

Multi Component Reactive Spray Coating

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ISCST-20180919AM-A-CA5

Presented at the 19th International Coating Science and Technology Symposium,
September 16-19, 2018, Long Beach, CA, USA[†].

Coating Applications

In this contribution we elaborate a novel coating tool, combining the coating process with in situ chemical reactions conducted at a tip of a multi fluid spray coating nozzle. Key applications are (i) coatings with functional particles embedded in a reactive matrix or (ii) coatings with in situ formation of particles within the reactive coating process. Due to separate liquid feeds, chemically incompatible material systems can be stored separately with long shelf life and are finally combined in a single reactive coating step.

As shown in figure 1 the reaction kinetics and process parameters can be balanced in order to tune film topography as one important parameter for optical properties such as transmittance/opacity and light in- and out-coupling behavior. We chose one organic polyelectrolyte and one inorganic sol-gel system for investigating the capability and limitations of this coating technology.

In commercial applications the process can be easily implemented, thus leading to a minimum invest and modification of existing equipment.

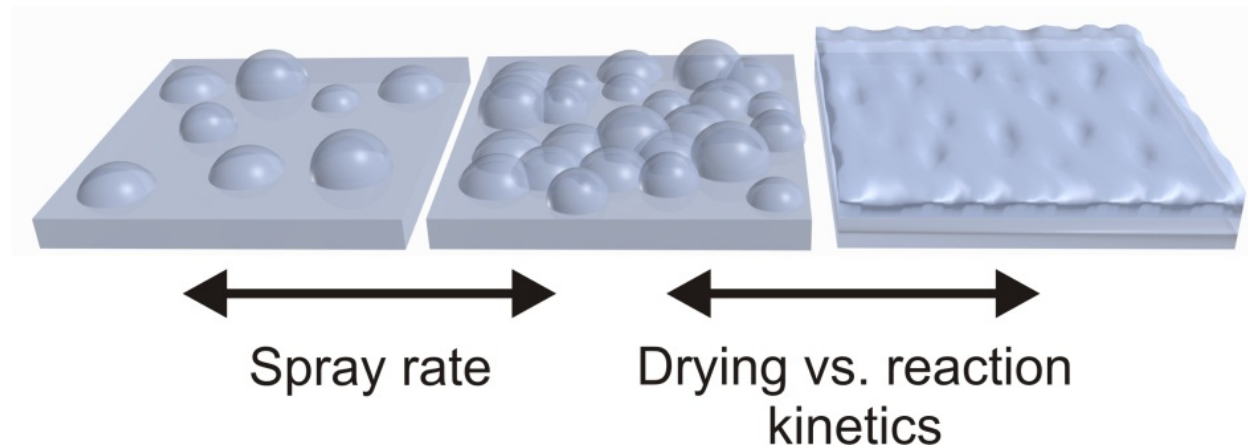


Fig.1: Influence of spray rate and drying kinetics on film formation of reactive system.

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