

EDGE GEOMETRY EFFECTS ON THE MICROSTRUCTURE DEVELOPMENT OF DRYING LATEX COATINGS

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The thicknesses particulate-based coatings frequently become non-uniform near their edges during drying. This issue is particularly important for coatings deposited on small substrates or for small printed patches. The walls act to level the initial wet coating, limiting the curvature of the air water interface. In this research, latex coatings were deposited onto silicon substrates both with and without photoresist walls around their edges. Digital microscopy and cryoSEM were used to characterize the effects of the walls on particle distributions and packing fronts during drying. Experiments show that particles accumulate both at the free surface and near the edge (or wall). Contact line pinning generates lateral flow in the coating suspension, leading to non-uniform particle distributions and coating thickness variations upon drying. Although the presence of the wall does not eliminate lateral non-uniformities, coatings dried in walled substrates showed a higher degree of uniformity than coatings dried without the walls (Price *et al.*, 2012).

Reference:

Price, K. K.; McCormick, A. V. and Francis, L. F., "CryoSEM Investigation of Latex Coatings Dried in Walled Substrates", *Langmuir*, accepted for publication, 2012.

¹ Unpublished. ISCST shall not be responsible for statements or opinions contained in papers or printed in its publications.