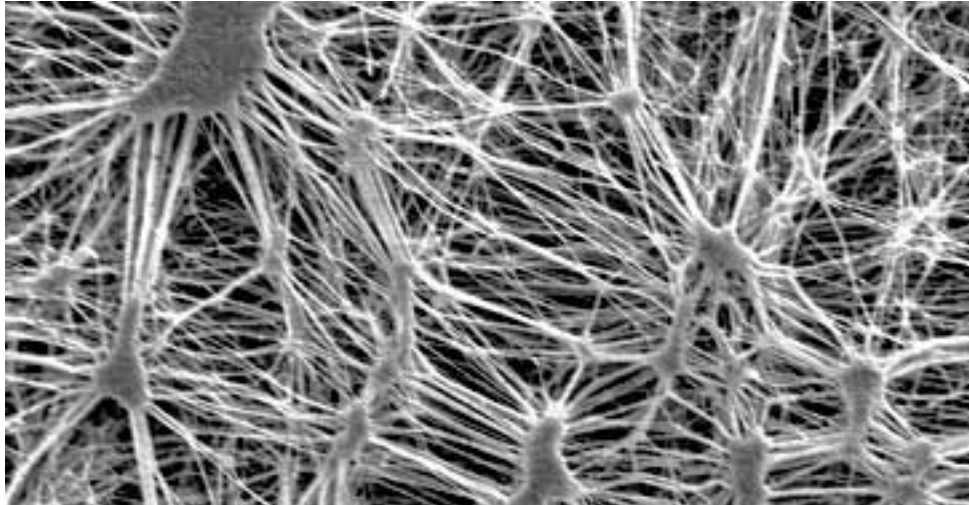


Smart Materials

One of the first nanotechnology products to hit the consumer market with great fanfare was one that seems rather trivial: stain-resistant trousers, sometimes known as nanopants. But the fabric of those nanopants is an example of a very active area of nanotechnology research—the development of "smart materials."



GORE-TEX® fabric has holes that are just a little larger than 100 nanometers—big enough to let water vapor escape, but small enough to keep liquid water out.

A smart material is designed to accomplish specific tasks. Another example of a smart material is a fabric called GORE-TEX®. It contains a waterproof sheet that's pierced with holes that are just a little larger than 100 nanometers. These holes are big enough to let water vapor escape (so your sweat isn't trapped), but small enough to keep liquid water out (so you stay dry).

Some smart materials change in response to outside stimuli, like the lenses of eyeglasses that darken in sunlight or the mugs that change color when filled with hot coffee. Today, materials are being transformed at the nanoscale to make them smart in brand new ways. For example, work is underway on dynamic armor that firms up at the impact of a bullet, or transforms into an instant splint. This is only the beginning.