

**Tuesday, March 11, 2008**  
**POSTER SESSION I: ASTEROIDS, COMETS, AND SMALL BODIES**  
**6:30 p.m. Fitness Center**

Gondet B. Bibring J.-P. Langevin Y. Poulet F. Murchie S. L.

*Phobos Observations by the OMEGA/Mars Express Hyperspectral Imager* [#1832]

Phobos spectral imaging was implemented in order to acquire compositional mapping with the prime objective to answer to the following questions: (1) Is Phobos a “primitive” body, and (2) can one detect surface material containing either volatile or organic compounds?

Clark P. E. Clark C. S. Stooke P. J.

*Using Boundary-based Mapping Projections for Morphological Classification of Small Bodies* [#1371]

The CSNB segmented map of Deimos provides the least distorted coverage of features and illustrates the preponderance of structural (crater) and albedo features along prominent ridges oriented radially or concentrically to the map edge “boundary.”

Reddy V. Gaffey M. J. Abell P. A. Kumar S. Fieber-Beyer S. K.

*Faint, Fuzzy and ‘Featureless’ PHAs: Making the Most Out of Almost Nothing* [#1996]

Physical characterization of potentially-hazardous asteroids has implications for impact hazard assessment. We present results of our characterization effort of faint, and “featureless” PHAs in order to constrain their albedo, composition, and diameter.

Reddy V. Cloutis E. A. Craig M. A. Gaffey M. J.

*Spectral Calibration of Orthopyroxene-Type A Clinopyroxene Mixtures: Implications for Interpreting Asteroid Spectra* [#2007]

Spectral calibration of pyroxenes has important implications for interpreting asteroid spectra. We present results of new mixing experiments with OPX and Type A CPX mixtures and present methods to identify Type A CPX in an asteroid spectrum.

Takir D. Hardersen P. S. Gaffey M. J.

*The Near-Infrared Spectroscopy of Two M-Class Main Belt Asteroids, 77 Frigga and 325 Heidelberg* [#1084]

We analyzed the NIR spectra of two M-asteroids, 77 Frigga and 325 Heidelberg. Based on our analysis we conclude that 77 Frigga is featureless and 325 Heidelberg exhibits a weak feature indicating the presence of low-Fe orthopyroxene.

Fieber-Beyer S. K. Gaffey M. J. Reddy V.

*Compositional and Dynamical Studies of Asteroids Located In/Near the 3:1 Kirkwood Gap: 495 Eulalia a First Step* [#1149]

Asteroid 495 Eulalia is the first observation of a campaign aimed to obtain, analyze, and mineralogically characterize spectra of asteroids in a zone centered on the 3:1 resonance with the intent of identifying meteorite analogs (if any).

Schaal M. Reddy V. Gaffey M. J.

*Significance of Thermal Emission of S-type Near-Earth Asteroids and Their Mineralogical Similarities to the Moon* [#2071]

We present results of thermal modeling experiments to investigate the effects of thermal emission on spectral band parameters of S-type near-Earth asteroids.

Marchis F. Hardersen P. S. Emery J. P. Descamps P. Reddy V. Lim L. F.

*Composition of the Binary Main-Belt Asteroid (22) Kalliope* [#2526]

We will describe the analysis and comparison of vis/NIR spectrum and thermal spectrum of (22) Kalliope.

Hiroi T. Nimura T. Ueda Y. Sasaki S. Pieters C. M.

*Deriving the Distribution of Ordinary Chondrite (H, L, LL)-like Materials in Asteroids from Their Visible and Near-Infrared Reflectance Spectroscopy* [#1997]

We have attempted to identify asteroid surface materials similar to ordinary chondrite types by examining reflectance spectra of the S, A, R, and V asteroids over the 1- $\mu$ m band range, and derive their distributions.

Chi M. Ishi H. Dai Z. R. Simon S. B. Browning N. D. Bradley J. P.

*(S)TEM Characterization on the Refractory Minerals from Comet 81P/Wild-2* [#2321]

(S)TEM study of Ti-pyroxene (fassaite) and osbornite inclusions in the refractory minerals within the CAI "Inti" from comet P81/Wild-2 suggests a common inner-solar origin for fassaite. Inti is unlikely to originate outside of the solar system.

Lim L. F. Nittler L. R.

