

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)  
Fluid and Materials Sciences (2)

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CONFINED AND UNCONFINED NUCLEATE BOILING UNDER TERRESTRIAL AND  
MICROGRAVITY CONDITIONS**Abstract**

This work presents experimental results for subcooled nucleated boiling of n-Pentane, under terrestrial and microgravity conditions, on a heating surface facing downward, for different gap sizes and for low and moderate heat fluxes (60kW/m<sup>2</sup>). The microgravity conditions were obtained from the Maracati II space mission, which involved the launching of the suborbital Brazilian rocket VSB 30. The results under terrestrial conditions showed a decrease in the heat transfer coefficient with a decrease in the gap size. It was observed that the heat transfer coefficient increases with an increase in the liquid temperature. The results under microgravity conditions were compared with those for terrestrial conditions. For the confined case, the experimental data had the same trend. However, for the unconfined case, there was a difference between the data obtained under microgravity and terrestrial gravity conditions.

Keywords: Boiling, Nucleate boiling, Microgravity, Bond number, Heat transfer