

Distribution of SDS in acrylic composite latexes and in waterborne films

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Abstract

The use of water based polymer coatings and adhesives has become of growing interest due to strict European regulations.

Film formation is more complex for waterborne films than solvent-borne ones. The surfactant stabilizing the latex, can be a problem once the film is dry. For instance, concentrated at the film/air or film/substrate interfaces, it can lower optical or adhesive properties. If it forms aggregates in the bulk of the film, mechanical and barrier properties can be negatively affected.

Knowing the surfactant distribution is important and will help us understanding the drying mechanisms and determining which parameters have a strong influence on the final film properties.

The films were prepared from polymer and polymer/clay latexes. Surfactant distributions were studied in the latex via adsorption isotherms and then in the films using confocal Raman spectroscopy, AFM and XPS.

We found that some parameters have a strong effect on drying and on surfactant distributions: initial surfactant distribution in the latex, colloidal stability, composition of the particles...