

Monitoring Surfactant Migration in Water-based PSA Film

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NNIN Facility utilized: Characterization Facility

DESCRIPTION OF WORK

- ◆ Investigating surfactant distribution across PSA film.
- ◆ Understanding mechanism of surfactant migration during film formation.
- ◆ Monitoring effects of surfactant migration on performance properties of PSA films.

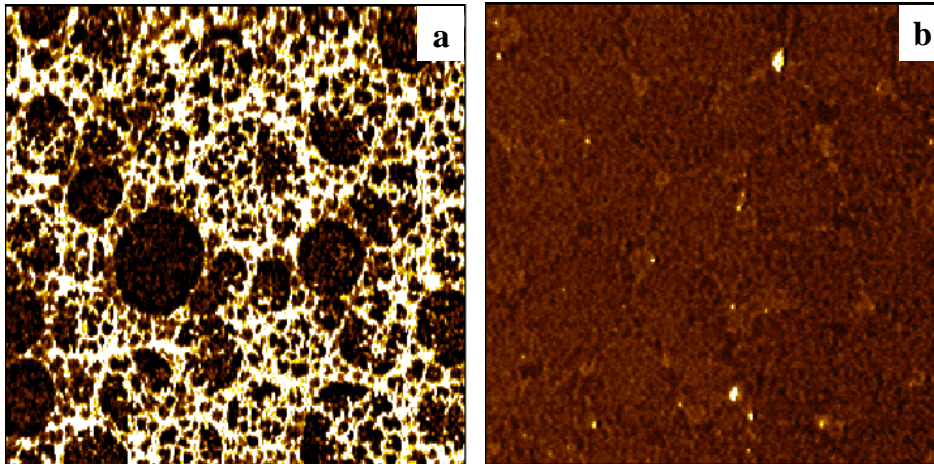


Figure 1. (a) AFM phase image of film-air interface of model PSA, and (b) film-air interface after soaking in solvent for 5 minutes. (Scan size $2.5 \mu\text{m} \times 2.5 \mu\text{m}$)

Publications

- ◆ Guizhen H. Xu, Jinping Dong, Jiguang Zhang, Steve J. Severtson, Carl J. Houtman, Lary E. Gwin, Characterizing the Distribution of Nonylphenol Ethoxylate Surfactants in Water-based Pressure-Sensitive Adhesive Films using Atomic-Force and Confocal Raman Microscopy. **Journal of Physical Chemistry B**, 112: 11907-11914, 2008.

MAJOR OBSERVATIONS

- ◆ Surfactant with higher water solubility is apt to migrate to air-film interface during film formation due to “water flux”.
- ◆ Surfactant enrichment at film interfaces inhibits latex coalescence.

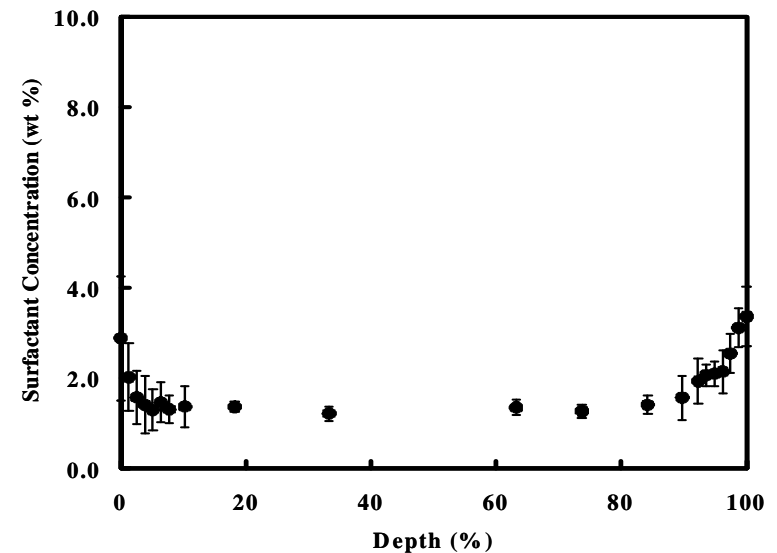


Figure 2. Surfactant distribution profile over the entire thickness of a film cast from PSA.