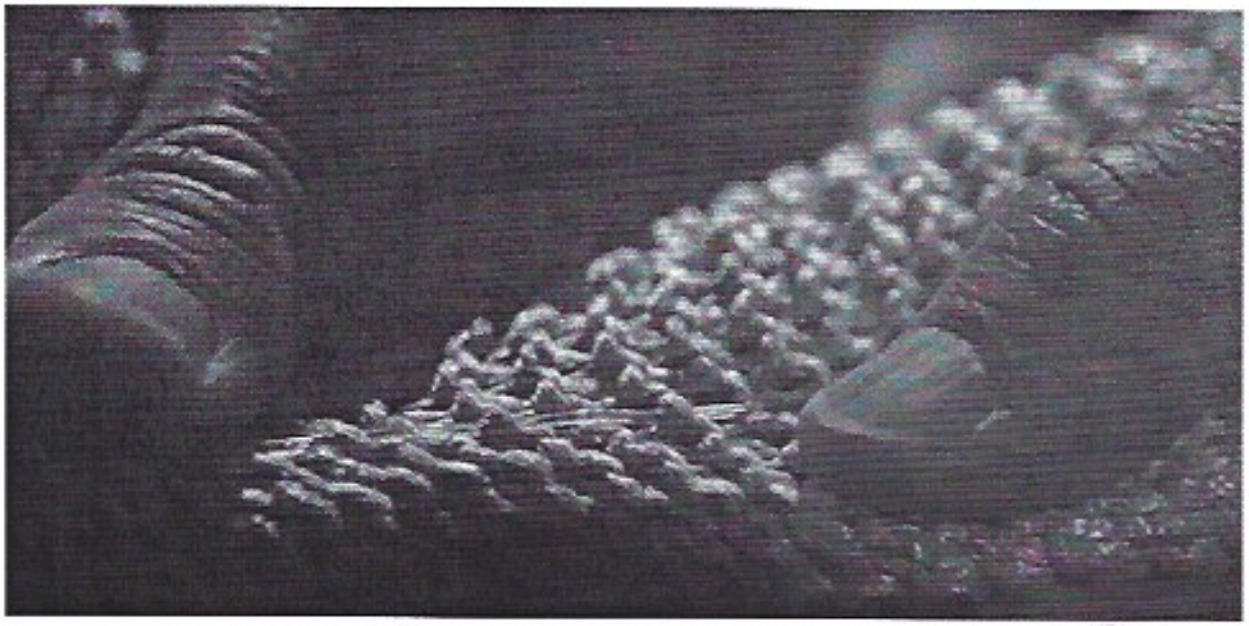
New Fiber to Revolutionize the Future of Smart Clothes

Posted by Lauren Saccone on June 11, 2018 in Engineering News | Leave a response



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Scientists from EPFL have revealed a fast and effective way to generate high-performance, super-elastic fibers that can be used in a variety of applications. Although these fibers have long been used as sensors in smart clothing and with robotics, this new method could allow the fibers to be used in even more devices, including medical implants and smart textiles.

EPFL has created a new way of thinking about sensors and sensor technology. They developed tiny fibers that are made of elastomer. These fibers can incorporate a variety of materials, including electrodes and nanocomposite polymers. The fibers are capable of detecting subtle changes to pressure and strain. They're also able to withstand deformation at nearly 500% before returning to their original shape. These traits make the fibers ideal for a variety of applications,including smart clothing and creating artificial robot nerves.

The fibers were designed at EPFL's Laboratory of Photonic Materials and Fiber Devices. The idea came to scientists who were looking for a fast and simple way to embed different types of microstructures in super-elastic fibers. The technique can also be used to create hundreds of meters of this fiber in a relatively short period of time.

Scientists used a thermal drawing process to make the fibers. This is generally the standard process when it comes to optical-fiber manufacturing. First, they created a macroscopic preform with all the fiber components arranged in a specific 3D pattern. Then the preform is heated and stretched out to make fibers that measure a few hundred microns in diameter. The process stretches the pattern of components lengthwise and simultaneously contracts it crosswise; this keeps the relative positions of the components the same. The final product is a set of fibers with a very complicated microarchitecture, as well as advanced properties.