

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Effects of boronization on reversed field pinch plasmas<sup>1</sup>** J.A. GOETZ, J. KO, D.J. DEN HARTOG, S.T. LIMBACH, P.J. WEIX, University of Wisconsin - Madison — First successful gaseous boronization during a series of pulsed discharges is reported. Sublimation of o-carborane ( $C_2B_{10}H_{12}$ ) combined with pulsed discharge plasmas with a repetition rate of 1 Hz produces a hard boron-containing coating for reversed field pinch (RFP) plasmas in MST. X-ray photoelectron spectroscopy with Ar ion beam etching for aluminum and silicon coupons installed at the plasma boundary shows about 60% boron concentration in the deposited layer. Both profilometer and scanning electron microscope (SEM) analysis of the silicon coupons imply that the thickness of the B/C coating is about 80 nm. Ellipsometry calibrated with the SEM results yields a refractive index of 2.6 for the film. This high refractive index implies that the coating is hard and has a well-ordered morphology. A reduction in wall recycling has consistently been observed after all boronization sessions. Comparison of the x-ray spectra in standard RFP plasmas before and after boronization indicates a slight decrease in the effective ionic charge. A similar comparison will also be presented for improved confinement RFP plasmas.

<sup>1</sup>Work supported by US DoE

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Date submitted: 13 Jul 2011

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