Thin Heat Pipes for Low Power Applications

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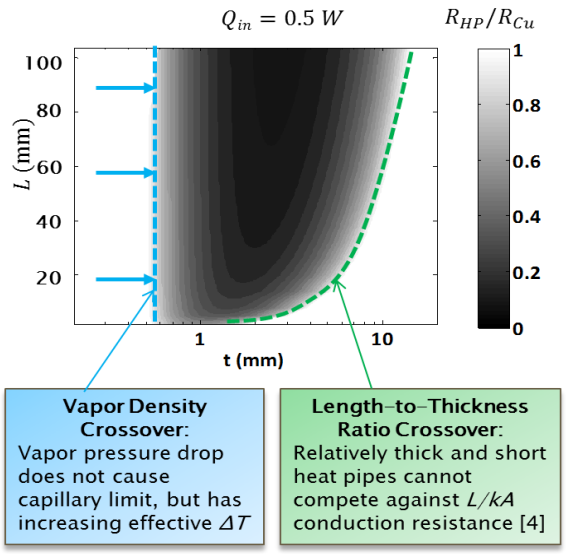
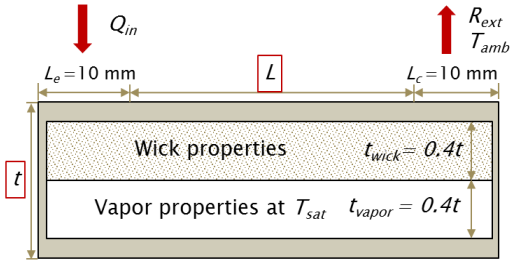
Objectives

- Evaluation and model-based design of ultra-thin heat pipes for low power applications
- Validate and improve heat pipe models to capture important governing mechanisms
- Generate comprehensive design guidelines

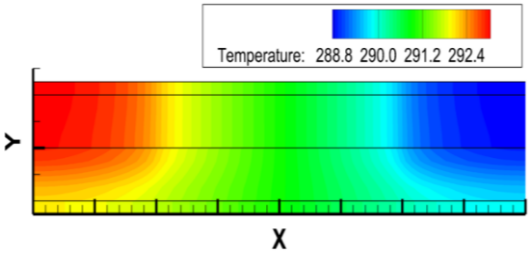
Approach

- Numerical modeling using 1D resistance network model and 2D computational model
- Compare performance with heat spreader
- Identify important transport mechanisms

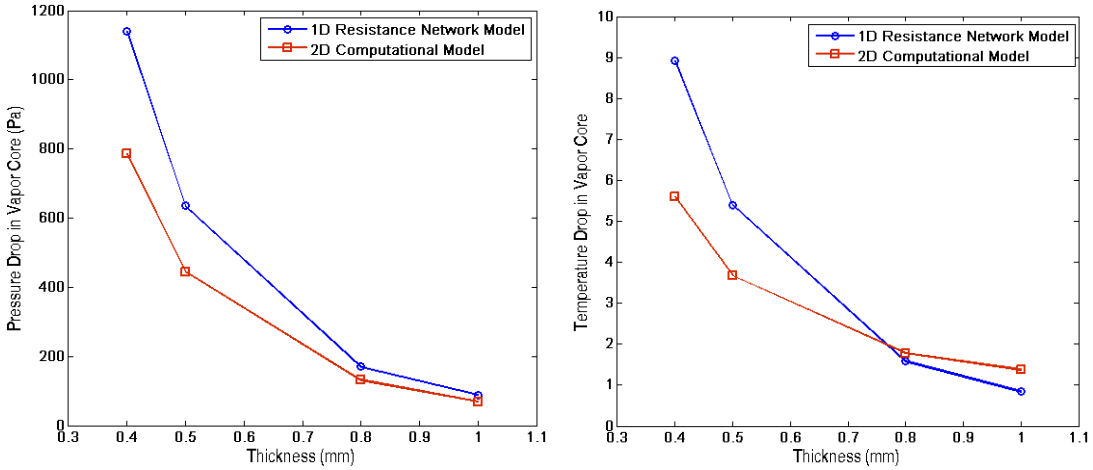




Numerical Case and Geometry



Temperature Contours



Comparison Between 1D and 2D Models

Selected Publications

- Vadakkan, U., Murthy, J. Y., and Garimella, S. V., 2003, ‘‘Transient Analysis of Flat Heat Pipes,’’ *Procs. ASME SHTC*, HT2003-47349.
- Prasher, R., 2003, “A Simplified Conduction Based Modeling Scheme for Design Sensitivity Study of Thermal Solution Utilizing Heat Pipe and Vapor Chamber Technology,” ASME JEP, pp. 378-385

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