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Multi-functional surfaces with controllable wettability and water adhesion SPIROS H. ANASTASIADIS, MELANI A. FRYALI, GEORGE KENANAKIS, GEORGIA KAKLAMANI, LAMPROS PAPOUTSAKIS, Foundation for Research and Technology-Hellas and Univ. of Crete, Greece — The design of multifunctional surfaces based on biomimetic structures has gained the interest of the scientific community. Novel multifunctional surfaces have been developed, able to alter their wetting properties in response to temperature and pH as well as light illumination, by combining proper chemistry and surface micro/nano-structuring using ultrafast (femtosecond) laser irradiation. The combination of the hierarchical surface with a ZnO and/or a responsive polymer coating results in efficient photo-active properties as well as reversible superhydrophobic / superhydrophilic surfaces in response to external stimuli. These surfaces can be optimized to exhibit high or zero water adhesion and/or controllable directionality as well. Moreover, they can be seeded with human fibroblasts to examine the cellular response on both surface roughness and surface chemistry. Acknowledgements: This research has been co-financed by the General Secretariat for Research and Technology ("ARISTEIA II" Action, SMART-SURF) and the European Union (NFFA Europe -grant agreement No. 654360).

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