

A PHYSICAL MODEL OF THE FORMATION OF
A SURFACE LAYER BROKEN BY MECHANICAL
TREATMENT IN MATERIALS
FOR OPTICAL-ELECTRONIC
AND SENSOR DEVICES

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S u m m a r y

We investigate changes of the ellipticity parameter of polarized light in the case of its reflection from a polished surface of optical glass caused by the presence of defects and microdeformations formed in it during final operations of a mechanical treatment. The most widespread industrial grades of optical glass were used as samples for investigations. A physical model of the formation of a surface layer broken by a mechanical treatment was proposed. According to the model, due to the thermofluctuation breakage of interatomic bonds, the distribution of defects has a form similar to the temperature distribution in the process of transfer of the thermal energy from the treated surface to internal layers of the material. That's why one of the physical characteristics that can be used for the description of the distribution of defects in the broken surface layer is the thermal diffusivity of the treated material.