



NUMERICAL INVESTIGATION OF IMPACT ON ADIABATIC FLAME TEMPERATURE, COMPOSITION DEPENDENCE OF THE SPECIFIC HEAT AND NO_x EMISSIONS IN A GH₂ - AIR COMBUSTOR WITH TURBULANT FLAME

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ABSTRACT

Combustors have a wide variety of mixture combinations which produces high fluxes on the combustion chamber. To deal with such heat transfer rates, prediction of AFT and its associated composition dependence are to be thoroughly studied. The current study shows numerical analysis of GH₂ - Air combustor considering combustion of hydrogen, rate of heat transfer through wall of the chamber, combustion instabilities if any and flame behaviour accordingly. The present analysis is performed with single co-axial injector which uses gaseous hydrogen as fuel and air as the oxidiser. Difference of turbulent flame behaviour with different concentration are analysed. When the concentration of oxygen is increased, flame temperature will also get increased. If the species concentration is more, AFT would be very less at par with the theoretical value. So in order to attain complete combustion, correct