

## **Observation of the luminescence on the lithium neutron generating target under proton beam irradiation**

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In the Budker Institute of Nuclear Physics the accelerator based epithermal neutron source was proposed and designed [1] for the development of BNCT. One of the principal units of the facility is the neutron generating target. The target consists of a copper substrate with a thin lithium layer of around 100  $\mu\text{m}$  sputtered on it. The target was irradiated by the proton beam with various energy values from dozens of keV to 2 MeV. Moreover, the current of the proton beam was gradually changed from dozens of  $\mu\text{A}$  to 2,5 mA. With the proton beam hitting the target surface the luminescence was noted. The luminescence was visually seen with the use of IP-camera DS-2CD4026FWD-AP with HV1140D-8MPIR lens (Hikvision, China), mounted on the  $\text{BaF}_2$  window. The observed wavelengths were measured using spectrometers (HR2000+ (Ocean Optics, UK), CCS100 Compact Spectrometer (Thorlabs, USA)). The spectrum measurement was carried out through the window with the fused quartz glass. The distinctly distinguished spectral lines of lithium (670,67 nm and 610,4 nm) were detected. Furthermore, hydrogen lines were detected, which correspond to the proton beam presence, and lines suspected to be caused by an argon presence.

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### References

1. S. Yu. Taskaev. Accelerator Based Epithermal Neutron Source. *Physics of Particles and Nuclei*, vol. 46, No. 6, page 956–990 (2015).