

Abstract Submitted
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The Effect of Substrate Hydrophobicity in Ink Transport During Dip-Pen Nanolithography JENNIFER R. HAMPTON, ARRELAINÉ A. DAMERON, RACHEL K. SMITH, PAUL S. WEISS, Departments of Chemistry and Physics, The Pennsylvania State University, University Park, PA — We have investigated the transport mechanism of the inks typically used in dip-pen nanolithography by patterning both hydrophilic and hydrophobic thiol inks on the same Au{111} substrate. The use of two inks with opposite contrast in lateral force microscopy images allows visualization of the later-patterned ink with respect to a previously-patterned structure. When hydrophobic ink is written on top of a pre-existing hydrophilic structure, the second ink is observed at the outsides of the hydrophilic structure. However, in the reverse case, the hydrophilic ink displaces the previously patterned hydrophobic ink. This striking difference highlights the important role substrate hydrophobicity plays in determining the transport properties of thiol inks in dip-pen nanolithography.

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