

MORÁVKA NEW H 5–6 CHONDRITE FROM CZECH REPUBLIC: VIDEOTAPED AND FOUND.

J. Borovicka¹, P. Jakeš², P. Spurný¹, J. Frýda³, and Z. Ceplecha¹, ¹Astronomical Institute, Academy of Sciences, 251 65 Ondřejov, Czech Republic (borovic@asu.cas.cz), ²Department of Geochemistry, Mineralogy and Mineral Resources, Charles University, Albertov 6, 12843 Praha 2, Czech Republic (jakes@natur.cuni.cz), ³Czech Geological Institute, Ke Klárovu 3, 121 48 Praha 1, Czech Republic.

On May 6, 2000, at 11:51 GMT, a bright "superbolide" was observed by inhabitants of Czech Republic, Poland, and Slovakia. The brightness of the bolide is demonstrated by the fact that several hundred eyewitnesses reports were obtained in the following days, despite the occurrence of the bolide during daylight, an hour after local noon. People saw the bolide for about five seconds with splitting to numerous pieces near the end of the trajectory.

Sonic boom has been heard on territory of northern Moravia, and the sonic boom was recorded by five seismic stations situated in mining area of Ostrava.

The bolide traveled approximately from the North to the South with relatively low inclination to horizon. Fortunately, three video records of parts of the bolide trajectory were obtained by casual witnesses. One of the video records shows at least 35 individual fragments. These data will allow the trajectory to be determined with good precision. Preliminary estimates of pre-fall trajectory suggest a relatively low velocity and short heliocentric orbit.

So far, two stone meteorites (mass 214 g and 329 g) were recovered in the vicinity of Morávka, North Moravia (49°36'N and 18°32'E). The fall of the first one was observed and the meteorite was immediately collected. Few days after the fall the other meteorite was found.

Finders have provided meteorites for research via Astronomical observatory of Technical University in Ostrava to Astronomical Institute of Czech Academy of Sciences, Ondřejov and to Faculty of Science, Charles University in Prague. Both stones were not complete, part of smaller stone was chipped off. In 10 days after the fall the first piece of meteorite has been counted for short-lived radioisotopes (LNGS in Assergi - Italy).

Small thin chip has been prepared into polished section of about 20 mm² and examined using the Microscan electron microscope and preliminarily analyzed, for the purpose of classification, using ED methods.

Meteorite has very thin dark brown fusion crust with streaks – striated pattern. The interior of meteorite appears fresh with inhomogeneous light gray in color

with darker parallel planes. Chondrules are visible in parts of hand specimen though barely visible in the section even in backscattered electron image. The chondrules though identifiable do not have clearly defined boundaries. At the time of writing the abstract only polished section of small (hardly representative) chips of the meteorite is available.

Meteorite shows mineralogical features of H chondrites and seems intensively recrystallized and homogenized. The composition of low - Ca pyroxene ranges from Fs 16.2 to 17.0 (n = 0) with clustering around Fs 16.8. Calcium content (aver. 0,5 wt. %) is compared to other ordinary chondrites lower and contents of TiO₂ and Al₂O₃ are variable. Olivine composition ranges from Fa 18.0 to Fa 19.1 clustering around Fa 19.0 (a = 12). The Fa content of olivine matches to Fs content of low - Ca pyroxene. High Ca pyroxene occurs associated with the plagioclases. Composition corresponds to En 49.5, Fs 6.2, Wo 44.3, Cr₂O₃ content (0.93 wt%) is above the average for H 5 – 6 chondrites (n = 5). Plagioclase (Ab 76.5–87.5, An 9.9–13.0, or 2.6–7.5). Metal content is less than 25 % of volume and both high Ni (30.5 wt%) and low Ni (5.8%) Fe – metal is present. Chromite, troilite and pentlandite were analyzed.

Meteorite Morávka is preliminary classified as equilibrated ordinary chondrite H 5 -6 with some though relatively little effect of shock metamorphism (observation only in polished sample).

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