Butterflies as inspiration for high-tech surfaces

17 May 2016, 15:13

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The Menaleus Blue Morpho is not only a beautiful, iconic butterfly from Central and South America, its wings also have special properties. For researchers from Ohio State University, they provided inspiration for high-tech surfaces.

This came from the remarkable ease with which they repel water and dirt. This is crucial, because otherwise they would not be able to fly. In addition, the wings are bright blue, despite not containing any pigments. That is also a remarkable characteristic.

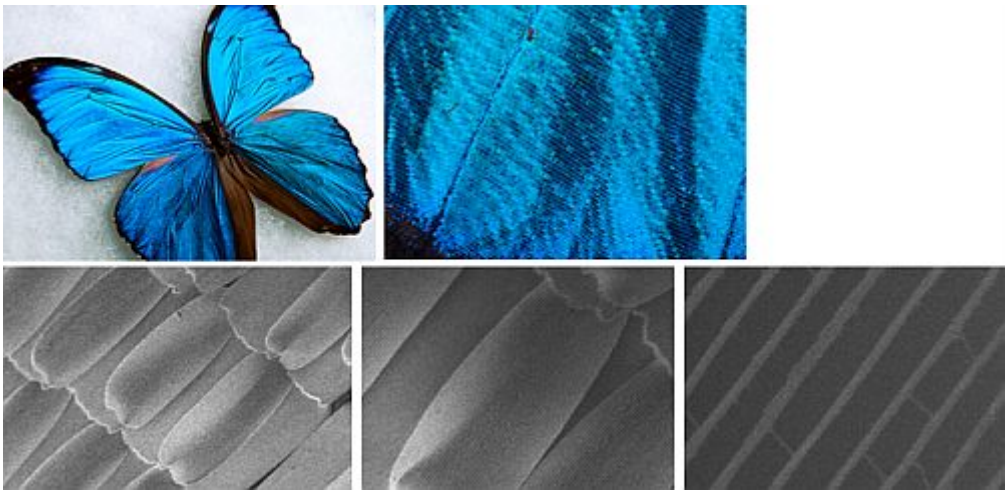
Scientists from Ohio State University discovered how all this was done. To the naked eye the wings look smooth, but under an electron microscope their surface texture resembles a pitched roof with overlapping rectangular plates. The overall effect? Water and dirt roll off, and the refraction of light through the microstructure provides the colour.

The many interesting applications

The American researchers wish to mimic the microstructure of the butterfly’s wings in order to develop high-tech surfaces with similar properties. This may lead to functional applications in many industrial sectors.

An improved flow of liquids is as important for pipelines transporting millions of litres of oil as it is for getting a few drops of blood along a nanochannel. And self-cleaning surfaces would certainly be an asset in medical equipment, where they could prevent the growth of bacterial plaques.

Making colours without the use of pigments would also be good for the environment, as it would avoid the use of toxic waste substances. The microstructure that gives the butterfly its colour can even improve the light absorption of solar cells.



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Sources

- http://researchnews.osu.edu
- http://www.slideshare.net

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