

# **Instrument study of silky lustre of jewelry-grade charoite**

BOUKHTIAROVA E.V., INDOUTNY V.V. VNIISIMS,  
Alexandrov, Russia, IGPhM, Kiev, Ukraine.

The results of laboratory nephelometric research of optical properties ( silky and pearly lustre, cat's-eye effect) of charoite from "Sirenevyy Kamen"- deposit are presented. Objects of investigation of physical nature of silky lustre were translucent flat-parallel polished plates 0.2mm in thickness, cut across and along fibrous aggregate directions from jewelry-grade charoite samples. Silky lustre features were researched by means of specially designed polar nephelometre. The measuring was held at transmitted and reflected light; two positions of charoite plates orientation were used – perpendicularly to fibrous direction and parallel to fibrous elongation. The results of measuring were plotted as nephelometric curves shown the relationship between intensity of transmitted or reflected light and observation angle. During light transmission through semi-transparent fibrous material repeated reflection and refraction take place. Reflected rays are focused at some plane, so optical "running light strip" or cat's-eye effect occurs. The surface curvature is important condition for clear appearance of cat's-eye "flash", therefore empirical formula was calculated:  $R = 2L/\sin\phi$ , where R is radius of surface curvature, L is linear dimension,  $\phi$  is observation angle of maximum intensity of reflected light at nephelometric graphs.