*Application of Monte-Carlo Simulation to Outstanding Problems in X-Ray Fluorescence Spectroscopy* [#1533]

Monte-Carlo modeling of the interaction of X-rays with the surface of the asteroid 433 Eros will help to resolve the source of the discrepancy between the NEAR XRS-derived and GRS-derived Fe/Si ratios.

Moskalenko I. V. Porter T. A. Digel S. W. Michelson P. F. Ormes J. F.

*Gamma-Ray Albedo of Small Solar System Bodies* [#2280]

We calculate the gamma-ray albedo flux from cosmic-ray interactions with the main belt asteroids and Kuiper belt objects. We show that their  $\gamma$ -ray albedo strongly depends on the small-body mass spectrum and may be detectable by the GLAST telescope.

Burbine T. H. Buchanan P. C. Binzel R. P.

*The Mineralogy of Middle- and Outer-Belt Vestoids* [#2270]

In this study, near-infrared spectra of two of middle- and outer-belt Vestoids, 1459 Magnya and 21238 1995 WV7, are analyzed. Our goal is to determine whether the average pyroxene mineralogies of these objects are consistent with HEDs.

McFadden L. A. Emerson G. Warner E. M. Onukwubiti U. Li J.-Y.

*Photometry of 4 Vesta from its 2007 Apparition* [#2546]

Photometric observations were made of Vesta before, during and after its 31 May 2007 opposition using a 20 cm f/4 schmidt-camera. Lightcurves from all filters exhibit similar shape but do change slightly as the observing geometry changes.

Federico C. Frigeri A. Pauselli C. Coradini A.

*Vesta Thermal Evolution Revisited* [#1719]

A study of the initial thermal evolution of Vesta has been developed using the finite element method in order to estimate the initial concentration of  $^{26}\text{Al}/^{27}\text{Al}$ .

Magni G. Coradini A. De Sanctis M. C. Turrini D.

*Is Vesta Cratering a Record of Primordial Bombardment?* [#1571]

We compute the cratering history of Vesta, by a N-body model. We evaluated the flux of impactors when Jupiter formed earlier than Vesta and in the case in which Saturn and other outer planets are present.

Byram S. M. Scheeres D. J.

*Rotational Dynamics of a Comet Nucleus Subject to Outgassing Jets* [#1287]

A theory for the evolution of comet nucleus rotation states is presented, verified, and used to develop realistic simulations. If the comets are axisymmetric with multiple jets, ~50% have an spin up end state and over 50% tend to a relaxed state.

Goguen J. D. Thomas P. C. Veverka J. F.

*Flows on the Nucleus of Comet Tempel 1* [#1969]

The Deep Impact Mission images of the nucleus of Comet Tempel 1 show two coherent flows of material across kilometer-scale distances on the 3-km radius body. We discuss physical models that might explain the emplacement of these flows.

Ipatov S. I. A'Hearn M. F.

*Velocities of Material Ejected After the Deep Impact Collision* [#1024]

Analysis of images made by Deep Impact cameras shows that although velocities of observed ejected material mainly decreased with time, the ejection of material with velocities of ~100–200 m/s could last for a few minutes.

Trigo-Rodriguez J. M. Davidsson B. Montanes-Rodriguez P. Sanchez A. Troughton B.

*All-Sky Cameras Detection and Telescope Follow-Up of the 17P/Holmes Outburst* [#1627]

Cometary outbursts are not completely understood. We have performed a continuous coverage of the recent 17P/Holmes outburst in order to learn more about the processes that generate an outburst of the 2007 magnificence.

Trigo-Rodriguez J. M. Bottke W. F. Campo Bagatin A. Tanga P. Llorca J. Jones D. C. Williams I. Madio J. M. Lyytinen E.

*Is Asteroid 2002NY40 a Rubble Pile Gravitationally Disrupted?* [#1692]

The recent identification of Near Earth Object (NEO) asteroid 2002NY40 as source of meteorite-dropping bolides opens new questions on the nature of this asteroid, and the physical process that originated the fireballs detected in 2006 August.

Housen K. R. Korycansky D. G.

*Rocky Asteroids: Small Rubble Piles and Brick Piles* [#1899]

Lab measurements of collision fragment velocities are used to show that small rocky asteroids even smaller than Itokawa could develop coarse rubble pile structures.

Minton D. A.

*The Limiting Shapes of Gravitationally Bound, Rotating Sand Piles* [#2426]

What would a self-gravitating, rotating sand pile look like if every slope on the surface was at the angle of repose? A new technique is demonstrated to construct objects for which the surface at every point is at a constant angle.

