Meteor showers and sporadic spectra by AMOS-Spec

J. Toth (1), P. Matlovic (1), R. Rudawska (2), P. Zigo (1), D. Kalmancok (1) (1) Comenius University in Bratislava, Slovakia, (2) ESA/ESTEC, (toth@fmph.uniba.sk)

Introduction

We present updated results from meteor spectra program [1] at Modra observatory, Slovakia (Comenius University in Bratislava) in November 2013 - February 2016. The advantage of the program is the presence of Slovak Video Meteor Network and close collaboration with CEMENt and EDMONd networks which provide trajectory and orbital data for almost all observed meteor spectra. Our sample includes several major meteor showers. We will discuss the diversity of materials on heliocentric orbits, and compare physical characteristics of meteoroids including material strength based on parameters Kb and PE [2, 3] and mechanical strength derived from dynamical pressure. The determined parameters will be confronted with meteor spectra classification based on emission line ratios of Fe, Mg, and Na [4]. Furthermore, the depletion of sodium and iron, as well as overabundance of sodium in several cases will be discussed.



Fig 1. Spectral profile of a Taurid meteor observed by AMOS-Spec system.



Fig 2. Ternary diagram showing spectral classification of meteors observed during 11/13 - 2/16.

Acknowledgment

This work was supported by the grant APVV-0517-12.

References

[1] Rudawska, R., Tóth, J., Kalmančok, D., Zigo, P., Matlovič, P., Meteor spectra from AMOS video system, Planetary and Space Science, doi:10.1016/j.pss.2015. 11.018, 2015.

[2] Ceplecha Z., McCrosky R. E. 1976. Fireball end heights - A diagnostic for the structure of meteoric material. Journal of Geophysical Research 81, 6257-6275, 1976.

[3] Ceplecha, Z., Earth's influx of different populations of sporadic meteoroids from photographic and television data. Bulletin of the Astronomical Institutes of Czechoslovakia 39, 221-236, 1988.

[4] Borovicka, J., Koten, P., Spurny, P., Bocek, J., Stork, R., A survey of meteor spectra and orbits: evidence for three populations of Na free meteoroids. Icarus 174, 15-30, 2005.