

反应堆工程

钾热管稳态数值模拟分析

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收稿日期 修回日期 网络版发布日期:

摘要 进行热管的数值模拟主要是为预测钾热管稳态运行时的工作特性。热管的物理模型中包括了管壁、吸液芯及蒸气腔内蒸气3个耦合传热区域。利用PHOENICS程序作为求解器对控制方程和边界条件进行求解, 得到了热管稳态运行时的温度、速度、压力分布。计算结果与试验结果进行了对比, 两者符合较好。

关键词 [PHOENICS程序](#) [钾热管](#) [稳态](#) [数值模拟](#)

分类号

Steady Numerical Analysis of Potassium Heat Pipe

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Abstract A numerical study to predict the characteristics on the steady operation of the potassium heat pipe was performed. The model of the heat pipe was composed of three conjugate heat transfer sections, i.e. the vapor, wick and wall. The governing equations and the boundary conditions were solved by the generalized PHOENICS computational code as a solver to acquire the profiles of the temperature, velocity and pressure for the heat pipe steady operation. The comparison of the data from calculation and experiment shows that the agreement is good.

Key words [PHOENICS code](#) [potassium heat pipe](#) [steady state](#) [numerical simulation](#)

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