Introduction

Self-cleaning surfaces are interesting for applications in e.g. lighting, healthcare, personal care products and solar cells. Inspired by nature, current man-made self-cleaning surfaces have permanent micro- and nano-structures. However, these are static and thus vulnerable to contamination and damage.

DynaClean is a project which creates dynamic self-cleaning surfaces, switchable between cleaning and non-cleaning by means of a hydrogel.

This is achieved by using microscopic base structures (3 – 80 µm) in SU-8 on glass between which a stimulus-responsive (e.g. heat, light, pH) hydrogel is placed.

Project

The goal of this project is to investigate and characterize the mechanical properties of the system in order to verify its mechanical robustness.

The mechanical robustness of the hydrogel is of importance for the end-use of the system.

1. Create the hybrid surface as specified in the figure above.
2. Perform friction tests on hydrogel surfaces, SU-8 pillars and the hybrid system of SU-8 and hydrogel.
3. Give an indication of the robustness of the proposed system.

Will you join us in this challenging multidisciplinary project?

/ Interested? Giuseppe Melpignano (g.g.melpignano@tue.nl), GEM-Z 3.119