

Controlled Stratification in Drying Film of Polymer-Colloid mixtures

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The drying of a polymer-colloidal film is important in many areas, such as in printing, spreading and coating, and materials science. An important problem is the structure of dried film, which has a great effect on material properties, is largely dependent on the drying conditions. In case of two different size of colloidal mixtures, it is well known that the colloids often stratify, where small colloids are laid upon large colloids at the high Peclet number condition for both sizes. Also, similar stratification tendency of polymer-colloidal mixtures has been reported by simulation. However, according to our experimental study, the size difference is not sole dominant factor for polymer-colloid mixtures. Here, we try to reveal the hidden mechanism of polymer-colloidal film stratification and suggest how to control this phenomena.