

## **Surfaces**

In engineering, surfaces and their interaction with the operating environment are often a critical part of the performance of an engineering system. Surfaces to reduce wear, prevent adhesion, promote cell growth, prevent corrosion, promote electrochemical reactions represent just a few examples of functional surface requirements. Surface engineering represents a large and broad UK industrial sector. Nature presents a wide range of surfaces with smart and complex features: nanocomposites, self healing properties, multiscale structures, super hydrophobicity as a few examples. The most commonly mimicked surface feature to date has been the self cleaning abilities of the lotus leaf – self cleaning glasses have already been commercialised.

With the rapid increase in the ability to modify and characterise surfaces which has occurred in the last two decades, since the emergence of techniques such as scanning probe microscopy, there is now enormous scope to exploit some of the ideas from nature to generate advanced functional surfaces.

Key links:

Lotus effect

[http://news.nationalgeographic.com/news/2003/02/0227\\_030227\\_lotusmaterial.html](http://news.nationalgeographic.com/news/2003/02/0227_030227_lotusmaterial.html)

<http://www.bath.ac.uk/~en2ral/lotussurface.html>

Biomimetics and tissue engineering

<http://www.nidcr.nih.gov/HealthInformation/DiseasesAndConditions/SpectrumSeries/BiomimeticsTissue.htm>

Material fabrication

<http://www.pnas.org/cgi/content/full/96/25/14183>