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COSMIC DUST STUDIED BY MOSS ANALYSIS

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It is a well-established phenomenon that extra-terrestrial dust particles (micrometeorites) survive atmospheric entry and reach the Earth's surface. Collection of extra-terrestrial dust for research focuses on the environments where terrestrial sedimentation rates and input of artificial particles of anthropogenic origin is minimal, including deep-sea sediments, Antarctic ice and snow, as well as natural planchettes of mosses and peat-bog cores. Experimental observations of particles considered as cosmic dust in moss samples (*Sanionia uncinata*) collected in King George Island, highlands of Georgia, lowlands of Belarus and Tver Region of Russia are presented. Microanalysis of moss samples showed the presence of clastic, anthropogenic particles and particles of cosmic dust. The results from Georgia are compared with those for moss samples collected in pristine areas of Norway. The identification of particles as micrometeorites is achieved on the basis of their compositional, mineralogical, and texture analyses using microscopy of (SEM and EDAX techniques) and neutron activation analysis (NAA). The majority of particles undergo melting during their passage of the atmosphere. Most abundantly, particularly at large sizes, cosmic spherules, i.e. completely melted droplets, were observed. These spherical particles provide a useful proxy for the total flux of dust because they are relatively easy to identify. They are the background magnetic component of cosmic dust, mainly microspheres and particles of native metals. Most often, it was possible to detect native Fe, Fe-Ni and Fe-Cr minerals.

Keywords: *extra-terrestrial dust particles, SEM, EDAX, NAA*

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