Lindsay McHenry, Ph.D.

**Award:** Research Infrastructure Program; $9961.00

**Title:** Associate Professor, Geosciences

**Project:** Astrobiology at Lassen Volcanic National Park

**Abstract:** (Second Paragraph of Proposal)Silica, sulfates, and phyllosilicates, all mineral types also identified on Mars (e.g. Murchie et al., 2009), can be formed during hydrothermal alteration and precipitation, and the exact minerals that form is in part determined by these aqueous conditions. Hydrothermal environments were likely common on Mars (due to evidence of early aqueous activity and a long record of volcanic activity), and such environments could have remained habitable long after the surface cooled and desiccated (e.g. Schulze-Markuch et al., 2007). However, some hydrothermal environments are more habitable than others, and being able to distinguish between the deposits of hostile acid-sulfate fumarole and more gentle near-neutral hot spring environments can give clues to habitability. Lassen hydrothermal environments produce silica by both acid-sulfate leaching and by precipitation as sinters from neutral hydrothermal waters (Janik and McLaren, 2010), both of which have been suggested as potential origins for deposits in the Columbia Hills studied by the Mars Exploration Rover (MER) Spirit (Yen et al., 2008; Ruff et al., 2011).

**Biography:** Dr. Lindsay McHenry is an associate professor at UW-Milwaukee, where she has been  
 teaching and researching since 2005. Her research has included terrestrial analogs for the  
 mineralogy and geochemistry of Mars, with an emphasis on volcanic and hydrothermal  
 environments. This research has taken her (and her students) to Hawaii, California, Idaho,  
 Iceland, and Tanzania (East Africa) pursuing a variety of potentially Mars-like settings.  
 She has also developed and taught courses in Planetary Geology at the introductory level  
 (including a popular online course on the “Geology of the Planets”) and at the advanced  
 level, and has mentored both graduate and undergraduate students on field and lab  
 projects related to the geology of the Martian surface.

**Congressional District**: 4

**Congressional Representative**: Gwen Moore