



P43C-2123: Distribution of the Ammoniated Species on the Surface of Ceres

Thursday, 15 December 2016

13:40 - 18:00

📍 *Moscone South - Poster Hall*

The Dawn spacecraft has been acquiring data on dwarf planet Ceres since January 2015 (1). The VIR spectrometer (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 about one hundred meters (2).

The average spectrum of Ceres is well represented by a mixture of dark minerals, Mg- phyllosilicates, ammoniated clays, and Mg carbonates (3). This result confirms previous studies based on ground based spectra (4, 5). Maps of the surface at about 1 km/px show that the components identified in the average spectrum are present all across the surface with variations in their relative abundance (6). Some localized areas however have peculiar spectral characteristics. One example is the spectrum of the bright regions within Occator crater that is most consistent with a large amount of Na-carbonates and possibly ammonium salts (7).

The presence of ammoniated species poses a constraint on the pH and redox condition during the evolution of Ceres. Therefore, we have studied the distribution across the surface of such species to better understand the evolutionary pathway of Ceres.

References : (1) Russell, C. T. et al. 2016, Science. (2) De Sanctis M.C. et al., The VIR Spectrometer, 2011, Space Science Reviews. (3) De Sanctis M.C. et al. Ammoniated phyllosilicates on dwarf planet Ceres reveal an outer solar system origin, Nature, 2015. (4) King T. et al. (1992) Science, 255, 1551–1553. (5) Rivkin A.S. et al. (2006) Icarus, 185, 563–567. (6) Ammannito E. et al., Spectral diversity of Ceres surface as measured by VIR, 2016, Science. (7) De Sanctis et al. (2016), Nature

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