

Experimental Study on Laminar Lifted Methane Jet Flame Diluted with Nitrogen and Helium

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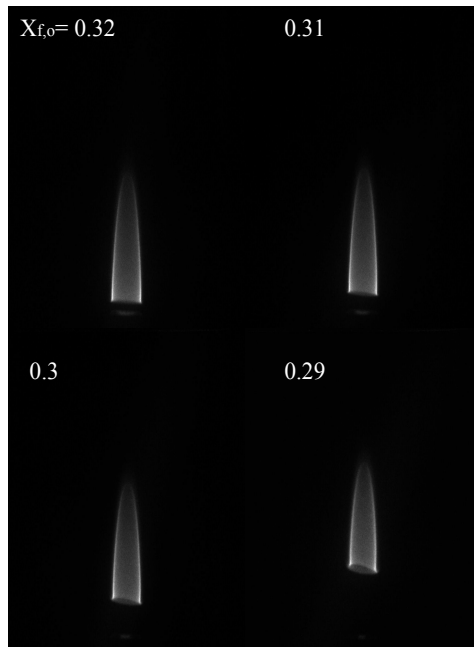


Fig.1. Visualization of laminar lifted methane jet flame diluted with nitrogen by ICCD camera at $U_o=15\text{cm/s}$ and various fuel mole fractions.

Laminar lifted methane jet flame diluted with nitrogen and helium in co-flow air has been investigated experimentally. To elucidate the stabilization mechanism in lifted methane jet flames with $Sc < 1$, the role of chemistry and intermediate species such as CH^* , OH^* chemiluminescence has been taken into consideration. The chemiluminescence intensities of CH^* and OH^* were measured using ICCD camera at various nozzle exit velocities and fuel mole fractions.

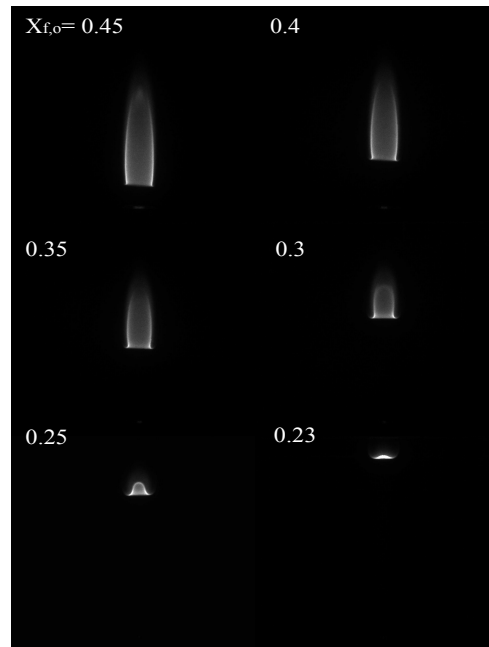


Fig.2. Visualization of laminar lifted methane jet flame diluted with helium by ICCD camera at $U_o=15\text{cm/s}$, and various fuel mole fractions.

It has been observed that the OH^* species can play an important role in stabilization of lifted methane jet flame as they are good indicators of heat release rate which can affect on flame speed. So this visualization of lifted methane jet flame diluted with nitrogen and helium by ICCD camera has been taken to obtain the presence of chemical species CH^* , OH^* in lifted flame.

References

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- [2] Jeong Seo, Nam Kim, Hyun Dong Shin, Combust. flame 153 (2008) 355-366.

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