

反应堆工程

疏松碳涂层密度测量的图像法研究

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摘要 研究采用图像分析技术测量包覆颗粒的疏松碳涂层密度, 包括图像采集硬件和分析软件。通过对颗粒的实际测量和扫描电镜观察, 对测量方法的可靠性进行了评价。在分析测量过程中不确定度主要来源的基础上, 对不确定度分量及合成不确定度进行了计算。结果表明, 本方法具有灵活方便、速度快、维护简单等特点, 可直接用于包覆颗粒涂层性能评价。

关键词 [图像法](#) [包覆颗粒](#) [疏松碳](#) [密度测量](#) [不确定度](#)

分类号

Image Analysis Technique for Density Measurement of Porous Pyrocarbon

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Abstract The image analysis technique was developed to measure the density of porous pyrocarbon on coated particles (CP), which consisted of image collecting hardware and analysis software. The reliability of the technique was assessed based on particle measurement and SEM (scanning electron microscopy) observation. The uncertainty components and combined uncertainty were evaluated by analyzing the main sources of uncertainty in measurement. The technique is suitable for the capability evaluation of CP coatings due to its convenience, rapidity, and easy maintenance.

Key words [image analysis technique](#) [coated particle](#) [porous pyrocarbon](#) [density measurement](#) [uncertainty](#)

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