Abstract Submitted
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The Material Plasma Exposure eXperiment (MPEX)[1] J. RAPP, T.M. BIEWER, T.S. BIGELOW, J. CANIK, J.B.O. CAUGHMAN, R.C. DUCKWORTH, R.H. GOULDING, D.L. HILLIS, J.D. LORE, A. LUMSDAINE, W.D. MCGINNIS, S.J. MEITNER, L.W. OWEN, G.C. SHAW, Oak Ridge National Laboratory, Oak Ridge, TN, USA, G.-N. LUO, Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, China — Next generation plasma generators have to be able to access the plasma conditions expected on the divertor targets in ITER and future devices. The Material Plasma Exposure eXperiment (MPEX) will address this regime with electron temperatures of 1 – 10 eV and electron densities of 10^{21} – 10^{20} m^{-3}. The resulting heat fluxes are about 10 MW/m^2. MPEX is designed to deliver those plasma conditions with a novel Radio Frequency plasma source able to produce high density plasmas and heat electron and ions separately with Electron Bernstein Wave (EBW) heating and Ion Cyclotron Resonance Heating (ICRH). Preliminary modeling has been used for pre-design studies of MPEX. MPEX will be capable to expose neutron irradiated samples. In this concept targets will be irradiated in ORNL's High Flux Isotope Reactor (HFIR) or possibly at the Spallation Neutron Source (SNS) and then subsequently (after a sufficient long cool-down period) exposed to fusion reactor relevant plasmas in MPEX. The current state of the pre-design of MPEX including the concept of handling irradiated samples will be presented

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