

EXPLORATION AND COMPARISON OF SPECTRA OF COMETS 9P/TEMPEL 1 AND 37P/FORBES OBSERVED ON 3-5 JULY, 2005 AT OBSERVATÓRIO DO PICO DOS DIAS. E. Picazzio¹, A. A. de Almeida¹, K.I.Churyumov², I. V., L.S. Chubko³, I.V. Lukyanyk², V.V.Kleshchonok², R.Torres¹, A.Escudero¹. ¹ Department of Astronomy, Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, Main Campus, Rua do Matão 1226, CEP 05508-090, São Paulo, Brazil, picazzio@astro.iag.usp.br. ²Astronomical Observatory of Kyiv Taras Shevchenko National University, 3 Observatorna Street, 04053 Kyiv 04053, Ukraine. ³ National aviation university, Cosmonaut Komarov Av. 1, Kyiv 03058, Ukraine

We present the results of exploration and comparison of spectra of two well known short period comets 9P/Tempel 1 and 37P/Forbes observed at Observatório do Pico dos Dias (LNA - Laboratório Nacional de Astrofísica), Brasópolis (Brazil), in the course of 3-5 July, 2005. Heliocentric and geocentric distances of the comets r and Δ and their magnitudes m_1 were on July 3-5, 2005: for comet 9P/Tempel 1: $r=1.51$ AU, $\Delta=0.89$ AU, $m_1=9.9^m$ and for comet 37P/Forbes: $r=1.60$ AU, $\Delta=0.68$ AU, $m_1=12^m$

Spectroscopic observations of comets 9P/Tempel 1 and 37P/Forbes were made on July 3-5, 2005 with the help of the Cassegrain spectrograph, using a 900/500 grating, attached to the Perkin & Elmer 1.6-m telescope of LNA. Spectral range: ~374 – 526 nm. The spectrograph slit was oriented to the East-West direction.

On the basis of these observations energy distributions in the spectrum for comet 9P/Tempel 1 on July 3-5, 2005 and in the spectrum for comet 37P/Forbes on July 4, 2005 were constructed. The detailed identification of emission lines in spectra of two comets was made. Using Shulman's and Haser's models, physical parameters of the near nucleus region of the cometary atmosphere (velocities of the outflow, times of life and rates of gas productivities of the molecules CN, C2 and C3) were determined. Presence of cometary luminescence continuum (non-solar origin) and chemical composition of the near nucleus region of the neutral comets 9P/Tempel 1 and 37P/Forbes atmospheres are discussed. Results of processing of spectra of comet 9P/Tempel 1 obtained on July 3-5, 2005 at OPD (LNA) during collision of the copper-aluminium impactor of the Deep Impact space mission with the nucleus of comet 9P/Tempel 1 compare with results got by the Deep Impact space mission.