

**Wednesday, March 16, 2005**  
**ASTEROID SPECTROSCOPY AND MINERALOGY**  
**8:30 a.m. Salon A**

**Chairs: S. Erard**  
**L. A. McFadden**

- 8:30 a.m. Gaffey M. J. \*  
*The Critical Importance of Data Reduction Calibrations in the Interpretability of S-type Asteroid Spectra* [#1916]  
 S-asteroid spectra are especially sensitive to distortion during the reduction of raw data to calibrated spectra. This can lead to major errors in mineralogical interpretations. Two major problems and the procedures to ameliorate them are discussed.
- 8:45 a.m. Sunshine J. M. \* Bus S. J. Burbine T. H. McCoy T. J.  
*Tracing Oxygen Fugacity in Asteroids and Meteorites Through Olivine Composition* [#1203]  
 We present new spectra of well-characterized olivine-rich meteorites and show that olivine Fa# can be accurately inferred from spectra. Using the same approach, new asteroid data are examined to infer the oxygen fugacity of olivine-rich asteroids.
- 9:00 a.m. Trigo-Rodríguez J. M. \* Castro-Tirado A. J. Llorca J.  
*Evidence of Hydrated 109P/Swift-Tuttle Meteoroids from Meteor Spectroscopy* [#1485]  
 Evidence for the possible presence of water in meteoroids released from comet 109P/Swift-Tuttle is presented. A Perseid fireball spectrum obtained during the 2004 campaign shows O and H lines, consistent with the presence of water in the mineral components of the meteoroid.
- 9:15 a.m. Emery J. P. \* Cruikshank D. P. Van Cleve J. Stansberry J. A.  
*Mineralogy of Asteroids from Observations with the Spitzer Space Telescope* [#2072]  
 Thermal emission measurements of the low-albedo Trojan asteroid 624 Hektor indicate a surface mineralogy of fine-grained silicates. We present the data and analysis leading to this conclusion and compare with similar data of Main Belt asteroids.
- 9:30 a.m. Reddy V. \* Hardersen P. S. Gaffey M. J. Abell P. A.  
*Mineralogy and Temperature-induced Spectral Investigations of A-type Asteroids 246 Asporina and 446 Aeternitas* [#1375]  
 We investigated temperature-induced spectral effects on A-asteroid 446 Aeternitas by observing at different heliocentric distances and did not find any change in the olivine feature. Mineralogy of 446 Aeternitas and 246 Asporina is also estimated.
- 9:45 a.m. Abell P. A. \* Gaffey M. J. Landis R. R. Jarvis K. S.  
*Compositional Investigation of Binary Near-Earth Asteroid 66063 (1998 RO<sub>1</sub>): A Potentially Undifferentiated Assemblage* [#2283]  
 Near-IR spectra of binary near-Earth asteroid 1998 RO<sub>1</sub> indicate this object may be an undifferentiated assemblage similar to an L-ordinary chondrite, or an assemblage that experienced low partial melting and thus similar to a primitive achondrite.
- 10:00 a.m. Hardersen P. S. \* Gaffey M. J. Abell P. A.  
*Detailed Mineralogical Characterizations of Four S-Asteroids: 138 Tolosa, 306 Unitas, 346 Hermentaria, and 480 Hansa* [#1240]  
 Near-IR spectra were obtained for S-asteroids 138 Tolosa, 306 Unitas, 346 Hermentaria, and 480 Hansa. Spectral band parameters and the resulting mineralogical characterizations suggest that all four asteroids are thermally-evolved and non-chondritic.

- 10:15 a.m. McFadden L. A. \* Goldman N. J. Gaffey M. J. Izenberg N. R.  
*Evidence for Partial Melting in Reflectance Spectra of 433 Eros* [#1561]  
Near-IR spectra of asteroid 433 Eros analyzed using MGM fitting results compositions indicating partial melting consistent with results from XGRS flown on NEAR. Partial melting had to occur before it was fragmented to its current state and size.
- 10:30 a.m. Erard S. \* Forni O. Ollivier M. Dotto E. Roush T. Poulet F. Müller T.  
*The 2004 Opposition of Ceres Observed with Adaptive Optics on the VLT* [#1388]  
Ceres has been observed with NACO on the VLT. Imaging and spectroscopy were performed in the 1.1–4.1  $\mu\text{m}$  range with spatial resolution up to 50 km. The aim is 1) to provide the first IR map of Ceres 2) to map compositional variations at the surface.
- 10:45 a.m. Li J.-Y. \* McFadden L. A. Parker J. Wm. Young E. F. Thomas P. C. Russell C. T. Stern S. A. Sykes M. V.  
*HST Photometry and Surface Mapping of Asteroid 1 Ceres* [#1345]  
The first spatially resolved, photometrically calibrated surface albedo maps of Ceres are constructed from HST observations at a spatial resolution of 60 km, showing a very uniform surface with a mean V-band SSA of  $0.07 \pm 2\%$ .
- 11:00 a.m. Lawrence S. J. \* Lucey P. G. Taylor G. J.  
*Asteroid Modal Mineralogy Using Hapke Mixing Models: Testing the Utility of Spectral Lookup Tables* [#2362]  
The effectiveness of a Hapke-based spectral mixing model used in conjunction with a spectral lookup table is discussed.
- 11:15 a.m. Foley C. N. \* Nittler L. R. Brown M. R. M. McCoy T. J. Lim L. F.  
*Chromium on Eros: Further Evidence of Ordinary Chondrite Composition* [#2017]  
We have obtained the first determination of an asteroidal Cr abundance by remote-sensing X-ray spectroscopy of Eros. The values determined provide further support for a link between S(IV) asteroids and ordinary chondrite meteorites.
- 11:30 a.m. Rivkin A. S. \* McFadden L. A. Binzel R. P. Sykes M.  
*Rotationally Resolved Spectroscopy of Vesta in the 2–3  $\mu\text{m}$  Region* [#1811]  
We present spectra from 2001–2004, and show that the northern and southern hemispheres of Vesta are distinct. The northern hemisphere shows evidence of a ~1% band at 3  $\mu\text{m}$ , while the southern hemisphere does not. We suggest the band is due to contamination from carbonaceous impactors.
- 11:45 a.m. Klima R. L. \* Pieters C. M. Dyar M. D.  
*Pyroxene Spectroscopy: Effects of Major Element Composition on Near, Mid and Far-Infrared Spectra* [#1462]  
Pyroxene composition is used extensively in characterizing the igneous evolution of planets. We present an analysis of a comprehensive set of synthetic pyroxenes from 0.5 to 50  $\mu\text{m}$  to address fundamental constraints of crystal structure on absorption.