Busuttil C. Cornwall P. Burchell M. J.

*Erosion of Small Craters on Rubble Pile Asteroids by Subsequent Large Impacts: Shaking or Ejecta Infilling?* [#1648]

Using a two stage light gas gun the role of impact shaking on erosion of pre-existing small craters on targets has been investigated. We find that infilling occurs from shaking rather than due to ejecta.

Lightwing A. Burchell M. J.

*Catastrophic Disruption of Icy Core-Mantle Bodies in the Laboratory* [#1842]

A two-stage light gas gun is used to impact icy core-mantle bodies in the laboratory. It is determined that an ice mantle with a thickness of more than five times the diameter of the impacting body causes a large increase in the disruption energy.

Plesko C. S. Guzik J. A. Coker R. F. Huebner W. F. Keady J. J. Weaver R. P. Pritchett-Sheats L. A.

*Exploring the Deflection of Potentially Hazardous Objects by Stand-off Bursts* [#2311]

We model momentum transfer in the nuclear deflection of potentially hazardous objects, and specifically the effects of PHO properties on coupling efficiency.

Hirata N. Fujii Y. Joukou Y. Demura H. Asada N. Abe S. Ishiguro M. Kitazato K. Nakamura R. Abe M.

*A GIS-Oriented Analysis Tool for Irregular Shaped Bodies* [#1584]

We developed a GIS-oriented tool to analyze data of irregular shaped body such as asteroids. This tool provides functions to manipulate the shape model of the target body.

Conrad A. R. Merline W. J. Drummond J. D. Carry B. Dumas C. Tamblyn P. M. Campbell R. D. Goodrich R. W. Le Mignant D.

*Asteroid Shape Determination: A Comparison of AO Imaging with Lightcurve Inversion* [#2473]

We present imaging data on three asteroids, using adaptive optics and having high spatial and rotational resolution. The resulting shapes can be compared with previous shape models derived from inversion of lightcurve data, and the agreement is generally good.

Abe M. Kawakami K. Hasegawa S. Kuroda D. Yoshikawa M. Kasuga T. Kitazato K. Sarugaku Y. Kinoshita D. Miyasaka S. Urakawa S. Okumura S. Takagi Y. Takato N. Fujiyoshi T. Terada H. Wada T. Ita Y. Vilas F. Weissman R. P. Choi Y.-J. Larson S. Bus S. J. Tokunaga A. Muller T. G.  
*Ground-based Observational Campaign for Asteroid 162173 1999 JU3* [#1594]

Asteroid 162173 1999 JU3 is a target for the Hayabusa-2 mission. We conducted an observational campaign of this asteroid. We report the obtained results of this campaign.

Arai T. Okada T. Shirai K. Yamamoto Y. Ogawa K. Kato M.  
*Re-Estimation of Elemental Composition of Asteroid 25143 Itokawa Using Hayabusa XRS with Updated Position and Attitude Data* [#1915]

We re-estimated the surface elemental composition of Asteroid 25143 Itokawa using the XRS data with newly prepared ancillary data sets, which allows us analysis of higher-Z elements such as S, Ca, and Fe, in addition to Mg, Al, and Si.

Stooke P. J.  
*A New Global Mosaic Map of Asteroid 433 Eros* [#1218]

A new high resolution global photomosaic of 433 Eros in simple cylindrical projection is described and illustrated. It will be placed in PDS when finished. The new map will support detailed regional geological analyses.

Davis J. W. Miller J. P.  
*Light Curves of 2005 FY9: Pluto-sized Trans-Neptunian Object* [#1091]

2005 FY9 is a TNO with an orbit located 30° off the ecliptic, a semi-major axis of 46 AU, and 0.16 eccentricity. With a diameter ~2000 km, it is a dwarf planet candidate. Using aperture photometry, light curves were constructed for 2005 FY9.

Linfield R. vanCleve J. Reitsema H. J. Arentz R.  
*Searching for Near Earth Objects from a Venus-like Orbit* [#1412]

High efficiency detection of Near Earth Objects (NEOs) can be made with a 50-cm diameter cryogenic mid-IR (10  $\mu$ m band) telescope in a Venus-like orbit. The addition of a 2-m-diameter visible telescope on Earth would further increase the search efficiency.