

Application of the Macrolayer Dryout Model for the Prediction of Pool Boiling CHF at Inclined Plate

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ABSTRACT

Application of the macrolayer dryout model has been performed to predict CHF at inclined plates. For the identification of the detachment frequency of coalesced bubble, experiments have been performed with high-speed motion analyzer and bubble behaviors at inclined plates have been investigated. Based on the observed bubble behaviors, the detachment frequency of the coalesced bubble is measured and linear relations between detachment frequency and heat flux have been developed. In the case of 60° and 90° inclined plate, the detachment frequency decreases with the increase of heat flux. However, opposite trend has been identified in 30° inclined plate: the detachment frequency increases with the increase of heat flux. Using the correlation of macrolayer thickness suggested by Haramura & Katto and the extrapolation of the identified linear relations, CHF values at different conditions have been predicted. According to the prediction results, CHF values are well predictable.