

Accepted Manuscript

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PII: S1359-4311(18)33758-X

DOI: <https://doi.org/10.1016/j.applthermaleng.2018.10.014>

Reference: ATE 12758

To appear in: *Applied Thermal Engineering*

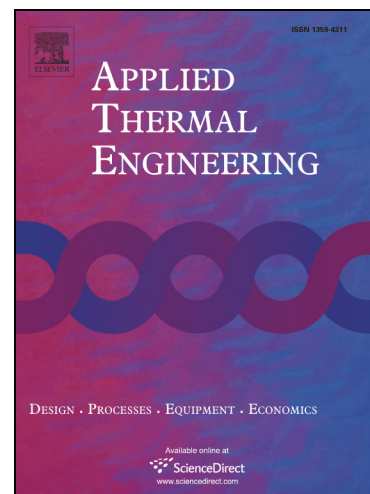
Received Date: 16 June 2018

Revised Date: 27 September 2018

Accepted Date: 5 October 2018

Please cite this article as: G. Wang, Z. Quan, Y. Zhao, H. Wang, Performance of a flat-plate micro heat pipe at different filling ratios and working fluids, *Applied Thermal Engineering* (2018), doi: <https://doi.org/10.1016/j.applthermaleng.2018.10.014>

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Performance of a flat-plate micro heat pipe at different filling ratios and working fluids

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Abstract: An experiment was carried out to study the effect of liquid filling ratio, inclination angle, and type of working fluid on the performance of a novel flat-plate micro heat pipe (FPMHP). The FPMHP is developed based on a multiport micro/minichannel flat tube, capable of the advantages such as the simple manufacturing process, flexible structure, good isothermal performance and heat transport with a long distance. Results shows that a filling ratio has a significant effect on thermal performance, and a FPMHP with a filling ratio of 20% has the best performance. The temperature distribution along the adiabatic section showed nearly no difference between two measuring points, indicating that the FPMHP is able to employed as a high-efficiency heat transfer equipment of phase change. FPMHP performance was improved remarkably when the inclination angle increased from 0° to 20° due to the effect of gravitational and buoyancy force, but the performance difference was negligible when the inclination angle increased from 20° to 90°. For different working fluids, the higher transmission factor, the better working fluids thermal performance. Thus, the FPMHP using methanol has the best performance,

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