

Abstract Submitted
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Hierarchical micro/nanostructure effect on the thermal performance of oscillating heat pipes¹ FENG ZHANG, ROBERT WINHOLTZ, VITALY GRUZDEV, HONGBIN MA, Univ of Missouri - Columbia — Oscillating heat pipes (OHPs) are a promising new technology for electronics cooling. When hierarchical micro/nanostructures are introduced within the OHP, the overall thermal performance is expected to improve due to the enhancement of thin film evaporation on the interior channel surfaces. Such structures, consisting of hierarchical micron sized waves and nanometer sized pores, were fabricated using a femtosecond laser at different scanning speeds and angles of incidence. Differences in surface topography were characterized with SEM. Contact angle measurements for the hierarchical structured surfaces were conducted with water and ethanol to determine the wettability of these working fluids. Experimental comparisons of the thermal performance of micro/nanostructured OHPs and conventional OHPs will be assessed.

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