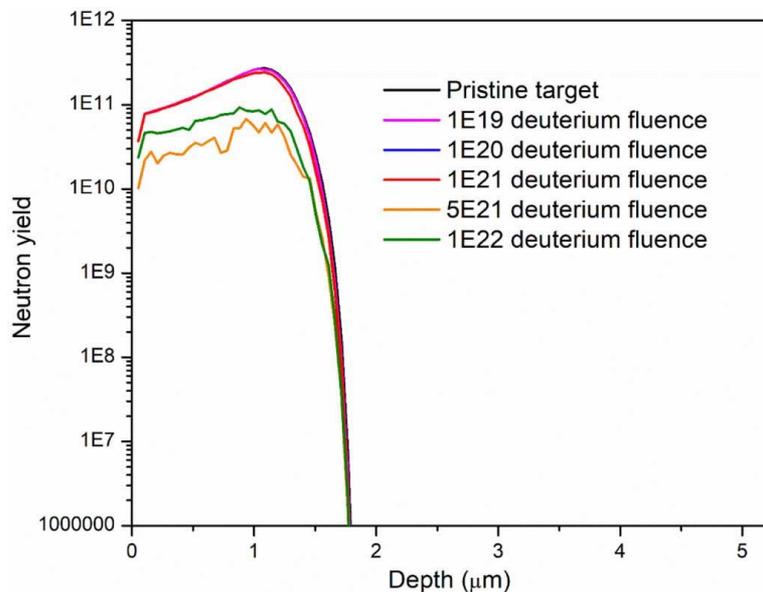


Tritium-titanium target degradation due to deuterium irradiation for DT neutron production ($1/2$)

M Rajput, H.L. Swami, S Vala, M Abhangi, Ratnesh Kumar, Rajesh Kumar



Neutron production after deuterium irradiation of different fluence for 300 keV energy.

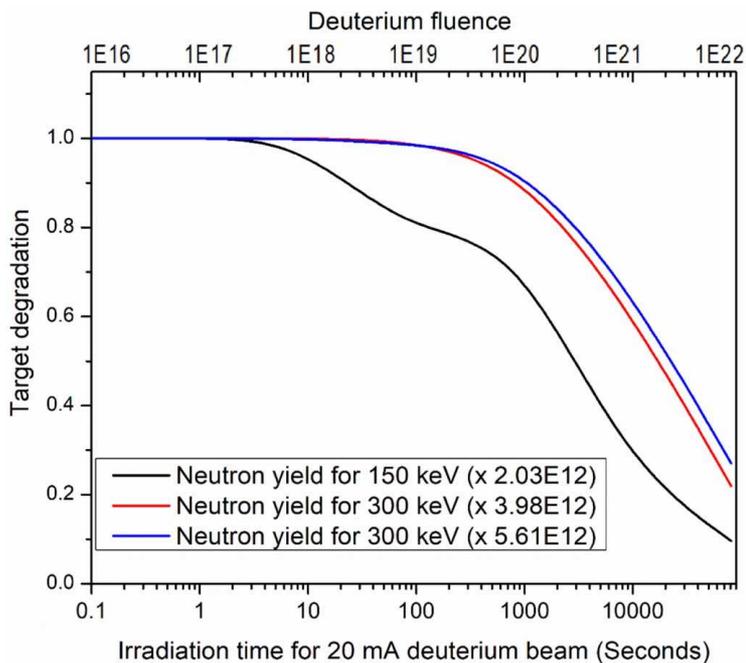
- We have investigated tritium removal from tritium-titanium targets during fusion neutron production with the SDTrimSp code.
- We adopt the binary collision approximation method to simulate the recoils and projectile trajectories and concentration of constituents in the target. We have modelled four phenomena in our simulations; ion exchange, sputtering, outgassing of tritium, and thermal diffusion of hydrogen isotopes in the target caused by deuterium irradiation.

Source: Nuclear Fusion, 63 (6), 066033, 05, 2023

Published Paper Link: <https://iopscience.iop.org/article/10.1088/1741-4326/accd80/pdf>

Tritium-titanium target degradation due to deuterium irradiation for DT neutron production ($^2/2$)

M Rajput, H.L. Swami, S Vala, M Abhangi, Ratnesh Kumar, Rajesh Kumar



Performance of target with the increasing deuterium fluence.

- A Python-based script is developed to investigate the effects of tritium removal on neutron production with these pristine and irradiated targets. Using the layered composition of tritium atoms in the target obtained from the SDTrimSp simulations, the script predicts the degradation in neutron production for different irradiation scenario.
- This study gives a clear picture of target replacements for long term neutron generator operations.

Source: Nuclear Fusion, 63 (6), 066033, 05, 2023

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