

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**Flashback behavior in a model swirl combustor at elevated pressure** RAKESH RANJAN, DOMINIK EBI, NOEL CLEMENS, The University of Texas at Austin — Understanding of combustion physics at high pressure is essential for safe and efficient operation of gas turbine combustors. A new optically-accessible elevated pressure combustion facility has been developed for this purpose. The modular design of the chamber allows applying various optical diagnostic techniques and the installation of different types of combustors. In the current study, the effect of pressure on boundary layer flashback in lean-premixed swirl flames is investigated. Mixtures of hydrogen and methane at different equivalence ratios are tested. High-speed chemiluminescence imaging is employed to study the upstream flame propagation inside the mixing tube, which allows comparison to previous results of flashback at atmospheric pressure.

Rakesh Ranjan  
The University of Texas at Austin

Date submitted: 01 Aug 2014

Electronic form version 1.4