

研究简报

新型三硅氧烷表面活性剂在低能表面的铺展机理

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摘要 为了了解三硅氧烷类表面活性剂在低能表面上的铺展机理, 实验研究了5种新型葡糖酰胺类三硅氧烷在石蜡表面铺展行为与时间以及浓度的关系. 结果显示: 在大多数情况下, 葡糖酰胺类三硅氧烷在石蜡表面的铺展是由三相线处非平衡毛细作用力导致, 在高浓度的I, II体系中, 表面张力梯度参与驱动液滴的铺展. 此外, 研究发现表面活性剂的HLB值以及分子体积明显影响其铺展能力, 具有适当HLB值的II在石蜡表面显示了一定的超铺展行为, 并在各浓度下均表现出最佳铺展性能.

关键词 [三硅氧烷](#) [葡糖酰胺](#) [铺展](#) [低能表面](#) [超铺展](#)

分类号

Spreading Mechanism of New Glucosamide-based Trisiloxane Surfactant on Low-Energy Surface

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Abstract In order to find the mechanism for spreading and superspreading behavior of trisiloxane surfactant on low-energy surface, the time-dependent and the concentration-dependent spreading performances of five new glucosamide-based trisiloxane on paraffin wax surface were investigated. The results showed that: in most cases, the spreading of these surfactants was driven by the unbalanced capillary force on the three-phase contact line, and that surface tension gradient participated the spreading process of surfactant I, II with higher concentration. Moreover, the spreading performance was affected by the HLB values and molecular volume of surfactant. Surfactant II with modest HLB value showed the best spreading performance within all concentrations, which also showed some superspreading behavior on paraffin wax surface.

Key words [trisiloxane](#) [glucosamide](#) [spreading](#) [low-energy surface](#) [superspreading](#)

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