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技术及应用

PAMS/GDP复合微球热降解过程研究

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摘要 利用称重法测量了PAMS（聚-α-甲基苯乙烯）在不同温度下的热降解速率，研究了PAMS微球随温度升高过程中的形貌变化。研究表明，固定PAMS的降解温度，PAMS降解速率将逐渐降低，需要采用梯度升温才能保证PAMS的降解速率相对稳定。PAMS降解过程对GDP（辉光等离子体放电聚合物）球壳性能影响较大，在降解过程中，PAMS未转变成可流动的液态，但降低了GDP微球的表面光洁度。GDP微球出现的各种缺陷主要与降解过程有关。

关键词 惯性约束聚变；降解芯轴技术；聚-α-甲基苯乙烯；降解温度

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Thermal Degradation Process of Poly (Alpha-Methylstyrene) Microspheres Coated With Glow Discharge Polymer

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Abstract Glow discharge polymer (GDP) shell was made by the decomposable mandrel technique using poly (alpha-methylstyrene) (PAMS) mandrel. The PAMS degradation rate and the GDP shell surface morphology at different equilibrium temperatures were investigated. Degradation rate was calculated from weight variation of PAMS before and after pyrolysis process. Experiment results indicate that the degradation rate decreases at the fixed equilibrium temperature and graded temperature can improve the rate. The degradation process has an effect on the GDP shell properties. The PAMS doesn’t molten to flow liquid during degradation. But the degradation can reduce surface finish of GDP coatings. The GDP shell deffects are the result of the PAMS degradation process.

Key words inertial confinement fusion decomposable mandrel technique poly (alpha-methylstyrene) degradation temperature

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