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Instability arisen on condensing vapor bubble¹ ICHIRO UENO²,
Dept. Mechanical Engineering, Fac. Science & Technology, Tokyo University of Science (TUS), RYOTA HOSOYA³, Div. Mechanical Engineering, School of Science & Technology, Tokyo University of Science, CHUNGPYO HONG⁴, Dept. Mechanical Engineering, Fac. Science & Technology, Tokyo University of Science — In the present study a special attention is paid to the growing and collapsing processes of vapor bubble injected into a subcooled pool; the authors try to extract the vapor-liquid interaction by employing a vapor generator that supplies vapor at designated flow rate to the subcooled pool instead of using a immersed heated surface to realize a vapor bubble by boiling phenomenon. This system enables ones to detect a spatio-temporal behavior of a single bubble of superheated vapor exposed to a subcooled liquid. The authors indicate the condensation rates as functions of the injection velocity of the vapor and the degree of subcooling of the pool. The authors indicate that an abrupt condensation of the injected vapor results in a fine disturbance over the vapor bubble surface before the collapse stage of the bubble. The wave number is sharply dependent on the degree of subcooling of the pool. The threshold of such a fine disturbance formation over the bubble corresponds with that the occurring condition of the maximum volume reduction rate of the vapor bubble.

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