science Team (including **Williams, A.J.**), 2013. Martian Fluvial Conglomerates at Gale Crater. *Science* (80). 291, 1068–1072. [Link to Article](#)

## Teaching Experience

### University of Florida:

**Survey of Geobiology** (GLY4930/6932) lecture and laboratory instructor, 2019-2020

**Evolution of Earth and Life in North America** (GLY3105C) lecture instructor 2020

### Towson University:

**Physical Geology** (GEOL 121) lecture and laboratory instructor, 2015-2018

**Survey of Geobiology** (GEOL 470) lecture instructor, 2018

**Methods for Environmental Geochemistry** (GEOL 410) lecture and laboratory instructor, 2016, 2018

**Oceanography** (GEOL 357) lecture guest instructor, 2017

**Environmental Science Senior Seminar** (ENVS 482) guest instructor, 2017

**Topics in Environmental Geology** (ENVS 601) graduate level lecture and laboratory instructor, 2016, 2018

### University of California, Davis:

**First Year Seminar-** 2013 Mars Science Laboratory Rover: Exploring Mars for a Habitable Environment co-instructor, 2013

**The Oceans** lecture guest instructor, 2012

**First Year Seminar-** 2011 Mars Science Laboratory Rover: Landing Site Selection and Mission to Mars co-instructor, 2011

**Sedimentology and Stratigraphy** TA lab instructor, 2011

**The Earth** TA lab instructor, 2010

### University of New Mexico:

**Environmental Science capstone course** TA lab instructor, 2009

**Introduction to Environmental Science** TA lab instructor 2007 - 2009

## Academic Experience

### **Geoscience Education Research Study**

Earth & Planetary Sciences Department, UC Davis, 2011.

Institutional Review Board-approved study to assess changes in undergraduate's understanding of the process of science via earth science literacy development in First Year Seminar course "2011 Mars Science Laboratory Rover: Landing Site Selection and Mission to Mars".

## Mentoring

### **Graduate and Undergraduate Research Advisor and Mentor**

Department of Geological Sciences, University of Florida, 2018- *present*.

Served as the primary faculty research advisor for 2 Ph.D., 1 MSc and 5 undergraduate students.

### **Graduate and Undergraduate Research Advisor and Mentor**

Department of Physics, Astronomy, and Geosciences, Towson University, 2015-2019.

Served as the primary faculty research advisor for 1 MSc and 16 undergraduate students. Directed the senior research project for 15 undergraduate senior thesis students.

### **Undergraduate/ Intern Research Advisor and Mentor**

Earth and Planetary Sciences Department, UC Davis, 2009-2014.

Served as the primary graduate research advisor for two undergraduate students (one geology major and one engineering major) and one high school intern.

### **Undergraduate Research Advisor and Mentor**

Earth & Planetary Sciences Department, University of New Mexico, 2008-2010.

Served as the primary graduate research advisor for five undergraduate students as part of the Sevilleta Research Experience for Undergraduates program.

## **Advisee Awards & Funding**

**Lauren Judge**, Florida Space Grant Consortium Masters Fellowship, 2020, \$8,992

**Chance Sturup**, UF College of Liberal Arts and Sciences Scholars Award, 2020, \$3,000

## **Invited Talks and Public Outreach**

### **COSPAR Spring 2021 Meeting**

Invited talk in session F3.3: Habitability in the Solar System and Beyond, February 2021.

### **American Geophysical Union Fall 2020 Meeting**

Invited talk in session P070: Water, Habitability, and Curiosity's Exploration near the Greenheugh Pediment, a Major Unconformity on Mount Sharp, Gale Crater, Mars I, December 2020.

### **Scientist in Every Florida School Program**

Outreach lecture on the Definition of Life and How to Search for Life on Mars delivered to 5 of Ms. Leigh Larsen's classes at Gainesville High School. September 2020.

### **Interview with NASA Astrobiology 'Countdown to Mars' for the Perseverance Rover Launch 2020**

<<https://astrobiology.nasa.gov/countdown-to-mars/>>

### **Interview with University of Florida University Relations 2019**

<<https://www.youtube.com/watch?v=HlawMg9FuwE>>

### **Louisiana State University**

Invited Endowed Seminar Speaker, Department of Geology and Geophysics, 2018.

