

平成 28 年 10 月 19 日

所属: 豊橋技術科学大学

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## 平成 28 年度 助成 海外調査研究終了報告書 ※ゴシック文字で記入下さい。

渡航目的	To attend the 36th International Symposium on Combustion
渡航日程と 海外での成果 (発表・調査など)	<p>2016/07/31, Flight from Nagoya, Japan to Seoul, Korea</p> <p>2016/08/01-08/05, Join the Symposium at COEX, Seoul, Korea</p> <p>2016/08/06, Flight from Seoul, Korea to Nagoya, Japan</p> <p>I gave an oral presentation at the 36th International Symposium on Combustion, which is named "Flame Base Structures of Micro-jet Hydrogen/Methane Diffusion Flames". The paper has been accepted and published in The Proceedings of the Combustion Institute.</p>
研究内容 の概要	<p>In this study, a comparison of flame base structures of hydrogen/methane-air diffusion flames formed over a tiny-jet is made numerically for both isothermal and thermal conductive burner conditions, in order to clarify the fuel dependent flame stabilization mechanisms. It is found that, unlike a methane flame, the flame base of a hydrogen flame always attaches to the burner. The analyses indicate that one of the H<sub>2</sub> production reactions (R43f: <math>H + O_2 + M \rightarrow H_2O + M</math>), which has a dominant role in sustaining reactivity at the flame base, shows a negative temperature dependence, causing the heat release rate in the flame base kernel to increase as the burner wall temperature decreases. It is expected that the flame attachment feature associated with the flame base structure can be easily controlled by mixing hydrogen and methane, making it possible to control the burner tip temperature in advance.</p>

提出期限: 帰国後すみやかに助成金の「必要経費使途明細書」「領収書」と合わせて提出下さい。