

CryoSEM of Microstructure Development in Latex - Ceramic Nanoparticle Coatings

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NNIN Facility utilized: Characterization Facility

RESEARCH GOALS

- ◆ Image microstructure in coatings during drying
- ◆ Discover the mechanisms by which a gradient in microstructure develops and ordered microstructure

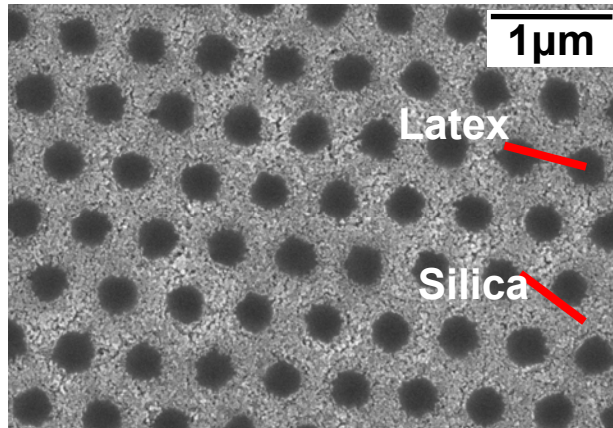


Fig.1. SEM of the top surface of a coating made with monodispers latex and silica nanoparticles

RESULTS

- ◆ Cryo-SEM reveals the formation of a packed latex rich surface during drying and transport of nanoparticles to the surface by convective flow

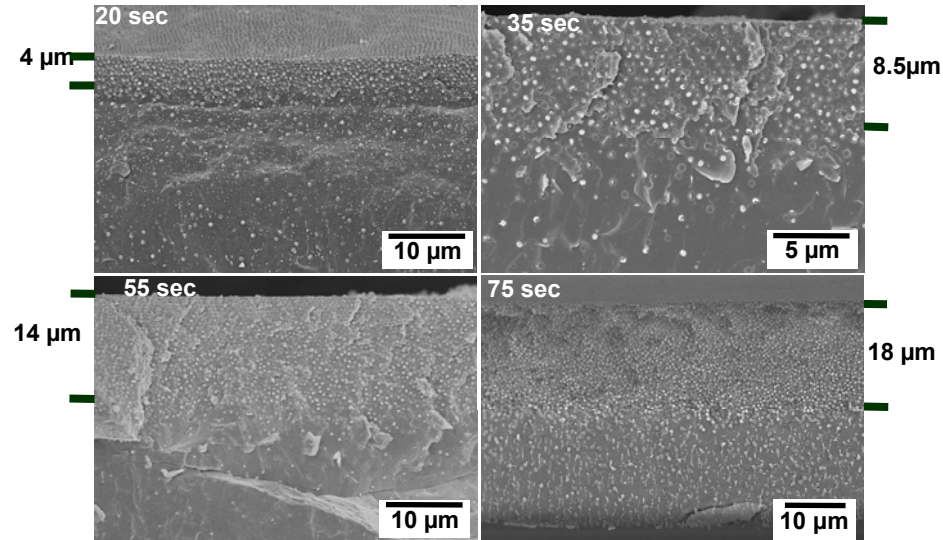


Fig.2. CryoSEM images of coating cross-sections for samples frozen after different amounts of drying time.