### **Virginia Polytechnic Institute and State University**

Invited Seminar, Department of Geosciences, 2018.

**University of Florida**

Invited Seminar, Department of Geological Sciences, 2018.

**American Geophysical Union Fall 2017 Meeting**

Invited talk in session P42B: What Determines Planetary Habitability, and What Biosignatures Might We Expect? I, 2017.

**Interview for Forbes Science Article**

“NASA’s Search for Transfats and Other Fatty Acids on Mars” by Bruce Dorminey  
<<https://goo.gl/N5qKvs>>

**University of Maryland, College Park**

Invited Seminar, Department of Geology, 2016.

**Washington and Lee University**

Invited Seminar, Department of Geology, 2015.

**'Mars Through Time' Professional Development Training Course**

Invited Talks, Lunar and Planetary Institute, 2014 and 2015

**Johns Hopkins Applied Physics Laboratory**

Invited Seminar, Space Exploration Division. 2014

**Water on Mars Launch Unit - Lawrence Hall of Science**

Science Adviser, UC Berkeley, 2014 - 2015

**Sevilleta LTER**

Invited Seminars, Sevilleta REU Summer Seminar Series, 2009 and 2014

**TEDxUCDavis**

Invited Talk, UC Davis, 2013, Presentation available at <http://goo.gl/24NZ7t>

**The Triple Helix, UCD Chapter**

Invited talk, University of California, Davis, 2012

**Professional  
Development  
and Training**

**Early Career Geoscience Faculty Workshop: Teaching, Research and Managing Your Career**

National Association of Geoscience Teachers - On the Cutting Edge Program, 2016.

**New Faculty Workshop for Chemistry Faculty**

Cottrell Scholars Collaborative, 2016.

**Undergraduate Teaching & Higher Education Faculty Workshop**

Planetary Science Institute, 2015.

**Learner-Centered Teaching Workshop**

Center for Excellence in Teaching and Learning, UC Davis, 2013.

**Seminar on Developing Hybrid and Online Courses**

Center for Excellence in Teaching and Learning, UC Davis, 2013.

**Moving FORWARD in Space workshop**

National Science Foundation Program Focus on Reaching Women for Academics, Research and Development, 2013.

**Powerful Pedagogy Workshop Series**

Center for Excellence in Teaching and Learning, UC Davis, 2013.

**International Geobiology Course**

University of Southern California & Colorado School of Mines, 2011.

**Preparing for an Academic Career in the Geosciences workshop**

National Association of Geoscience Teachers - On the Cutting Edge Program, 2010.

**Professional Service**

**Reviewer** for 2 NASA grant review panels (2020, 2017), external reviewer for 2 NASA grant review panels (2017, 2016), executive secretary for 1 NASA grant review panel (2013)

**Writing committee** member for the “Biosignature Preservation and Detection in Mars Analog Environments” conference, 2016

**Peer reviewer** for *Environmental Science and Pollution Research* (2013), *Geomicrobiology Journal* (2015), *Chemical Geology* (2016), *Extremophiles* (2017), *American Mineralogist* (2017), *Earth and Space Science* (2018), *Frontiers in Microbiology* (2018), *Astrobiology* (2019, 2020), *Geobiology* (2020), *Icarus* (2020), *Journal of Hydrology* (2020), *Scientific Reports* (2020)

**Abstracts**

\* indicates student advisee

**Williams, A.J.**, J. Eigenbrode, R.H. Williams, A. Buch, S. Teinturier, M. Millan, D.P. Glavin, C. Freissinet, C. Szopa, S.S. Johnson, C. Knudson, J.M.T. Lewis, A. McAdam, R. Navarro-González, C. Malespin, P.R. Mahaffy. Results from the TMAH Wet Chemistry Experiment on the Sample Analysis at Mars (SAM) Instrument Onboard NASA’s Curiosity Rover. COSPAR, January 2021. [Invited talk].

McAdam, A.C., B. Sutter, P. D. Archer, H. B. Franz, J. L. Eigenbrode, J. C. Stern, C. A. Knudson, J. M. T. Lewis, G. M. Wong, M. Millan, S. Andrejkovičová, J. V. Clark, C. N. Achilles, D. W. Ming, R. V. Morris, T. F. Bristow, E. B. Rampe, R. Navarro-González, S. S. Johnson, **A. J. Williams**, P. R. Mahaffy. Constraints on the Mineralogy and Chemistry of the Glen Torridon Clay-Bearing Unit from the Sample Analysis at Mars (SAM) Instrument on NASA’s Curiosity Rover. COSPAR, January 2021.

