

**Wednesday, March 19, 2003**  
**ASTEROIDS AND COMETS**  
**8:30 a.m. Salon C**

**Chairs: E. Cloutis**  
**M. Kelley**

Gaffey M. J. \*

*Observational and Data Reduction Techniques to Optimize Mineralogical Characterizations of Asteroid Surface Materials* [#1602]

Mineralogy is the key to determining the compositional history of asteroids and the genetic relationships between asteroids and meteorites. This presentation discusses procedures for optimizing asteroid spectra for mineralogical interpretations.

Hardersen P. S. \* Gaffey M. J. Abell P. A.

*Detailed Petrological Characterization of Asteroid 1459 Magnya* [#1133]

Detailed spectral analysis of 1459 Magnya reveals an asteroid that is not genetically related to 4 Vesta and likely represents a compositionally unique assemblage not yet represented in the terrestrial meteorite collection.

Holsapple K. A. \*

*Could Fast Rotator Asteroids be Rubble Piles?* [#1792]

An analysis of the internal stresses and strength requirements for the small fast rotating asteroids is presented. The interpretation as monolithic rocks and shards is not warranted from the data.

Durda D. D. \* Bottke W. F. Jr. Enke B. L. Asphaug E. Richardson D. C. Leinhardt Z. M.

*The Formation of Asteroid Satellites in Catastrophic Impacts: Results from Numerical Simulations* [#1943]

We model the formation of asteroid satellites in catastrophic collisions with a combination of SPH and N-body simulations. Catastrophic collisions create numerous fragments in orbit around the remaining target body or bound to one another.

Benoit P. H. \* Hagedorn N. L. Kracher A. Sears D. W. G. White J.

*Grain Size and Density Separation on Asteroids: Comparison of Seismic Shaking and Fluidization* [#1033]

“Ponds”, flat regions inside craters, inferred to be finer-grained than surroundings, were found on the asteroid Eros. Here we discuss two possible mechanisms for grain size and density separation, shaking and gas-flow induced fluidization.

Kracher A. \* Sears D. W. G. Benoit P. H. Meier A. J.

*Eros Sulfur Deficiency: A Closer Look at Meteorite Comparisons* [#1023]

NEAR Shoemaker has found a surprisingly low sulfur abundance on Eros. Comparison with meteorites suggests that secondary depletion is more likely than primary deficiency. Laboratory simulation of asteroid surface processes may help explain the result.

Robinson M. S. \* Thomas P. C. Veverka J.

*Missing Craters on Eros, Phobos, and the Moon — Crater Erasure in a Thick Regolith?* [#1696]

We investigate the possibility that the “missing” small crater population on Eros, Phobos, and the Moon is the result of preferential erasure in a loose regolith.

Izenberg N. R. \* Murchie S. L. Bell J. F. III McFadden L. A. Wellnitz D. D. Clark B. E. Gaffey M. J.

*Eros Spectral Properties and Geologic Processes from Combined NEAR NIS and MSI Data Sets* [#1870]

We improve and extend the NEAR spectroscopic dataset for Eros and investigate global and localized spectral variation with respect to mineralogy, composition, and space weathering of Eros.

Rivkin A. S. \* Howell E. S. Bus S. J. Hicks M. Reach W. T. Jarrett T. H. Binzel R. P.

*Spectroscopy and Photometry of the Earth Grazer 2002 NY40* [#1722]

The asteroid 2002 NY40 made a very close pass to the Earth in August 2002, when it was observed by observers all over the world in a variety of wavelengths. We present a full 0.3–4 micron spectrum, which shows a remarkable similarity to an LL6 spectrum, and discuss implications.

Abell P. A. \* Fernandez Y. R. Pravec P. French L. M. Farnham T. L. Gaffey M. J. Hardersen P. S.

Kusnirak P. Sarounova L. Sheppard S. S.

*Physical Characteristics of Asteroid-Like Comet Nucleus C/2001 OG108 (LONEOS)* [#1253]

Physical characteristics of C/2001 OG108 determined via near-IR reflectance spectroscopy indicates that this object has a spectrum similar P-type asteroids. This comet may represent the transition between highly active Halley Family comets and extinct comets.

Weissman P. R. \* Lowry S. C.

*The Size Distribution of Jupiter-Family Cometary Nuclei* [#2003]

We have fit a power law to the size distribution of cometary nuclei, using data on 57 nuclei observed to date. The slope of the power law is  $-1.59 \pm 0.03$  which is shallower than most other small body populations in the solar system.

Lowry S. C. \* Weissman P. R.

*Observations of Periodic Comet 2P/Encke: Physical Properties of the Nucleus and First Visual-Wavelength Detection of Its Dust Trail* [#2056]

We have performed CCD observations of periodic comet Encke and estimated its size, shape, and rotation period. We have also accomplished the first visual-wavelength detection of the comet's associated dust trail.

Russell C. T. \* Coradini A. De Sanctis M. C. Feldman W. C. Jaumann R. Konopliv A. S. McCord T. B. McFadden L. A. McSween H. Y. Mottola S. Neukum G. Pieters C. M. Prettyman T. H. Raymond C. A. Smith D. E. Sykes M. V. Williams B. G. Wise J. Zuber M. T.

*Dawn Mission: A Journey in Space and Time* [#1473]

The Dawn mission to be launched in May 2006 successively orbits Vesta and Ceres, in 2010 and 2014 respectively. The ion-propelled spacecraft carries an imager, mapping spectrometer, gamma ray/neutron spectrometer, laser altimeter and magnetometer.