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NEWS AND VIEWS

Colorful Beetle Serves as a Model In Nanoarchitecture Research

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The research group led by László Péter Biró, in the **Nanostructures Department of the HAS Research Institute for Technical Physics and Materials Science** has been working in the field of **bioinspired photonic nanoarchitectures since several years.**



During a lecture Professor Biró gave in Taiwan, he was shown three identical-looking beetles, but with different colors, namely orange, green and violet. Several months later, they revealed a novel intercalated photonic nanoarchitecture composed of a regular multilayer and nanorods perpendicular to the layers in the elytra of this Taiwanese beetle (*Trigonophorus rothschildi varians*). The color of the nanoarchitecture is determined by the distance of the layers, while the angle under which the color is seen is determined by the random arrangement of nanorods. The researchers succeeded in producing artificial bioinspired nanoarchitectures, with behaviors very similar to that of the living model, by a special procedure, called nanomachining. Their results attracted significant attention from the international scientific community, and were published in the journal **Interface of the Royal Society**, and also displayed on the website of BBC News.

This was not the first time the research team successfully reproduced photonic nanostructures inspired by such structures found in nature. Using certain butterfly species as models, they managed to artificially produce the nanostructure responsible for the color of the animal.

The potential of such applications range from computers working with light instead of electrons, through displays visible in sunlight, to textiles colored without pigments.

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