

沉降对不同粒径聚苯乙烯胶乳球异向聚集的影响

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摘要 R.Folkersma等报道了在微重力环境下2 μm 聚苯乙烯(PS)胶乳球的异向聚集速率有明显增大的结果,本文作者之一孙祉伟等的实验结果却与此有很大差异。为此作者在孙祉伟等的实验基础上对1,2,3 μm PS以及1 μm +2 μm PS胶乳球混和体系的相对聚集速率进行了研究。作者对原有实验装置进行了改进,并验证了改进后的实验装置的可行性。用密度匹配法实现模拟微重力条件,用快聚集过程中浊度随时间的变化表示相对聚集速率。结果表明,重力引起的沉降对所研究体系聚集速率的影响是很小的,在实验误差范围内可以忽略。作者认为与Stein等结果显著不同的原因是二者使用的样品表面性质不同以及实验方法的差异。

关键词 [沉降](#) [微重力](#) [聚集](#) [密度匹配](#) [聚苯乙烯](#) [胶乳](#) [异向聚集](#)

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Influence of sedimentation on perikinetic coagulation of different size of polystyrene spheres

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Abstract R. Folkersma et al. had reported that the perikinetic coagulation rate of 2 μm polystyrene(PS) spheres increased remarkably under microgravity conditions. Otherwise, Z. W. Sun et al. had provided their evidence showing that it was only appreciably faster under microgravity than under normal gravity. In order to test the influence of sedimentation on different size of PS spheres, on the basis of Sun's experiments, we have studied the coagulation rates of 1 μm , 2 μm , 3 μm and the mixture of 1 μm and 2 μm PS spheres. Turbidity versus time was employed to monitor the salt-induced coagulation process of PS dispersions. 0.5 mol.L⁻¹ MgCl₂ was used to induce fast aggregation. The results show that there is no difference in perikinetic coagulation rate under normal gravity and microgravity for 1 μm , 2 μm , 3 μm and 1 μm +2 μm PS. The authors assumed the surface properties of PS spheres and experimental method might account for the different results.

Key words [SETTLING](#) [MICROGRAVITY](#) [ACCUMULATE](#) [POLYSTYRENE](#) [LATEX](#)

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