Millan, M., K. Campbell, M. Van Kranendonk, C. Sriaporn, K. Handley, **A.J. Williams**, L. Chou, P.R. Mahaffy, S.S. Johnson. Preservation and Detection of Lipid Biosignatures in Modern Hot Spring Deposits using the Flight-like Experiments from the SAM and MOMA Instruments. COSPAR, January 2021.

Navarro-González, R., K.F. Navarro, J. Urrutia-Fucugauchi, C.P. McKay, L. Pérez-Cruz, P. Coll, J.L. Eigenbrode, **A.J. Williams**, C.A. Malespin, P.R. Mahaffy, F.J. Martín-Torres, M.P. Zorzano-Mier. Thiophene trends in sediments of two impact craters: Chicxulub and Gale. Implications to surface environmental conditions. COSPAR, January 2021.

**Williams, A.J.**, J. Eigenbrode, R.H. Williams, A. Buch, S. Teinturier, M. Millan, D.P. Glavin, C. Freissinet, C. Szopa, S.S. Johnson, C. Knudson, J.M.T. Lewis, A. McAdam, R. Navarro-González, V. Fox, A.B. Bryk, R. Summons, W. Brinckerhoff, C. Malespin, P.R. Mahaffy. The Search for Fatty Acids on Mars: Results from the First *In Situ* Thermochemolysis Experiment at Gale Crater, Mars. AGU Fall 2020 Meeting, December 2020 [Invited talk].

Shaner, S.\*, **Williams, A.J.**, Judge, L.\*, Kivrak, L.\*, Zhuang, G. Lipid Biosignature Detection by TMSH Lipid Biosignature Detection by TMSH Thermochemolysis and Pyrolysis GC-MS in the Mars-Analog Sediments of Hyperarid Qaidam Basin, China. AGU Fall 2020 Meeting, December 2020.

McAdam, A., B. Sutter, D. Archer Jr., H.B. Franz, J.L. Eigenbrode, C.A. Knudson, J.M.T. Lewis, G. Wong, M. Millan, S. Andrejkovicová, J. Hogancamp, **A.J. Williams**, C. Freissinet, D.P. Glavin, J. Stern, R. Navarro-Gonzalez, C. Achilles, D. Ming, R. Morris, T. Bristow, E. Rampe, A. Bryk, S. Johnson, P. Mahaffy, C. Malespin. Constraints on the Depositional and Diagenetic History of the Glen Torridon Clay-Bearing Unit from the Mars Science Laboratory Sample Analysis at Mars Instrument Suite. AGU Fall 2020 Meeting, December 2020.

Judge, L.\*, **Williams, A.J.**, Lanza, N., Ollila, A.M., Spilde, M.N., Lueth, V.W., Shaner, S., Kivrak, L.\* Trends in Trace Elements from Biogenic and Abiogenic Manganese Oxides. AGU Fall 2020 Meeting, December 2020.

Kivrak L.\*, Shaner, S.\*, Judge, L.\*, **Williams, A.J.**, McAdam, A., Andrejkovicová, S.C. Trimethylsulfonium hydroxide (TMSH) as a Thermochemolysis Reagent for Detecting Fatty Acids in Mars and Ceres-analog Samples. AGU Fall 2020 Meeting, December 2020.

Eigenbrode, J.L., **Williams, A.J.**, R.H. Williams, A. Buch, S. Teinturier, M. Millan, D.P. Glavin, C. Freissinet, C. Szopa, J.M.T. Lewis, A. McAdam, R. Navarro-Gonzalez, H.B. Franz, D. Archer Jr., B. Sutter, R.E. Summons, A. Steele, C. Malespin, P.R. Mahaffy. Sample Chemistry Revealed by TMAH-Evolved Gas Analysis: Results from the First *In Situ* Thermochemolysis Experiment at Gale Crater, Mars. AGU Fall 2020 Meeting, December 2020.

