

**Abstract Submitted for the 51st Annual Meeting  
Division of Plasma Physics  
November 2-6, 2009, Atlanta, Georgia**

**Shell Pellet Experiments on DIII-D,\*** E.M. Hollmann, A.N. James, J.H. Yu, *UCSD*; N. Commaux, T.C. Jernigan, *ORNL*; T.E. Evans, D.A. Humphreys, G.L. Jackson, P.B. Parks, E.J. Strait, and W. Wu, *GA*- Injection of hollow shell pellets filled with a dispersive payload is a possible method for rapid shutdown of future large tokamaks to avoid wall damage during disruptions. Preliminary shell pellet experiments have been performed in the DIII-D tokamak by firing small (OD  $\sim$  2 mm) polystyrene shells filled with either pressurized (10 atm) argon gas or with boron powder into quiescent discharges. Pellet slowing from 350 m/s down to 100 m/s was observed, which is not well-understood at present. Using the measured pellet velocity, the observed pellet burn up at  $r/a \sim 0.5$ , appears consistent with ablation rate calculations. Successful delivery and rapid ( $<15$  ms) dispersal of the pellet payloads into the plasma core was observed. Negligible plasma current contraction or MHD onset were seen as a result of the shell burn up in the plasma edge, consistent with calculations. Planned experiments with large (OD  $\sim$  1 cm) shell pellets will also be discussed.

\*Supported by the US DOE under DE-FG02-07ER54917, DE-AC05-00OR22725, and DE-FC02-04ER54698.