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Investigations of magnetic micrometeorites in sediments by thermomagnetic and microscopic analysis.

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The thermomagnetic and microprobe analyses were done for sedimentary samples from the highland Darhad Basin located in northern Mongolia; from the southwest of the Baikal Rift Zone and sedimentary samples from DSDP 386, 387, 391A, and 391C boreholes in the northwestern Atlantic; sediments from the lower section of the borehole BDP-98 drilled at the bottom on the Akademichesky Ridge of Lake Baikal. All sediment has different sedimentation rates from 1–2 cm/kyr to 47 m/myr.
The thermomagnetic analysis (TMA) measurements were made using the Curie express balance, constructed by Burov et.al. The TMA included measuring the specific magnetization of the samples in the magnetic field up to 500 mT at room temperature and recording the temperature dependence of magnetization. The heating rate is 100°C/min. The resulting thermomagnetic curves were used for identifying the Curie points of the magnetic minerals present in the sample and for establishing the character of the heating related mineral alterations, which can often be treated as the diagnostic signs of certain minerals. More interesting particles for us – native iron are identified from Curie points Tc = 710–770 ℃. For some samples which contain minerals with the temperatures higher than 710 ℃ were made magnetic extraction. Magnetic extracts investigated on electron microscope. This analysis have done for determine the origin (cosmic or terrestrial) of native iron.
The concentrations of native iron are bimodal everywhere with the zero mode necessarily present it testifies to the predominantly cosmic origin of the native iron. It is shown that quantity of cosmic dust depends on sedimentation rate and if it is slow, we have more particles if the speed is high more difficult to determine native iron.
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