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Hitoshi Fujimoto, Soushi Yoshimoto, Ken Takahashi, Takayuki Hama, Hirohiko Takuda

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# Deformation behavior of two droplets successively impinging obliquely on hot solid surface

Hitoshi Fujimoto<sup>a\*</sup>, Soushi Yoshimoto<sup>ab</sup>, Ken Takahashi<sup>ac</sup>,  
Takayuki Hama<sup>a</sup>, and Hirohiko Takuda<sup>a</sup>

<sup>a</sup> Graduate School of Energy Science, Kyoto University, Kyoto 606-8501, Japan

<sup>b</sup> Presently, JFE Steel Corporation, Fukuyama 721-8510, Japan

<sup>c</sup> Presently, Daikin Corporation, Kusatsu 565-8526, Japan

\*Corresponding Author. Hitoshi Fujimoto

E-mail: h-fujimoto@energy.kyoto-u.ac.jp, Tel: +81-75-753-5419

## ABSTRACT

We investigated the successive oblique collision of two droplets with a hot solid surface using flash photography. A pair of water droplets at room temperature was vertically dropped to impact a tilted smooth sapphire substrate one after the other. The diameter of the droplets was approximately 0.6 mm and the impact velocity was varied between 1.6 and 2.1 m/s. The spacing between the centers of the two falling droplets was also varied between 0.8 and 1.5 mm. The substrate was tilted at  $\leq 45^\circ$  relative to the horizontal and its temperature was varied between 170 and 500 °C. The leading droplet impacted the substrate and slid downwards over the surface, and this was followed by the off-centered collision of the trailing droplet relative to the deformed leading droplet. The subsequent motion of the “combined liquid” was observed to be essentially three-dimensional. For substrate temperatures of 200–300 °C, the combined liquid was considerably distorted by the bursting of boiling vapor bubbles at the free surface. At a substrate temperature of 500 °C, the liquid motion was roughly linearly symmetric.

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