

# **LOW-DENSITY POROUS MATERIALS: PRODUCTION AND USE IN LASER TARGETS**

*A. V. Tsareva, A. V. Ilyushechkina, S. M. Prohorov, E. Yu. Solomatina, I. A. Chugrov*

FSUE «RFNC – VNIIEF», Sarov, Russia

Low-density porous materials are widely studied due to their possible application in many branches of science. In particular, they are of interest for use as elements of target structures in laser thermonuclear fusion research. The use of such materials in target structures results in an increase of ablation pressure, compared to the case of using a solid ablator, and the most efficient absorption of laser radiation. Another important point of low-density porous material is the process of homogenization of high-temperature plasma formed during the interaction of laser radiation with the volume of the material. An important task is to introduce uniformly distributed nanosized particles of heavy elements into the volume of low-density material to obtain maximum conversion of laser radiation into X-rays.

This paper describes the methods for obtaining and the results of studying the structure of low-density porous materials of three compositions: polymer triacetate cellulose and resorcinol-formaldehyde aerogels, and also carbon aerographite. Examples of their use as functional elements of target structures are given. The results of studies on the introduction of uniformly distributed nanosized particles of heavy elements into the volume of low-density material are also presented.

---