

Abstract Submitted
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Effects of flow shear on chemical reactions in non-premixed combustion¹ YOSHITO KAGA, NAOTO YOKOYAMA, Energy Conversion Research Center, Doshisha University, Japan, JIRO MIZUSHIMA, Department of Mechanical Engineering, Doshisha University, Japan — Interactions between chemical reactions and flows are numerically investigated by use of a methane-air six-species and four-step reduced kinetic mechanism in axisymmetric jet diffusion flame. It is known that major heat release takes place owing to the water producing reaction and is present slightly outside of the classical flame surface defined by the stoichiometric mixture fraction. In the diffusion flame, the shape of the flame surface is maintained by merging of reactants into the flame surface. In this study, it is confirmed that the amount of heat release depends on the way how the reactants are supplied to the flame surface. Therefore, effects of the inflows of chemical reactants induced by the flow shear on the chemical reactions is investigated in detail.

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