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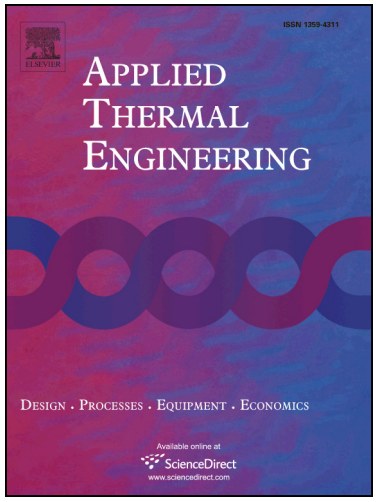

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Numerical investigation on onset of significant void during water subcooled flow boiling

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ABSTRACT

Accurate evaluation of the location of onset of significant void (OSV) is particularly important in predicting the void fraction profile in the subcooled flow boiling. In this study, a Computational Fluid Dynamics (CFD) model based on a wall heat flux partition algorithm is presented. Good consistency between simulation results and available experimental data for void fraction, liquid temperature, and wall temperature is demonstrated for a given case. To further evaluate the feasibility of the CFD model in predicting the OSV condition, more simulations are performed under various operational parameters. The simulation results show that an acceptable prediction is observed in the inlet and outlet sections for the void fraction in all the

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