IN-LINE PRODUCTION OF CRYOGENIC TARGETS FOR REALIZATION OF NATURE-LIKE TECHNOLOGIES IN IFE [[1]](#footnote-1)\*)

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Working with moving cryogenic targets opens up the possibility for the practical implementation of nature-like technologies in the inertial fusion energy (IFE) systems for the production of environmentally safe fuels and the generation of electric and thermal energy.



Fig.1. Schematics of the FST-layering module operation

**(b)**



**After FST layering**

**the uniform ultrafine solid layer is formed**

**SC**

**LC**

**TC**

**Light**

**Light**

 **Camera**

**Tomograph**

 **Computers**

 **Cryostat**

This paper presents the results of the advanced research cycle obtained in the field of constructing a repeatable layering module for cryogenic targets production of a reactor-scaled design. The work is intended for mass manufacturing of IFE targets that is of specific science interest for the high-power laser community.

The principle of layering module operation is based on the FST (free-standing target) layering method [1, 2]: formation of a solid fuel layer inside free-standing and line-moving targets, which was proposed and developed at the Lebedev Physical Institute (LPI). Schematics of the FST-layering module operation is shown in Fig. 1.

The practical realization of this innovative technology will be the development of a prototype of a specialized-in-line FST-LM [3] of repeatable operation for the low-cost target production and their noncontact delivery at the focus of the reaction chamber of high repetition rate facilities or IFE reactor.

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/It/ru/CR-Koresheva.docx) [↑](#footnote-ref-1)