



TECHNOLOGY

Biofunctionalized Silk Fibers

OVERVIEW

Background

Silk is a versatile natural fiber. It is lightweight and elastic, yet extremely strong, and insect silk has wide use as a fabric. Spider silk has even greater strength and elastic properties but has not found widespread use due to the difficulties of production. The unique properties of spider silk make it an attractive fiber for numerous applications and research is ongoing into ways to produce spider silk at a commercial scale.

Although silk has many natural benefits as a fabric, synthetic fibers have developed improvements such as waterproofing or odor resistance that may decrease the use of natural silk. The ability to modify the properties of silk without harming the inherent properties could allow for increased use in silk fabrics as opposed to synthetic fabrics.

Innovative Technology

Researchers at the University of Maryland have developed a way to bind biological molecules to natural silk fibers. This simple process allows for the conjugation of a wide range of biological molecules to the silk. Proof of concept testing has shown that the addition of molecules does not affect the inherent properties of the silk fibers, while still adding the additional functionality of the attached molecule. This technique allows for increasing the functionality of both individual silk fibers and silk fabrics in numerous applications.

APPLICATIONS

Can add functionality to both insect and spider silk fibers

ADVANTAGES

Simple process links molecules to silk fibers

Process works on wide range of molecules to create multiple changes in functionality

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EXTERNAL RESOURCES

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