

## STUDY OF PARTICLE SIZE DISTRIBUTION OF ENVIRONMENT CERTIFIED REFERENCE MATERIAL

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*One of the most important stages of the developing certified reference materials (CRM) of solid natural samples is to describe a particle size distribution of prepared powders. The particle size distribution affects the degree of material homogeneity and the value representative of the analytical sample mass. The collection of CRMs was being produced at the Vinogradov Institute of Geochemistry SB RAS through a long time span; therefore the grain-size compositions of the CRM powders were measured by different instrumental methods and assessed at different scales.*

*The laser diffraction analyzer HELOS/BR was employed to accurately and rapidly measure the grain-size composition of CRM natural sample powders. New measurements confirm that the particle size distribution of CRMs of magmatic and metamorphic rocks and sediments of Lake Baikal developed 45 and 25 years ago, accordingly have not changed fundamentally. The multimodal distributions of particle sizes of investigated CRMs clearly reflect the differences in mineral and chemical compositions. Aggregating of the particles of different composition and origin during long-term storage of powders is not observed. The measurement results of particle size compositions of the CRM powders show a slight dependence on the weight put into the device, as well as its mineral composition. The homogeneity of the substance of studied standard samples was confirmed by low quantities of representative sub-samples (0.075-0.100 g) for a wide range of elements determined by modern instrumental analytical methods. The use of laser diffraction analyzers type HELOS could help to certify the particle size composition of CRM powder as repeatable metrological characteristic.*

**Key words:** certified reference materials, natural samples, grain-size composition, laser diffraction analyzer HELOS/BR, representative sample

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