ALCATOR C-MOD CRYOPUMP TESTING AND INSTALLATION

J. Zaks, R. Vieira, W. Beck, B. Labombard, B. Lipshultz, J. Irby, R. Childs, P. Titus, D. Gwinn, S. Pierson.
MIT Plasma Science and Fusion Center, 190 Albany Street, Cambridge, MA 02139
zaks@psfc.mit.edu

A cryopump is being fabricated for installation in the upper vessel chamber of the Alcator C-Mod to enhance plasma density and impurity control during H-mode, internal transport barrier, and lower hybrid current drive experiments. The vacuum vessel size imposes design challenges for achieving the required pumping speed. The pump will initially operate with an open helium fill system. The testing is scheduled to be completed by September of 2005. Manufacturing and installation are to be completed by the end of 2005. A full scale cryopump test will be done before installation on the C-Mod and will include the following: steady state pumping speed measurements, over-pressure tests, demonstrate effective transfer of helium and nitrogen, vacuum integrity testing of cryogenic couplings and vacuum welds, thermal insulation testing to minimize helium boil off, demonstration of avoiding film-boiling regime, testing of the supports. Details of the cryopump testing and installation will be presented in this paper. The mechanical design and analysis of the cryopump will be discussed in a companion paper at this conference.