

Abstract Submitted  
for the DFD16 Meeting of  
The American Physical Society

**Modified Flamelet-Based Model for Non-Premixed High Speed Combustion** ZHIPENG LOU, FOLUSO LADEINDE, State Univ of NY- Stony Brook, WENHAI LI, TTC Technologies, Inc. Centereach, NY — The influence of static pressure and the use of Troe's model on flamelet solutions in supersonic combustion are studied. With various values of the background static pressure, we have observed significant effects on the flamelet solutions in such quantities as the quenching stoichiometric scalar dissipation rate, reaction rate of species and progress variable, heat release rate, and the temperature profile. In addition, the Troe's model shows opposite effects for low and high pressure conditions. The baseline flamelet table has been constructed with respect to mixture fraction and its stoichiometric scalar dissipation rate, where the information on both the stable and unstable flamelet solutions have been included. We have also experimented with the addition of pressure as an independent variable in the table, toward modeling compressibility and/or pressure-sensitive properties and the variable quenching conditions in real dual-mode scramjet operations.

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Date submitted: 07 Aug 2016

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