Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Penetration process and instabilities arisen on a liquid jet impinged to a liquid flowing in a channel KAORU HATTORI, Undergraduate, Department of Mechanical Engineering, Faculty Science & Technology, Tokyo University of Science, ICHIRO UENO, Department of Mechanical Engineering, Faculty Science & Technology, Tokyo University of Science — We conduct a series of experiments with a special interest on a penetration process and instabilities arisen on a liquid jet impinged to a liquid of the same kind flowing in a channel. The impinged jet penetrates into the flowing bath accompanying with entrainment of the ambient immiscible gas, which results in the impinged jet wrapped by the entrained gas as a "sheath." This sheath formation enables the impinged jet to survive in the fluid in the channel without coalescing until the entrained-air sheath breaks down. Occasionally a "cap" of the entrained air is formed at the tip of the penetrated jet, and the jet elongates like a long balloon. Dynamic behaviors of the penetrated jet and the departure of the bubble of warring gas at the tip of the collapsing jet observed by use of a high-speed camera are discussed.

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Date submitted: 09 Aug 2010 Electronic form version 1.4