BIOMIMETICS

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BIOMIMETICS

Biomimetic refers to human-made processes,substances, devices, or systems that imitate nature.

The study of the structure and function of biological systems as models for the design and engineering of materials and machines.

IMITATING THE FIREFLIES IT IS POSSIBLE TO IMPROVE THE LED EFFICIENCY

If anyone in nature knows how to emit light, it is fireflies. Drawing inspiration from the structure of the sharp, pointy scales of the luminescent abdomen of fireflies, scientists at the University of Namur in Belgium have improved the efficiency of a light-emitting diode (LED) by 55 percent.

The scientists specifically relied on the study of the Photuris firefly, observing the positive effect of the scales of the abdomen that manage to change the index of refraction to enhance bioluminescent light thanks to millions of years of evolution.

FIREFLIES AND LED LIGHTS

The relationship between these insects and LED bulbs is not new. In 2016, a group of Korean researchers made LEDs based on the way fireflies get their light, that characteristic green glow.

FIREFLIES AND LIGHT

Like fireflies, LED bulbs face the difficulty of releasing light without straying, reflecting backwards.

Recent research ensures that, to prevent this from happening, fireflies have microstructures with asymmetric sides on their surface that effectively project light. For their part, LEDs also have these microstructures but, in this case, their sides are symmetrical. Scientists found that using a similar type of asymmetric microstructure, the improvement in light extraction was 90%.

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