

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Polymeric surfaces exhibiting photocatalytic activity and controlled anisotropic wettability SPIROS H. ANASTASIADIS, MELANI A. FRYALI, LAMPROS PAPOUTSAKIS, GEORGE KENANAKIS, EMMANUEL STRATAKIS, MARIA VAMVAKAKI, Foundation for Research and Technology - Hellas and Univ. of Crete, Greece, GRIGORIS MOUNTRICHAS, STERGIOS PISPAS, National Hellenic Research Foundation, Greece — In this work we focus on surfaces, which exhibit controlled, switchable wettability in response to one or more external stimuli as well as photocatalytic activity. For this we are inspired from nature to produce surfaces with a dual-scale hierarchical roughness and combine them with the appropriate inorganic and/or polymer coating. The combination of the hierarchical surface with a ZnO coating and a pH- or temperature-responsive polymer results in efficient photo-active properties as well as reversible superhydrophobic / superhydrophilic surfaces. Furthermore, we fabricate surfaces with unidirectional wettability variation. Overall, such complex surfaces require advanced design, combining hierarchically structured surfaces with suitable polymeric materials. Acknowledgment: This research was partially supported by the European Union (European Social Fund, ESF) and Greek national funds through the “ARISTEIA II” Action (SMART-SURF) of the Operational Programme “Education and Lifelong Learning,” NSRF 2007-2013, via the General Secretariat for Research & Technology, Ministry of Education and Religious Affairs, Greece.

Spiros H. Anastasiadis
Foundation for Research and Technology - Hellas

Date submitted: 12 Nov 2014

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