Curriculum Vitae for William J. Abbey

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EDUCATION

1997 M.Sc. Geology, George Washington University, Washington, D.C.

POSITIONS

2014 - pres Surface Sampling System Scientist, Mars Science Laboratory
2001 - pres Technologist, Plantary Chemistry & Astrobiology, Jet Propulsion Laboratory
2000 - 2001 Research Assistant, California Institute of Technology

CURRENT ACTIVITIES

Wireline Analysis Tool for Subsurface Observation of Northern-Ice-Sheets (WATSON), PSTAR, Co-I (*PI: Bhartia*) 2015-2018. Will support instrument deployment to Arctic field sites.

Derivation of Optical Constants of Mars Carbonate Analogs, MFRP, Consultant (*PI: Pittman*) 2013-2015. Characterize carbonate analogs used for optical constant determination.

RESPONSIBILITIES

- SHERLOC Science Team Member, a Mars 2020 effort to build an arm-mounted, deep UV fluorescence/Raman spectrometer for detection of organic compounds and astrobiologically relevant minerals via *in situ* micro-mapping of suspected source terrains on Martian surface.
- MSL Science Team Member. Currently serve as a Surface Sampling System (SSS) Scientist aiding team in selection of high value targets that can be safely sampled, processed, and delivered to MSL instruments. Prior to landing, helped plan and execute Fast Motion Field Test and Rover Thread Test training exercises designed to simulate Rover Science Operations.
- Consult on various projects that require geologic expertise, sample characterization, and/or field planning, including current 2020 efforts to acquire Martian analogs for drill and hardware testing, and upcoming deployment of wireline borehole instrument to Greenland Ice Sheet.
- Have provided logistical planning and support for field investigations to such locations as the Mojave Desert, the San Francisco Volcanic Field in Arizona, and Death Valley National Park, as well as the Atacama Desert in Chile and the Arctic Circle.

AWARDS

NASA Bonus Award - MSL SSS Science Team, Team Bonus Award 2015
NASA Honors Award - MSL Prime Mission Science & Operations Team, Group Achievement 2015
NASA Honors Award - MSL Project Operations Team, Group Achievment 2013
NASA Honors Award - MSL Science Office Development/Operations Team, Group Achievement 2013
NASA Bonus Award - In Situ Sample Processing Team, Team Bonus Award 2005

PUBLICATIONS

Abbey, W. J., Bhartia, R., Williford, K., Paez, V., Sijapati, K., Sijapati, S., Hug, W., Beegle, L., Deep UV Raman Spectroscopy for Planetary Exploration: The Search for In Situ Organics, *paper to be submitted to* Icarus, 2015.

Beegle, L.C., Bhartia, R., White, M., DeFlores, L., **Abbey, W.,** Wu, J., *et al.* SHERLOC: Scanning Habitable Environments with Raman and Luminescence for Organics and Chemicals, paper presented at IEEE Aerospace Conference, 2015.

Douglas, S., Perry, M.E., **Abbey, W.J**., Tanaka, Z., Chen, B., McKay, C.P., The structure and chemical layering of Proterozoic stromatolites in the Mojave Desert, International Journal of Astrobiology 14 (3), 517-526, 2015.

Anderson, R.C., Beegle, L.C., Hurowitz, J., Hanson, C., **Abbey, W.,** Sybold, C., *et al*. The Mars Science Laboratory Scooping Campaign at Rocknest: A Comparison Between Pre-Launch Terrestrial Testing and Mars, Icarus 256, 66-77, 2015.

Pitman, K.M., Noe Dobrea, E.Z., Jamieson, C.S., Dalton, J.B., **Abbey, W.J.,** Joseph, E.C.S., Reflected spectroscopy and optical functions for hydrated Fe-sulfates, American Mineralogist 99 (8-9), 1593-1603, 2014.

Noell, A.C., **Abbey, W.J.,** Anderson, R.C., Ponce, A., Radiocarbon Dating of Glacial Dust Layers and Soils at Kilimanjaro's Northern Ice Field, The Holocene 24 (10), 1398-1405, 2014.

Jamieson, C, Dobrea, E.N., Dalton, J.B., Pitman, K., **Abbey, W.,** The Spectral Variability of Kieserite ($MgSO4+H_2O$) with Temperature and Grain Size and its Application to the Martian Surface, Journal of Geophysical Research – Planets 119 (6), 1218-1237, 2014.

Bekker, D.L., Thompson, D.R., **Abbey, W.J**., Cabrol, N.A., Francis, R., Manatt, K.S., Ortega, K.F., Wagstaff, K.L., A Field Demonstration of an Instrument Performing Autonomous Classification of Geologic Surfaces, Astrobiology 14 (6), 486-501, 2014.

Foil, G., Thompson, D., **Abbey, W**., Wettergreen, D., Probabilistic Surface Classification for Rover Instrument Targeting, paper presented at IEEE/RSJ International Conference on Intelligent Robots and Systems, 2013.

Wagstaff, K.L, Thompson, D.R., **Abbey, W.,** Allwood, A., Bekker, D., Cabrol, N.A., Fuchs, T., Smart, texture-sensitive instrument classification for in situ rock and layer analysis, Geophysical Research Letters 40, 1-6, 2013

Abbey, W., Salas, E., Bhartia, R., Beegle, L.W., The Mojave Vadose Zone: A Subsurface Biosphere Analog for Mars, Astrobiology 13 (7), 637-646, 2013.

Zacny, K., Paulsen, G., Bar-Cohen, Y., Beegle, L., Sherrit, S.... **Abbey, B.,** *et al.* Wireline Deep Drill for Exploration of Mars, Europa, and Enceladus, paper presented at IEEE Aerospace Conference, 2013.

Guerrero, J., Beegle, L, **Abbey, W**., Bhartia, R., Salas, E., Russell, M., Towles, D., The Mojave Subsurface Bio-Geochemistry Explorer (MOSBE), Earth and Space 2012, 592-599, 2012.

Peters, G.H., **Abbey, W.,** Bearman, G.H., Mungas, G.S., Smith, J.A., Anderson, R.C., Douglas, S., and Beegle, L.W., Mojave Mars simulant - Characterization of a new geologic Mars analog, Icarus 197, 470-479, 2008.

Bhartia, R., Hug, W.F., Salas, E.C., Reid, R.D., Sijapati, K.K., Tsapin, A., **Abbey, W**., Conrad, P.G., Nealson, K.H., and Lane, A.L., Classification of Organic and Biological Materials with Deep UV Excitation, Applied Spectroscopy 62 (10), 46-53, 2008.

Douglas, S., **Abbey, W.,** Mielke, R., and Conrad, P. and Kanik, I., Textural and mineralogical biosignatures in an unusual microbialite from Death Valley, California, Icarus 193, 620-636, 2008.