

Investigation Bubble Growth and Nucleation Rates during the Pool Boiling Heat Transfer of Distilled Water Using Population Balance Model

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Abstract : In this research, the changes in bubbles diameter and number that may occur due to the change in heat flux of pure water during pool boiling process. For this purpose, test equipment was designed and developed to collect test data. The bubbles were graded using Caliper Screen software. To calculate the growth and nucleation rates of bubbles under different fluxes, population balance model was employed. The results show that the increase in heat flux from $q=20$ kw/m² to $q=102$ kw/m² raised the growth and nucleation rates of bubbles.

Keywords : heat flux, bubble growth, bubble nucleation, population balance model

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