

The influence of heights of the sample setting on the mapping of surface inequality under thermally unstable measurement conditions

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During spatial measurements of surface irregularities with the use of a contact profilometer, the effect of temperature change on the obtained measurement results was noticed. The paper presents the influence of the height at which the measurement is taken, as well as the impact of the material from which the sample is made on the correctness of the mapping of the tested surface with the same changes in the thermal conditions of the environment.

The experiment was carried out using a climate chamber that allows to set specific thermal conditions (maintaining a certain temperature inside it or its cyclical change). The tests were carried out for different heights of the sample setting and for materials that differ in thermal expansion properties.

The obtained results indicated the relationship between the change in the temperature of the contact profilometer's environment and the errors of the mapping of surface irregularities.



Fig. 1.

The stand for determining the influence of thermal expansion of the sample / substratum for different measuring heights

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