low-density (0.9-0.2 of solid matter) targets for iCf research, characteristic features of technology and monitoring

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Much attention has been given recently to the targets with low-density layers, which allow one to obtain interesting results using the existing IСF facilities and those being put into operation. Such targets and the methods of their precision monitoring have been in development in FIAN (LPI) for a long time [1, 2].

The technology of manufacturing low-density (0.9-0.2 from the density of a solid matter) plastic and metal targets required a long step-by-step development with the rejection of a numberof options. At the same time, much attention was paid to the monitoring issues, since the accuracy in the control and certification of targets affects the interpretation of experimental results and the planning of further studies of ICF [3]. In this work the precision optical and X-ray methods have been used for control.

With the development of low-density targets, there emerge a variety of technologies, but they become very sensitive to the density of the laying. It was impossible using a single method of manufacture to cover in the experiments on irradiation the density range 0.001 to 1 of a solid matter. It is necessary to run over a wide range, for example, in the studies on optimization of the sources of particles and radiations based on laser plasma, or in the experiments with the density gradient.

In the course of the work, the authors managed to overcome the difficulties associated with preparatory operations and the work with micro-objects, nano-structuring of the matter and with small amounts of materials used [4, 5].

The results obtained are important for conducting future experiments and developing promising target models.

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