

Abstract Submitted  
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**Between-Shot Boronization on Alcator C-Mod**<sup>1</sup> E. MARMAR, I. HUTCHINSON, J. IRBY, Y. LIN, B. LIPSCHULTZ, M. REINKE, J. RICE, J. TERRY, MIT — Boronization is a standard wall conditioning technique used in C-Mod. The boron layer is usually deposited using an Electron Cyclotron Discharge (ECDC) run in 10%B<sub>2</sub>D<sub>6</sub>/90%He gas. Normally a ~8 hour boronization is applied about once every week to cover the all-metal plasma facing components and vessel surfaces. Assuming uniform coverage, the rate of B deposition is ~20 nm/hour, with typical coverage of ~150 nm from a single overnight treatment. Boronization has important effects on plasma operation, including reduction of core radiation and improvement of global energy confinement. The effects of a single boronization typically last for between 10 and 100 plasma discharges, depending on plasma conditions and auxiliary heating power. To better understand the effects of boronization and to improve discharge consistency, we are investigating between-shot boronization. Initial experiments show that as little as 10 minutes of ECDC boronization significantly affects the subsequent tokamak plasma shot, and the beneficial effects increase monotonically with application time, at least up to 30 minutes. These effects also wear off in 1 or 2 shots, enabling the assessment of variations in resonance scan and gas parameters during ECDC. Glow discharge boronization is also being considered as a possible between-shot technique.

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