

THE SURFACE PROPERTIES OF DAMOCLOID 2002 RP120. J. Licandro¹, J. de León¹, N. Pinilla-Alonso², H. Campins² and R. Binzel³, ¹Instituto de Astrofísica de Canarias, Spain (jlicandr@iac.es, jmlc@iac.es) ²Centro Galileo Galilei & Telescopio Nazionale Galileo, Spain (npinilla@tng.iac.es), ³University of Central Florida, USA (campins@physics.ucf.edu), ⁴Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139, USA (rpb@mit.edu).

Introduction: Damocloids are objects with asteroidal aspect moving in orbits typical of Halley-type or LP comets (Tisserand parameter $T < 2$). These are the best candidates of being “dormant” or “extinct” comets due to their dynamical properties.

We present visible and near-infrared spectra of Damocloid 2002 RP120, covering the 0.5-2.4 micron range, obtained with the 3.6m Telescopio Nazionale Galileo (TNG) and the 2.5m Isaac Newton Telescope (INT) at “El Roque de los Muchachos” Observatory (Spain) and the 3.5m IRTF facility of the Mauna Kea Observatory (USA).

Observations: A spectrum in the visible range was obtained with the INT on September 17, 2002. The spectrum is featureless, with a red slope ($S'_V = 11 \pm 2\% / 0.1 \mu\text{m}$) typical of a D-type asteroid. Three spectra were obtained in the near-infrared on Sept. 19, 2002 with the TNG, and Sept. 15 and Oct. 27, 2002 with the IRTF. In all cases the spectrum is featureless with a red slope typical of a D-type asteroid ($S'_N = 7 \pm 2, 4 \pm 2, \text{ and } 2 \pm 2\% / 0.1 \mu\text{m}$ respectively).

Analysis and results: We compared the spectrum of 2002 RP120 with that of comet nuclei, asteroids in JF cometary orbits with $T < 2.7$, Trojan and Hilda asteroids, and we didn't find any subtle feature that differentiate the Damocloid from these populations.

All spectral properties are similar to that of comet nuclei and outer belt asteroids. In particular its S'_V is very close to the main value of the color distribution of these populations and the other Damocloids with known colors [1].

Our observations suggest a cometary or outer main belt origin of this Damocloid.

References:

- [1] Jewitt 2005, AJ 129, 530.