3D Transient Models for Miniature Flat Heat Pipes

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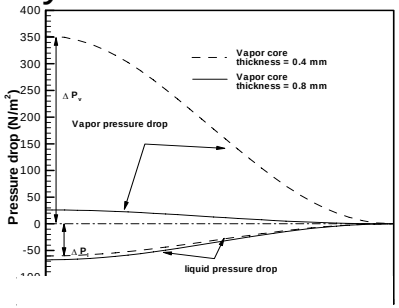
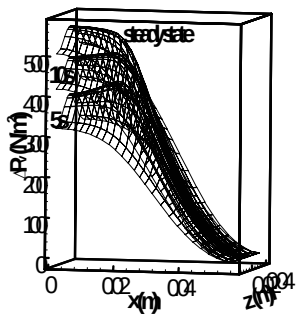
Objective

Extend the envelope of current heat pipe technologies by developing predictive capabilities to address the complex phase change processes in the heat pipe system



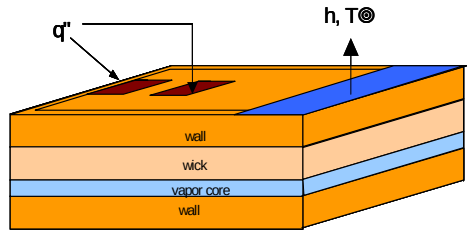


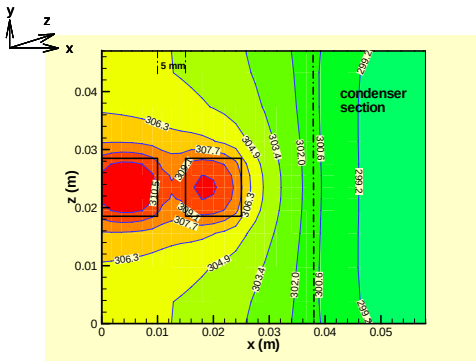
Approach

Our stable, convergent numerical scheme for the transient analysis of flat heat pipes at high heat fluxes uses a sequential solution procedure using SIMPLE. The model is in 3D, and handles multiple discrete heat sources. Capillary limits can be explored as well.

Impact

The transient, 3D model developed for miniature flat heat pipes allows design, optimization, and analysis of performance limits of heat pipes in constrained spaces and high heat flux applications.





Selected Publications

- U. Vadakkan, S. V. Garimella and J. Y. Murthy, ASME J Heat Transfer **126**:347-354, 2004.
- U. Vadakkan, S. V. Garimella and J. Y. Murthy, IMECE2003-42444, Washington, D.C., November 2003.

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