Journal of Visualization, Vol. 6, No. 1 (2003) 6

Counterflow Diffusion Flame under Reduced Gravity

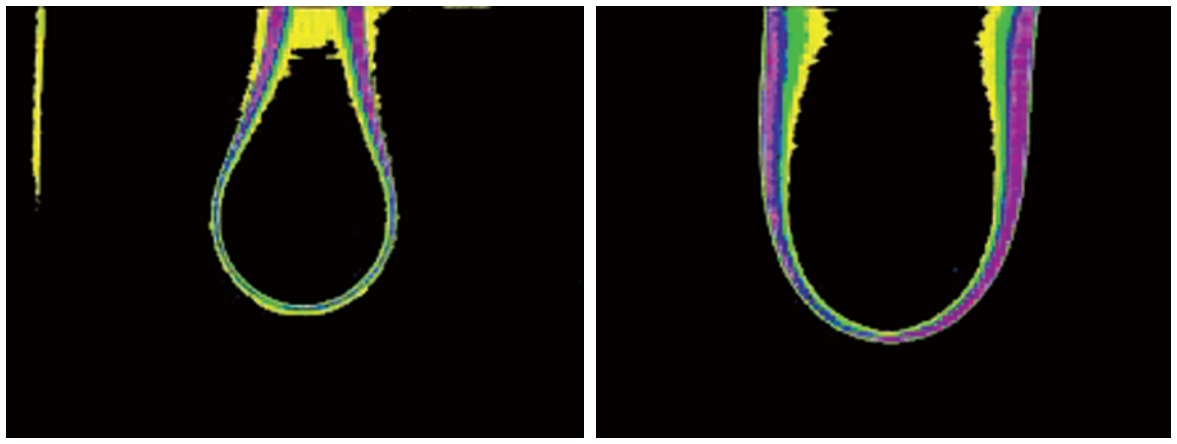
Torii, S. [1], *Yano, T.* [1] *and Maeda, H.* [2]

1) *Department of Mechanical Engineering, Kagoshima University, 1-21-40 Korimoto, Kagoshima 890-0065, Japan*

2) *Seiko Epson Co., Suwa-shi, Nagano, Japan*

(a) Onset of free fall (b) after t=0.6 sec.

Fig. 1. Timewise variation of counderflow diffusion flame under reduced gravity



(a) Onset of free fall (b) after t=0.6 sec.

Fig. 2. Brightness of counterflow diffusion flame under reduced gravity

Figure 1 illustrates the counderflow diffusion flame in the forward stagnation region of a porous cylinder placed in the vertical wind tunnel under reduced gravity. The counterflow diffusion flame of propane at t=0 seconds appears in the vicinity of the porous cylinder. After t=0.6 seconds, the flame thickness and area increase due to non-buoyancy forces, as shown in Fig. 1(b). The corresponding flame luminosity obtained by an image processing method is amplified under reduced gravity, that is, the flame brightness, namely, the area of the red region, becomes wider (Fig. 2).