

**SPECTROSCOPY OF ASTEROID PAIRS.** M. Birlan<sup>1</sup>, M. Popescu<sup>2,1</sup>, P. Vernazza<sup>3</sup>, D. A. Nedelcu<sup>4,1</sup> and O. Groussin<sup>5</sup>, <sup>1</sup>IMCCE, Observatoire de Paris, CNRS UMR8028, 77 avenue Denfert Rochereau, 75014 Paris Cedex, France, email: Mirel.Birlan@imcce.fr, <sup>2</sup>Politehnica University, Bucharest, Romania, <sup>3</sup>European Southern Observatory, K. Schwarzschild-Str. 2, 85748, Garching, Germany, <sup>4</sup>Astronomical Institute of the Romanian Academy, 5 Cuțitul de Argint, RO-75212 Bucharest, Romania, <sup>5</sup>Laboratoire d'Astrophysique de Marseille, 38 rue Frédéric Joliot-Curie, 13388 Marseille, France.

**Introduction:** The identification of asteroid-pairs could be considered as the smallest cluster that could be derived using the asteroids dynamical parameters. Vokrouhlicky and Nesvorny propose the pairs of asteroids of a common origin in 2008[1] which will be further re-analysed and quantified in terms of statistical significance by Pravec and Vokrouhlicky in 2009[2].

Physical characterisation of asteroid pairs is still incipient and a challenging task since a large fraction of identified pairs have large magnitudes. Some recent results were proposed by Duddy et al[3].

We present NIR spectra of two objects of two different pairs identified by[2]: (10484) Hecht and (31569) 1999 FL18. The observations were performed using SpeX/IRTF low resolution, in remote observing mode[4].

**Observational data:** The spectra are presented in Figure 1. While the S/N ratio is poor for (10484) Hecht only the spectral range 0.8-2.1 $\mu$ m is considered as relevant. For the asteroid (31569) 1999 FL18 the spectrum is reliable over the spectral interval 0.8-2.4 $\mu$ m.

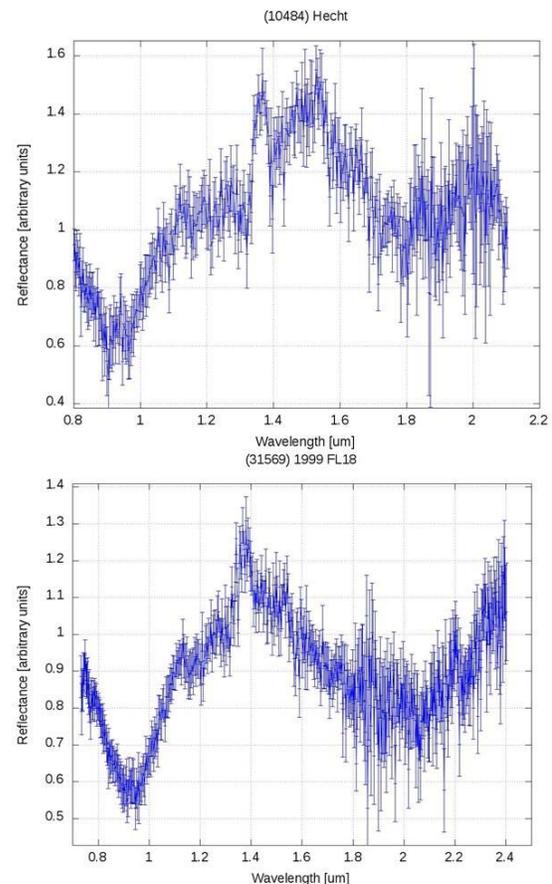
**Taxonomy and meteorite fit:** The modeling was performed using M4AST on-line tool[5]. (10484) Hecht data are close to the V, Sv, Sr and R taxonomic classes into the Bus-DeMeo taxonomy. The result is mainly based on the deep 1 $\mu$ m absorption band. The asteroid (31569) 1999 FL18 was classified as V taxonomic type.

The comparison to meteorite spectra confirms the affinity of both spectra to the one of HED meteorites. The best fit for (10484) Hecht is the HED meteorite EETA79002,146. However, due to the lack of data over 2.1 $\mu$ m, the acapulcoide primitive achondrite meteorites could also be a relative good mineralogical solution. For (31569) 1999 FL18 the HED eucritic nature is proposed. Its best fit is the sample of Macibini Clast 3, a meteorite discovered in South Africa.

**Discussion:** (10484) Hecht and (31569) 1999 FL18 belong to two different pairs which could be genetically related. Their twins are the asteroids (44645) 1999 RC118 and (21321) 1997 AN2 respectively. The extrapolation of these results to these pairs shows four new objects possible V-type inside the asteroidal population.

**References:** [1] Vokrouhlicky D. and Nesvorny D.(2008) *AJ* 136, 280-290. [2] Pravec P. and Vokrouh-

licky D.(2009) *Icarus* 204, 580-588. [3] Duddy S.R. et al (2012) *A&A*,(in press). [4] Birlan M. (2004) *NAst* 9, 343-351. [5] Popescu M. et al (2011) *A&A* 535, id.a15.



**Figure 1.** Spectra of asteroids (10484) Hecht and (31569) 1999 FL18.