

OPTICAL MEASUREMENT OF NON-CLASSICAL MATERIALS MECHANICAL PROPERTIES

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SUMMARY

Traditionally carried out a one-axis tension test, commonly used in the research of mechanical properties of materials, makes it impossible to collect enough information on the actual specimen defamation mechanism of a tested material. Accurate information regarding the course of a transverse deformation of the tested material specimen is significant in the case of non-classic material, for example, broadly defined and used polymers. The increasing requirements for the structures made of non-classical materials, such as polymers, need the development of detailed analytical models of material's mechanical properties. Defining the precise mechanical criteria for non-classic material destruction is not possible without the knowledge concerning the course of transverse strain coefficient changes. Determining the energy of analytical description of non-classic material destruction criteria indicates the necessity to precisely define the characteristics of a transverse strains coefficient. Optical measurement system application allows to register accurate data about the course of transverse strain specimen changes while performing traditional research of materials' mechanical properties. The proposed research methodology allows to measure transversal strains in two perpendicular planes with measurement accuracy sufficient for analytical research. The advantages of the mentioned solution are a relatively low cost of apparatus and uncomplicated installation in popular tensile-testing machines.

The main topics of the mini-symposium include:

1. Strength of non-classical material and structures.
2. Strength of material analytical and experimental research.
3. Dynamics problems of non-classical materials and structures.