MORASKO METEORITE STRUCTURE AND MINERALOGY.

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The study of the Morasko meteorite and its surroundings has resulted in a significant amount of information on the mineralogy, geochemistry and timing of this cosmic event as well as on geoenvironmental issues [1], [2], [3]. It was found in glacitectonically disturbed Neogene sediments of the "Poznań series", which is occurring just beneath the present-day surface. The impact penetrated the surficial, thin layer of Quaternary sediments (hence fragments of granitic material found in the frontal part of the meteorite).

The collection of Morasko meteorites is characterised by a great diversity of the mass of individual objects, but also the extraordinary total volume of matter [4]. They come from the primary fragmentation that occurred in the atmosphere and the secondary fragmentation due to the impact on the surface of the ground. The diversity of the surface temperatures of individual objects, as an effect of the flight through the atmosphere and warming up, results, after the break-up, in a different interaction of the deposits in the fall location. Hence, in part, it led to a thermal influence on the environment - in the form of a differential effect of temperature. Ultimately, the meteorites gained a specific crust of varying thicknesses. Ablative niches became the best places to generate such a complex structure. The subsequent duration of meteorites' settlement in the ground caused the aeration processes, which supplemented polygenesis, occurrence of the earth crust of high hardness. The authors executed the mineralogical and dosimetric tests on the crust of a number of meteorites. First, the SEM analyses and the preliminary interpretation of the structures of the crusts were performed, which were then supported with the EDS data and detailed microscopic tests. In the construction of Morasko extraterrestrial matter iron-nickel alloy dominates. Own analysis of small and medium meteorites showed also within the weathering crust small silicate grains. These grains presence due to local material of the meteorite fall.

Microscopic observations showed, that the direct contact of meteorite with surrounding sediments, have very specific structure, such as deformities, crushing, secondary filling veins, in both: in the components of the skeleton of grain and in matrix. Grains are cemented by matrix and the meteorite fall probably caused grains crushing and their local orientation. Gaps in grains formed along the outer edges of the grains. The fissures that are situated along the edges of the shrapnel, indicated the direction perpendicular to the meteorite fragment. These structures, and the direction of the longer axis of the grains along the meteorite formed probably by the fall of analysed meteorite fragment. The matrix genesis and its variable composition is problematic. It may be formed by the processes of weathering, or be associated with the moment of the fall of the meteorite.

On the basis on the chemical and mineralogical research, especially taking into account the presence of silicate grains, the crusts were subject to dosimetric tests in order to verify the possibility of thermal history record.

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