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SILK-BASED TEXTILE PLATFORMS OF SEMICONDUCTOR PHOTOCATALYSIS USING LIGHT LOCALIZATION

Native silk fibers and cocoons are being utilized to create cost-effective, eco-friendly optical biomaterials for implantable devices and biocompatible optical components.

Strong light scattering in a partially heterogeneous medium is a primary means for efficient energy transport and a direct consequence of the constructive or destructive interference of lightwaves. Currently, roughly all experimental studies for realizing strong light scattering in the optical ranges use densely assembled nanostructures that rely on semiconductor material that has extremely high refractive-indices.

Researchers at Purdue University have developed a technology that utilizes native silk fibers and cocoons produced by silkworms to make optical biomaterials for implantable optical devices and their components. Compared to current technology that is restricted by material toxicity and incompatibility, biomaterials using silk fibers and cocoons are more economical and eco-friendly. This new technology presents the possibility of countless applications, including scalable production, embedded devices, and biosensors.

Advantages:

-More economical and eco-friendly than current alternatives

-Not restricted by material toxicity or biocompatibility

Potential Applications:

-Biocompatible optical components

-Implantable optical devices

TRL: 2

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