

Abstract Submitted  
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**Overview of the preliminary design of the diagnostic suite for MPEX**<sup>1</sup> T.M. BIEWER, T.S. BJORHOLM, J. RAPP, Oak Ridge National Lab, MPEX TEAM — The Material Plasma Exposure eXperiment (MPEX) is a planned steady-state device at ORNL that will be used to study plasma-material interactions to advance the progress of engineered materials for the plasma facing components of fusion reactors. The preliminary design of MPEX will soon be reviewed, including the diagnostic suite of instrumentation. Similar to other fusion-relevant devices, MPEX diagnostics will serve a variety of roles: machine protection, basic operation, advanced plasma control, and scientific utilization. The diagnostic suite at the conceptual design stage includes: Thomson scattering, optical emission spectroscopy, interferometers, visible and infra-red camera imaging, pyrometers, microwave diodes, bolometry, in-vessel and ex-vessel thermocouple arrays, pressure gauges, residual gas analysis, and in vacuo surface analysis techniques. MPEX diagnostics will be implemented in a staged approach; Phase I diagnostics are those necessary to meet key performance parameters, while Phase II diagnostics are those necessary for the initial scientific utilization of MPEX. It is envisioned that Phase II diagnostics will be implemented in collaboration with institutions outside of ORNL. This presentation will give an overview of the planned diagnostic layout for MPEX.

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