

The mechanism of microstructural change during drying of PMMA suspension

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Suspension which is composed of particle and polymer has been used in a variety of industrial field such as paint, fuel cell, Li-ion battery and so on. However, many issues have been encountered during manufacturing processes. To characterize and control a microstructure of coating liquid is essential for stability of dispersion and storage of liquid during material preparation process. In addition, to optimize operating conditions of coating and drying is also essential for producing high quality and performance of final products. Therefore, it is important for material design, quality control, and high performance of product to understand the mechanism of particle and polymer dynamics during processes. We focus on the microstructure of coating liquid and dried film of particulate suspension. The suspension is composed of PMMA particle and polyacrylic acid (PAA) in aqueous solution. The microstructure of PMMA/PAA suspension and dried film depends on a concentration of particle and polymer due to adsorption amount of PAA onto the surface of PMMA particles. The mechanism of microstructural change of suspension during drying process will be discussed in this presentation.