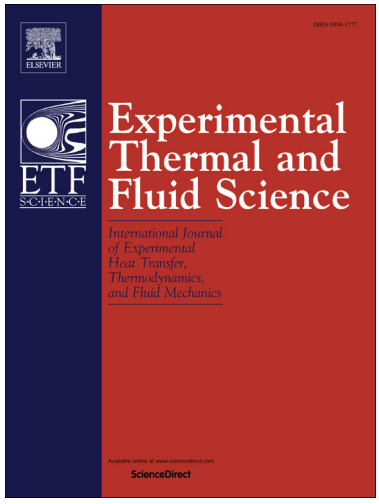

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SHORT COMMUNICATION

Pool Boiling Heat Transfer Enhancement of Distilled Water with Passive Rotating Blades Installed Above the Heating Surface

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Abstract

This study examined the pool boiling heat transfer of distilled water on a copper heating surface with passive rotating blades installed above the heating surface. The rotating blades were made from copper material, with a diameter of 30 mm, a core of 5 mm, a length of 50 mm, and a blade angle of 90°. The number of blades in this experiment varied between 2, 3, and 4. The study examined the effects of a varying number of blades and the distance between the heating surface and rotating blades (L_{SB}) on the pool boiling heat transfer coefficient. The experimental results show that, when compared under the same conditions, the rotor with four blades yielded a higher heat transfer coefficient than those with two and three blades. This is because the added blades increased the area that received strike force from the bubbles. As a result, the rotating blades created more disturbance of the working fluid over the heating surface. Furthermore, when compared with the same number of blades, the L_{SB} of 5 mm yielded a higher heat transfer coefficient than the L_{SB} of 15 or 25 mm. This