

## SILICON NANOWIRES AS AN ALTERNATIVE FOR THE DEVELOPMENT OF LIGHT RESPONSIVE SMART SURFACES

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Smart surfaces, known for their ability to respond to an external stimulus, have gained in recent years popularity as a tool for the development of biological applications. Light has commonly been used as a stimulus since it can be quantitatively /qualitatively regulated and spatially/temporally regulated. In the development of these surfaces, a photoswitch covalently bound to the biomolecule of interest is immobilized on a surface and then, upon irradiation, the activity of the bioactive compound can be reversibly “turned on and off” according to the photoswitch state. [1-3]

Azobenzenes are often chosen for this type of application not only due to their high quantum yields, fast photoisomerization rates and resistance to optical fatigue, but also because they suffer a change in their dipole moment after isomerization which allows the use of water contact angle (WCA) as a simple method to follow their isomerization when immobilized. However, in general, the difference in the WCA before and after isomerization is generally not higher than 10° which makes the analysis of results hard. [4-5]

In this work we present silicon nanowires as an alternative for the development of smart surfaces modified with azobenzenes. These nanowires can be produced by metal-assisted chemical etching, a simple and low-cost method with a high degree of control (diameter, length, orientation...), which makes them an attractive option. [6] Due to the increased roughness of this surface, a more pronounced difference in the WCA between the cis and trans configuration of azobenzene is expected.

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