

"Smart" Textiles integrating Peptide Nanostructures (Ramot)

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The Technology

Textiles that have been modified by integrating peptide nanostructures show remarkable properties. These include the physical and chemical properties of the fabric, such as strength and fire-resistance, as well as much more advanced properties including enzymatic activities such as self-cleaning and hazardous materials-decontamination.

Potential applications

Smart textiles have many applications. Among them are self-cleaning fabrics, increased fire resistant clothes, and bulletproof garments. Other applications include triggered release fabrics to counteract chemicals and the possibility of dynamically changing camouflage.


Advantages

We have developed a unique and novel family of peptide nanostructures that are based on aromatic homo-dipeptides. This includes peptide nanotubes, nanospheres, and hydrogels with nano-scale order. It was also demonstrated that these peptide nanotubes could serve as a mold for the fabrication of metals and building blocks of novel electrochemical platform. Furthermore, the peptide tubes were demonstrated to have very strong mechanical rigidity with Young modulus of about 19 GPa. We also reveal that a peptide homologue can form spherical nanometric assemblies. Both the nanotubes and nanospheres assemble efficiently and have remarkable stability.

Patents and Status

Four granted patents.

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