Abstract Submitted
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A target station for plasma exposure of neutron irradiated fusion material samples to reactor relevant conditions[1] JUERGEN RAPP, DOMINIC GIULIANO, RONALD ELLIS, RICHARD HOWARD, JEREMY LORE, ARNOLD LUMSDAINE, TIMOTHY LESSARD, WILLIAM MCGINNIS, STEVEN MEITNER, LARRY OWEN, VENUGOPAL VARMA, Oak Ridge National Laboratory — The Material Plasma Exposure eXperiment (MPEX) is a device planned to address scientific and technological gaps for the development of viable plasma facing components for fusion reactor conditions (FNSF, DEMO). It will have to address the relevant plasma conditions in a reactor divertor (electron density, electron temperature, ion fluxes) and it needs to be able to expose a-priori neutron irradiated samples. A pre design of a target station able to handle activated materials will be presented. This includes detailed MCNP as well as SCALE and MAVRIC calculations for all potential plasma-facing materials to estimate dose rates. Details on the remote handling schemes for the material samples will be presented. 2 point modeling of the linear plasma transport has been used to scope out the parameter range of the anticipated power fluxes to the target. This has been used to design the cooling capability of the target. The operational conditions of surface temperatures, plasma conditions, and oblique angle of incidence of magnetic field to target surface will be discussed.

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