

Drying of Latex Dispersions

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When a latex dispersion is dried a number of transitions occur. Lateral drying fronts are observed with close packed particle regions forming and growing. These regions can also display cracks, if the particles are too rigid and non-film forming. This form of drying has been extensively studied over the past few years.

The presence of surfactant greatly complicates the drying process by initiating flows and creating craters in final latex films. We describe conditions under which an excess of surfactant is found at the top surface of latex films and predict the resulting flow instabilities.

There are found to be two instabilities, over widely different length scales, although both are driven by desorption of surfactant. Both mechanisms are described mathematically and experimental evidence of both will be presented.