Judge, L.\*, **Williams, A.J.**, Lanza, N., Ollila, A.M., Spilde, M.N., Lueth, V.W., Shaner, S., Kivrak, L. Quantifying the Organics Load Within Manganese Oxides Using Mars Spaceflight Pyrolysis GC-MS Techniques. Geological Society of America Fall 2020 Meeting, October 2020.

Kivrak, L.\*, **Williams, A.J.**, Buch, A., He, Y. Optimizing the Pyrolysis Temperature of TMSH Thermochemolysis for Use in GC-MS Biosignature Detection. Geological Society of America Fall 2020 Meeting, October 2020.

Sturup, C.\*, Rogers, M.\*, **Williams, A.J.** Organics Detection in Acid Mine Drainage Sediments, With Implications for Organics Preservation in Iron Rich Acid and Saline Environments on Mars. Geological Society of America Fall 2020 Meeting, October 2020.

Shaner, S.E.\*, **A. J. Williams**, G. Zhuang. Organics Preservation in The Hyperarid Qaidam Basin, China: An Analog for Fluvio-Lacustrine Deposits In Gale Crater, Mars. University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2020.

Sturup, C.\*, M. Rogers\*, and **A. J. Williams**. Organics Detection in Acid Mine Drainage Sediments, with Implications for Organics Preservation in Iron-Rich Acid and Saline Environments on Mars. University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2020.

Burnette, S.\*, and Williams, A.J. Preservation of Organic Biosignatures in Icelandic Iron Sinter Springs. University of Florida Undergraduate Research Symposium, Gainesville, FL, April 2020.

**Williams, A.J.**, C. Muñoz, S. Shaner\*, D. Hu\*, P. Thompson\*. Organics Preservation and Detection From The El Tatio Geyser Field Digitate Stromatolites, With Implications For Organics Detection In Comparable Digitate Structures From Columbia Hills In Gusev Crater, Mars. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Shaner, S.E.\*, **A. J. Williams**, G. Zhuang. Organics Preservation In The Hyperarid Qaidam Basin, China: An Analog For Fluvio-Lacustrine Deposits In Gale Crater, Mars. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Sturup, C.\*, M. Rogers\*, and **A. J. Williams**. Organics Detection in Acid Mine Drainage Sediments, with Implications for Organics Preservation in Iron-Rich Acid and Saline Environments on Mars. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Judge, L.\*, Shaner, S.\*, Kivrak, L.\*, **Williams, A.J.**, Lanza, N., Spilde, M. Geobiology of Manganese Oxides. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Kivrak, L.\*, Shaner, S.\*, Judge, L.\*, **Williams, A.J.** Trimethylsulfoniumhydroxide (TMSH) as a Thermochemolysis Reagent for Detecting Fatty Acid Methyl Esters In Iron Oxide And Siliceous Sinter Mars-Analog Rocks. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Millan, M., C. Pozarycki, A. McAdam, S. Andrejkovičová, P. Mahaffy, D. Glavin, A. Buch, C. Szopa, C. Freissinet, A. Srivastava, S. Teinturier, C. Malespin, R. Williams, **A.J. Williams**, J. Eigenbrode, R. Navarro-Gonzalez, S. S. Johnson. Optimization of the Sample Analysis at Mars Wet Chemistry Experiment for the Detection of Organics in Glen Torridon. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

Fraeman, A.A., L. A. Edgar, E. B. Rampe, J. L'Haridon, N. Mangold, L. Thompson, J. Frydenvang, C. M. Fedo, J. P. Grotzinger, J. G. Catalano, V. Z. Sun, C. House, C. Hardgrove, T. S. J. Gabriel, S. Czarnecki, A. R. Vasavada, R. V. Morris, R. E. Arvidson, A. Bryk, S. Banham, K. Bennett, J. C. Bridges, W. Dietrich, C. S. Edwards, W. W. Fischer, V. K. Fox, S. Gupta, B. Horgan, S. Jacob, J. R. Johnson, S. S. Johnson, D. M. Rubin, M. Salvatore, S. P. Schwenzer, K. Siebach, N. T. Stein, K. M. Stack, S. Turner, D. Wellington, **A.J. Williams**. The Origin of Vera Rubin Ridge: Overview and Results from Curiosity's Exploration Campaign. Lunar and Planetary Science Conference, The Woodlands, TX, March 2020.

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