

Abstract Submitted
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Photoresponsive Polymer Surfaces¹ SPIROS H. ANASTASIADIS², M.I. LYGERAKI, K. LAKIOTAKI, M. VARDA, A. ATHANASSIOU, M. FARSARI, C. FOTAKIS, Foundation for Research and Rechnology - Hellas — Photochromic spiropyran molecules are utilized as additives for the development of polymer surfaces whose wetting characteristics can reversibly respond to irradiation with laser beams of properly chosen photon energy. The hydrophilicity is enhanced upon UV laser irradiation since the embedded non-polar spiropyran molecules convert to their polar merocyanine isomers, which is reversed upon green laser irradiation. Micropatterning of the photochromic-polymer films using soft lithography or photopolymerization techniques affects their wettability towards a more hydrophobic or more hydrophilic behavior depending on the dimensions of the patterned features and on the hydrophilicity-hydrophobicity of the flat surface. The light-induced wettability variations of the structured surfaces are enhanced by up to a factor of three as compared to those on the flat surfaces. This enhancement is attributed to the photoinduced reversible volume changes to the imprinted gratings, which additionally contribute to the wettability changes due to the light-induced photochromic interconversions.

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