

Abstract Submitted  
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**A Jet-Stirred Apparatus for Turbulent Combustion Experiments<sup>1</sup>**

ABBASALI DAVANI, PAUL RONNEY, Univeristy of Southern California — A novel jet-stirred combustion chamber is designed to study turbulent premixed flames. In the new approach, multiple impinging turbulent jets are used to stir the mixture. It is well known that pair of counterflowing turbulent jets produces nearly a constant intensity ( $u'$ ) along the jet axes. In this study, different numbers of impinging jets in various configurations are used to produce isotropic turbulence intensity. FLUENT simulations have been conducted to assess the viability of the proposed chamber. In order to be able to compare different configurations, three different non dimensional indices are introduces. Mean flow index; Homogeneity index, and Isotropicity index. Using these indices one can compare various chambers including conventional Fan-stirred Reactors. Results show that a concentric inlet/outlet chamber (CAIO) with 8 inlets and 8 outlets with inlet velocity of 20 m/s and initial intensity of 15% produces near zero mean flow and 2.5 m/s turbulence intensity which is much more higher than reported values for Fan-stirred chamber.

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