

## عنوان مقاله:

Flame Length Scaling of C<sub>2</sub>H<sub>4</sub>-Air Premixed Flames under Acoustic Forcing

## محل انتشار:

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## خلاصه مقاله:

An experimental study has been carried out to investigate the effects of inlet velocity, equivalence ratio, and acoustic forcing on flame lengths and flame center lengths in a dump combustor. A premixed gas of ethylene and air was supplied to a combustor through an inlet section and an acoustic driver was used to generate acoustic forcing to simulate unstable combustion. By changing these parameters, combustion tests were performed and flame images were taken using an ICCD camera with a bandpass filter corresponding to a CH\* chemiluminescence band. Flame lengths/flame center lengths were obtained from the flame images and were analyzed with respect to dimensional parameters. For a more general finding, the flame length and flame center length were normalized by the inlet width. The dimensional parameters were also replaced with non-dimensional parameters such as the Reynolds number, Strouhal number, Damköhler number, and normalized inlet velocity fluctuation, since dimensional parameters have a complex influence on these non-dimensional parameters. The normalized flame lengths and flame center lengths could be expressed well as a function of the non-dimensional parameters. It was found that an increase in the Reynolds number and a decrease in the Strouhal number, Damköhler number and normalized inlet velocity fluctuation caused the flame length/flame center length to become greater.

## کلمات کلیدی:

Flame length, Flame center length, Dump combustor, Combustion instability, Turbulent vortex flame

## لینک ثابت مقاله در پایگاه سیویلیکا:

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