

Abstract Submitted  
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**Infrared Visualisation of Nucleate Boiling from an Isolated Site in a Hele-Shaw Cell** JACQUELINE BARBER, DAVID BRUTIN, LOUNES TADRIST, Polytech Marseille, Université de Provence — Nucleation, growth and detachment of HFE-7000 confined vapour bubbles are investigated locally using simultaneously an infrared camera with 10  $\mu\text{m}$  spatial resolution and a visible camera. Bubbles are created from a 50  $\mu\text{m}$  artificial nucleation site on a 100  $\mu\text{m}$  Inconel film in a Hele-Shaw cell. A single bubble nucleation is investigated. Experiments are performed by varying both the convective inlet liquid mass flow rate, and the heat flux supplied at the wire. Bubble detachment diameters at the single artificial nucleation site and the associated effects on the heat transfer by the confinement influence are investigated at low Reynolds number. The experimental set-up enables observation in the 2D Hele-Shaw cell of the flow and of the bubble growth; this is achievable since the cell has one face transparent to infrared radiation. The infrared video resolution enables us to observe the presence of a bubble and its magnitude of thermal disturbance on the flow. The temperature profile of the bubble as it nucleates, grows and detaches from the wall can be measured from the infrared videos. The temperature change at the nucleation site highlights the frequency of the bubble detachment based on the temperature signal. From analysis of the visible and infrared videos, the nucleation site surface temperature, bubble detachment diameter and bubble nucleation frequency can be calculated.

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