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## **P4.185 Study of tritium and helium generation and release from lead-lithium eutectics Li15.7Pb under neutron irradiation**

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At the moment, the lead-lithium eutectic was chosen as the material of the reactor blankets of ITER and DEMO. During the reactor operation radioactive tritium will be produced in the blanket, but the interaction parameters of hydrogen isotopes with lead-lithium eutectic are poorly studied. The most significant processes affecting the release of tritium from the lead-lithium eutectic is its interaction with lithium atoms, as a result of which lithium tritide is formed. An increase in the temperature of sample above 300 ° C leads to a decrease in tritium release, which is caused by the appearance of local inhomogeneities in the eutectic, leading to a change in the ratio of lithium atoms to lead atoms in the sample. As a result, lithium atoms are deblocked with lead atoms (and, correspondingly, the increase in the chemical activity constant of eutectics), as a result of which the lithium atom can interact with the tritium atom. Physically, this process can be represented as an increase in the number of traps for tritium in eutectic with an increase in temperature. The main published works on eutectics were usually carried out with samples containing 17% of lithium, but even a small deviation in the lithium concentration relative to lead leads to significant changes in the properties of the eutectic with respect to hydrogen isotopes. That is why there is an urgent need for research on the generation and release of tritium from a lead-lithium eutectic with a lithium content of 15.7% directly under neutron irradiation.

In this paper, we present the results of experimental studies of the lead-lithium eutectic Li15.7Pb under neutron irradiation, as well as the parameters of tritium release from the lead-lithium eutectic Li15.7Pb for various temperature regimes.

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