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Post-irradiation exam of tritium release from long-term irradiated Li_2TiO_3 ceramics

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Lithium ceramics is planned to be used in tritium breeding systems of future fusion reactors. To provide effective tritium generation while obeying the ecological and safety restrictions on tritium processing it is necessary to investigate tritium interaction with elements of proposed breeding systems. Therefore tritium-ceramics interaction is of most interest in such systems.

Presented work describes experimental studies of tritium yield from lithium ceramics (Li_2TiO_3+5mol.% TiO_2) after long-term neutron irradiation. Initially ceramics was 96% enriched with Li6 and irradiated with neutrons (about 220 days) in research water-water reactor of Kazakh National Nuclear Center (WWRK) till the 20% burn-up of ^{6}Li.Examinations of residual tritium yield from irradiated lithium ceramics were conducted using thermodesorption method with linear heating rates from 2 to 10 K/min up to ceramics melting point temperature. The experiments were carried-out under continuous pump-out and mass-analysis of desorbed gases in experimental chamber. As the result the data on tritium (and other gases) release rates from irradiated ceramics are obtained.

Preliminary results on estimations of residual tritium content in irradiated lithium ceramics and its thermodesorption data are presented in given report.