

Coating process: issues and current state of the art

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Coating is defined as a process to replace air or other gas at its surface by a continuous liquid layer. Of many unit processes in information technology, coating has been widely used in many industries including flat panel display, battery, electronic chip manufacturing, and more. However, coating process is normally regarded as a black box and there is little effort to control the process. Though it has a long history, the coating process has rarely been studied systematically especially in these fast growing industries. In coating process, as the material experiences high shear flow due to the small gap of tens of micrometers and the dispersion of pigment is critical to the coating performance, the flow control of complex fluids of particulate system is very important. In addition, drying is another complex process that we have to consider together. Describing drying process with measurable quantities is another challenge we have to take. Therefore, precise control of the process, high shear rheology, flow control of particles, quantitative description of coating and drying performance will be the challenges of this area. In this talk, current state of the art of the quantitative approaches for coating and drying process is introduced.