

**Thursday, March 21, 2013**  
**MINERALOGY OF MARTIAN AQUEOUS ENVIRONMENTS**  
**8:30 a.m. Waterway Ballroom 4**

[R402]

**Chairs:** **Scott McLennan**  
**Susanne Schwenger**

- 8:30 a.m. Schwenger S. P. \* Reed M. H.  
[\*Modeling Alteration Minerals on Mars — Investigating the High Temperature Component\*](#) [#2301]  
 High-temperature mineral formation in martian rocks — modeled with the new code CHIM-XPT — reveals the early history of (impact-generated) hydrothermal systems.
- 8:45 a.m. Carter J. \* Loizeau D. Mangold N. Poulet F. Bibring J.-P.  
[\*Widespread Surface Weathering on Early Mars: A Case for a Warmer and Wetter Mars\*](#) [#1755]  
 We report the detection of numerous specific clay stratigraphies on Mars that are consistent with weathering sequences formed under nonarid climates on Earth.
- 9:00 a.m. Dehouck E. \* Gaudin A. Mangold N. Lajaunie L. Dauzeres A. et al.  
[\*Weathering of Olivine Under CO<sub>2</sub> Atmosphere: A Martian Perspective\*](#) [#2071]  
 We performed an experimental study of the weathering of olivine under CO<sub>2</sub> and air. The results can help to understand the secondary mineralogy of Mars.
- 9:15 a.m. Horgan B. \* Kahmann-Robinson J. A. Bishop J. L. Christensen P. R.  
[\*Climate Change and a Sequence of Habitable Ancient Surface Environments Preserved in Pedogenically Altered Sediments at Mawrth Vallis, Mars\*](#) [#3059]  
 The clay stratigraphy at Mawrth Vallis, Mars, is interpreted as a paleosol sequence. Soil mineralogy indicates climate transitions and surface environments.
- 9:30 a.m. Pan L. \* Ehlmann B. L.  
[\*Phyllosilicate and Hydrated Silica Detection in the Knobby Terrains of Acidalia Planitia\*](#) [#2572]  
 Hydrated silica and Fe/Mg phyllosilicate with olivine-bearing units are found using CRISM data in eastern Acidalia Planitia associated with mud volcanoes.
- 9:45 a.m. Hallis L. J. \* Ishii H. A. Bradley J. P. Taylor G. J.  
[\*Comparisons of Martian and Antarctic Alteration: A Transmission Electron Microscope Study of MIL 090032\*](#) [#1735]  
 We studied both the pre-terrestrial and terrestrial alteration in MIL 090032 — a martian nakhlite meteorite — using transmission electron microscopy.
- 10:00 a.m. Tomkinson T. \* Lee M. R. Mark D. F. Stuart F. M.  
[\*The Nakhilite Meteorites Provide Evidence for Mineralization of Martian CO<sub>2</sub> by Carbonation of Silicates\*](#) [#1208]  
 Evidence from the Lafayette meteorite shows that carbon dioxide could have been sequestered very effectively from the martian atmosphere by mineral carbonation.
- 10:15 a.m. Bishop J. L. \* Wray J. J. Ehlmann B. L. Brown A. J. Parente M.  
[\*Refining Martian Carbonate Chemistries Determined Through CRISM Analyses of Several Carbonate-Bearing Outcrops\*](#) [#2555]  
 This study refines the chemistries of carbonate outcrops on Mars through current analyses of CRISM data utilizing newly available lab spectra of carbonates.

- 10:30 a.m. McLennan S. M. \* Zhao Y.-Y. S.  
[Trace Element \(Cr, Ni, Zn\) Geochemistry of Surficial Processes on Mars: Insights from Experiments and Implications for In Situ Measurements](#) [#2642]  
Experiments evaluating Cr, Ni, and Zn behavior during acid alteration, evaporation, and oxidative diagenesis provide constraints on interpreting Mars APXS data.
- 10:45 a.m. Niles P. B. \* Golden D. C. Michalski J.  
[Experimental Evidence for Weathering and Martian Sulfate Formation Under Extremely Cold Water-Limited Environments](#) [#2526]  
We describe experiments that show weathering and sulfate formation are possible at temperatures  $<-40^{\circ}\text{C}$  by acidic thin films that may be occurring on Mars.
- 11:00 a.m. Leftwich K. M. \* Bish D. L.  
[Phase Stabilities in the  \$\text{Na}\_2\text{Mg}\(\text{SO}\_4\)\_2\text{-H}\_2\text{O}\$  System and Hydration/Dehydration Behavior of a New 16-Hydrate Phase Under Mars-Relevant Conditions](#) [#2778]  
This work describes the dehydration/hydration behavior of phases in the  $\text{Na}_2\text{Mg}(\text{SO}_4)_2\text{-H}_2\text{O}$  system under Mars-relevant conditions.
- 11:15 a.m. Elsenousy A. A.E. \* Hanley J. Chevrier V. F.  
[Freezing and Evaporation Modeling of Phoenix WCL Solutions Using FREZCHEM and Geochemical Workbench](#) [#2695]  
The WCL solutions modeled using FREZCHEM and GWB show the absence of Ca perchlorate in the simulations, which indicates a very arid environment.
- 11:30 a.m. Glotch T. D. \* Bandfield J. L. Wolff M. J. Arnold J. A.  
[Chloride Salt Deposits on Mars — No Longer "Putative"](#) [#1549]  
We have discovered a new spectral class of chloride salt deposits on Mars. Differences between spectral classes are due to grain sizes of admixed silicates.