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

- **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.1. SEM of the top surface of a coating made with monodispers latex and silica nanoparticles](image1)

![Fig.2. CryoSEM images of coating cross-sections for samples frozen after different amounts of drying time](image2)