

反应堆工程

快堆组件盒壁破损机理模型的建立与验证

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摘要 快堆内发生超设计基准事故后, 故障组件盒会发展到沸腾池, 事故下一步的传播取决于池壁破损。文章采用机理建模方法, 对3种主要盒壁破损机理建立模型, 并在法国SCARABEE堆内实验中的BE+3和PV-A实验以及堆外GEYSER实验上进行了模型验证, 模型计算结果与实验结果吻合较好。根据模型计算结果, 对PV-A实验的池壁破损给予了合理解释, 总结出快堆池壁破损的相关结论, 并对堆内发生燃料-冷却剂相互作用(FCI)的可能性进行分析, 给出了相关结论。

关键词 [快堆](#) [沸腾池](#) [燃料-冷却剂相互作用](#)

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Establishment and Validation of Breaking Model of Subassembly Wrapper in Fast Reactor

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Abstract Under the beyond design basis accidental condition, the accidental subassembly steps into boiling pool period quickly. And the accident's propagation is up to the collapse of the wrapper. The method of establishing mechanism model was utilized in the paper. And three models were established according to the main mechanisms which were validated on the in-pile experiment BE+3, PV-A and out-of-pile experiment GEYSER showing good results. According to the calculation results of the model, a reasonable explanation was derived and some relative conclusion about the wrapper breaking was derived as well. Based on analyzing the possibility of the fuel-coolant interaction phenomena in fast reactor, some conclusions relative to this phenomenon were educated either.

Key words [fast reactor](#) [boiling pool](#) [fuel-coolant interaction](#)

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