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# Visualization study of the growth of a spherical bubble in He II boiling under microgravity condition

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Under microgravity, the heat transfer is considered to be different from that under normal gravity condition because of zero subcooling due to zero hydrodynamic pressure in saturated He II. Thus the heat transfer in He II under microgravity is an interesting research target. Microgravity experiments are expected to reveal some hidden mechanism of boiling heat transfer across vapor-liquid interface because a stable large-scale vapor bubble is formed. In the present study, the behavior of a single spherical bubble generated by a micro heater was observed under microgravity condition created with a drop tower for about 1.3 second. The visualized images taken by a high-speed camera were analyzed to obtain the time variation of a large vapor bubble in the order of 10 mm. It was seen that the sizes of single bubbles increased with decreasing He II temperature for fixed heat input. The bubble size near lambda temperature was smaller than that at 1.9 K though the effective thermal conductivity is quite small. The heat transfer function on the basis of the Gorter –Millink's law was found not to be significant in the prediction of the bubble dynamics of He II under microgravity.

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