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Paper No. 110-3

Presentation Time: 8:35 AM

SURFICIAL COMPOSITION OF DWARF PLANET CERES (Invited Presentation)

AMMANNITO, Eleonora¹, DE SANCTIS, Maria Cristina², CIARNIELLO, Mauro², FRIGERI, Alessandro², CARROZZO, Filippo Giacomo³, COMBE, Jean-Philippe⁴, EHLMANN, Bethany⁵, MARCHI, Simone⁶, MCSWEEN, H.Y.⁷, RAPONI, Andrea², TOPLIS, Michael⁸, TOSI, Federico², CASTILLO-ROGEZ, Julie C.⁹, CAPACCIONI, Fabrizio², CAPRIA, Maria Teresa², FONTE, Sergio², GIARDINO, Marco², JAUMANN, Ralf¹⁰, LONGOBARDO, Andrea³, MCCORD, Thomas B.⁴, MCFADDEN, Lucy¹¹, PALOMBA, Ernesto², PIETERS, C.M.¹², RAYMOND, Carol A.⁹, SCHENK, Paul¹³, ZAMBON, Francesca² and RUSSELL, C.T.¹⁴, (1)EPSS-IGPP, EPSS-IGPP, 595 Charles Young Drive East, Los Angeles, CA 90025, (2)INAF - Istituto Nazionale di Astrofisica, IAPS - Istituto di Astrofisica e Planetologia Spaziali, Via del Fosso del Cavaliere, 100, Rome, I-00133, Italy, (3)IAPS - Istituto di Astrofisica e Planetologia Spaziali, INAF - Istituto Nazionale di Astrofisica, Via del Fosso del Cavaliere, 100, Rome, I-00133, Italy, (4)Bear Fight Institute, P.O. Box 667, 22 Fiddler's Rd, Winthrop, WA 98862, (5)Division of Geological and Planetary Sciences, California Institute of Technology, MC170-25, Pasadena, CA 91125, and Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91104, (6)Southwest Research Institute, Boulder, CO 80302, (7)Earth and Planetary Sciences, University of Tennessee, 1412 Circle Drive, Knoxville, AZ 37996-1410, (8)Institut de Recherche d'Astrophysique et Planétologie, Centre National de la Recherche Scientifique, Université Paul Sabatier, Toulouse, 31400, France, (9)Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, (10)German Aerospace Center (DLR), Institute of Planetary Research German Aerospace Center (DLR), Berlin, Germany, (11)NASA Goddard Space Flight Center, Greenbelt, MD 20771, (12)Geological Sciences, Brown University, Box 1846, Providence, RI 02912, (13)Houston, TX 77058, (14)Earth, Planetary and Space Sciences/IGPP, University of California, Los Angeles, 603 Charles Young Drive, 3845, Los Angeles, CA 90095, eleonora.ammannito@igpp.ucla.edu

The Dawn spacecraft has been orbiting around dwarf planet Ceres since Spring 2015 [1, 2]. The spectrometer VIR (0.25-5.0 μm) acquired data at different altitudes providing information on the composition of the surface of Ceres at resolutions ranging from few kilometers to few tens of meters [3,4].

The average thermally corrected reflectance spectrum of Ceres as measured by VIR shows that the spectrum in the 2.6–4.2 μm region is compatible with the presence on the surface of a mixture of dark carbon-rich minerals, Mg- phyllosilicates, ammoniated clays, and carbonates [4]. This result confirms previous studies based on ground based spectra [5, 6].

The pervasive presence of Mg- and NH₄-bearing phyllosilicates indicates endogenous formation by a globally widespread and extensive alteration processes while the variations in the amount of phyllosilicate suggest the existence of a vertically stratified upper crust [7].

The heterogeneity of the crust is also suggested by the presence of the 'bright spots'. The typically dark surface of the dwarf planet Ceres is punctuated by areas of much higher albedo [8,9]. These areas are mostly consistent with a large amount of carbonate, implying recent hydrothermal activity [10].

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Session No. 110

[T174. The Geology of Dwarf Planet Ceres](#)

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