TESTS OF HIGH TEMPERATURE INTENSE NEUTRON TARGET PROTOTYPE.

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Abstract

In the framework of European program to develop a second generation of accelerator complex for Radioactive Ion Beam (RIB) production, Legnaro National Laboratory (LNL) proposed the construction of national facility for RIB generated by fast neutrons on two-step ISOL technique – SPES project. Protons/deuterons of 40 MeV (150 kW) will produce on converter about 1014 neutrons per second centered at around 14 MeV that will induce fission in a suitable fissile target, with the aim of 1013 fission per second at least. A rotating wheel equipped with converter made from 12C and 13C graphite, cooled mainly by thermal radiation has been chosen as neutron production target. The target prototype for nominal beam power 50 kW and 1 cm beam diameter was created and tested under high-power electron-beam. The prototype was successfully stood more than 80 h at nominal condition and short time at 70 kW (140 % on nominal). The design of prototype and main results of performed tests are presented.

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