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U₃Si₂Al弥散型燃料的辐照肿胀研究

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摘要 介绍了U₃Si₂Al弥散型燃料的辐照肿胀机理。将弥散型燃料的芯体视为连续基体中的微型燃料元件，应用裂变气体的行为机理描述燃料相中的气泡形成过程。研究结果表明：燃料相的肿胀引起燃料颗粒和金属基体之间的力学相互作用，金属基体能抑制燃料颗粒的辐照肿胀。在一定辐照条件下，本模型对燃料元件辐照肿胀的预测值与测量值相符

关键词 [亚晶化](#) [界面反应](#) [蠕变](#) [肿胀](#)

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Study on the Irradiation Swelling of U₃Si₂-Al Dispersion Fuel

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Abstract The dominant modeling mechanisms on irradiation swelling of U₃Si₂Al dispersion fuel are introduced. The core of dispersion fuel is looked to as micro fuel elements of continuous matrix. The formation processes of gas bubbles in the fuel phase are described through the behavior mechanisms of fission gases. The swelling in the fuel phase causes the interaction between fuel particles and metal matrix, and the metal matrix can restrain the irradiation swelling of fuel particles. The developed code can predict irradiation swelling values according to the parameters of fuel elements and irradiation conditions, and the predicted values are in agreement with the measured results.

Key words [grain subdivision](#) [interface reaction](#) [creep](#) [swelling](#)

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