Problems of Monitoring of ultradispersed low-density layers for ITF targets

A.I. Gromov, I.V. Akimova, A.A. Akunets, L.A. Borisenko, Yu.A. Merkuliev, A.S. Orekhov, A.A. Shapkin, N.G. Borisenko

Lebedev Physical Institute of Russian Academy of Sciences, Leninsky pr. 53, Moscow, [agrom@sci.lebedev.ru](mailto:agrom@sci.lebedev.ru)

The problems of precision monitoring metal ultradispersed powder layers (MSPL), as well as low-density polymer layers with inclusion of MSPL are discussed. The noted layers are used as constructional covers in ITF.

Such designs of the target are widely used in many tasks, and among them are as follows: more effective conversion of laser radiation into the x-ray one [1], the compression stability, and an increase of the neuron yield in the experiments.

To control the discussed layers we have used the methods of micro-radiography, x-ray tomography with image processing program, and the scanning electronic microscopy.

In the development, fabrication and measuring of such layers we have overcome some severe difficulties connected with micro-dimension and small amounts of the matters used [2,3,4]. The mentioned techniques are also discussed from the viewpoint of realization of target mass production.

References

1. N.G. Borisenko,, A.I. Gromov, Yu.A. Merkuliev, A.S. Orekhov, Sh. Chaurasiya, S. Tripati, D.S. Munda, N.K. Gupta, L.G. Darishvar.Comparison of laser light conversion into X-ray on metal low-density bismuth. Peprint FIAN N29. Moscow 2011. P.14.
2. I.V. Akimova, A.A. Akunets, L.A. Borisenko, N.G. Borisenko, A.I. Gromov, Yu.A. Merkuliev, A.S. Orekhov, V.G. Pimenov, E.E. Sheveleva. Micro structured polymer aerogel layers with high-Z metal nanoparticles (Au, Sn, Cu etc) for laser targets. //32 European Conference on Laser Interaction with Matter (ECLIM). Warsaw. Poland. September 2012. Book of abstracts. P.20.
3. I.V. Akimova, N.G. Borisenko, A.I. Gromov, Yu.A. Merkuliev, A.S. Orekhov,.Study into the efficiency of lo-density converters of laser radiation into X-ray, and a new method of measuring the density of heavy metal nanolayers// The problems of atomic science and technology. Thermonuclear fusion series. Issue 2. 2012. PP.122-130.
4. N.G. Borisenko, I.V. Akimova, A.A.Akunets, A.I. Gromov, A.S. Orekhov. Metal produced as nano-snow layers for converters of laser light into X-ray for indirect targets as intensive EUV sourses//Journal of Radioanalytical and Nuclear Chemistry. 2014. Vol. 299. Num.2.PP.955-960.