

Centimeter, Millimeter, and Submillimeter Observations of Comet 103P/Hartley 2

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The close approach (0.12 AU) of Comet 103P/Hartley 2 to the Earth only 8 days prior to perihelion provided a unique opportunity to probe the chemical composition of this object. Additionally, supporting data was acquired during the EPOXI (Extrasolar Planet Observation and Deep Impact Extended Investigation) flyby mission [1], which provided high resolution infrared spectra and images. Observations were conducted from four facilities, contributing to the large ground-based consortium organized in support of the EPOXI mission [2]. The Arizona Radio Observatory's 12m telescope, Kitt Peak, AZ, and Submillimeter telescope, Mt. Graham, AZ, as well as the James Clerk Maxwell Telescope, Mauna Kea, HI and the Greenbank 100m telescope, Greenbank, WV, were employed for this study covering 20 cm, 3 cm, and 0.8-3 mm. Data were obtained, collectively, from 12 October 2010 to 5 November 2010 [3]. HCN, CH₃OH, H₂CO, HNC, OH, and CS were detected, and upper limits on the abundance of H₂S, SO₂, *c*-C₃H₂, and deuterated isotopologues of HCN, H₂CO, and H₂O were measured. Upper limits on the D/H ratio derived from DCN gave D/H < 0.01[3]. Detailed analysis of these data will help constrain the temperature, abundances, variance or periodicity of a given species, and can be compared to results from other comets, as well as support the data obtained from the EPOXI mission. The full analysis and comparison will be presented.

[1] A'Hearn, M. et al. (2008) *Asteroids, Comets, Meteors 2008*, Abstract #8165. [2] Meech, K. et al. (2011) *Science*, submitted. [3] Milam, S.N. et al. (2011) *42nd LPI Contrib. No 1847*.