

New deveopment in textile industry - summary



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Key Facts Underlined The textile industry is an early adopter of new ideas and technologies. Textiles are not only for the fashion conscious - they have important applications in the aerospace, automotive, construction, healthcare and sportswear industries. Already on the market are socks and leisurewear with embedded silver nanoparticles that combat odour through killing bacteria - and this capability has been extended successfully to wound dressings. Several brands of clothing, including some designer labels, have incorporated self-cleaning and stain repellent nanotechnologies, very convenient for school clothes - and, of course, the less a garment needs to be washed, the more energy is saved! More glamorous applications include embedding gold nanoparticles into natural fabrics such as wool. The gold nanoparticles impart soft colours from pale soft greens, to browns and beiges, depending on the particle size and shape. These colours are stable, and may even provide some antibacterial properties to the fabrics, as an added bonus!

Across the globe a tremendous amount of research is taking place in electrospinning techniques. The spun, polymer-based nanofibres can be loaded with different additives which could be nanoparticles, enzymes, drugs or catalysts. Some combinations can be antibacterial and sprayed on to wounds as a kind of healing web, others can be conductive or even form filters or membranes.

Scientists are also working on nanoelectronic devices that can be embedded into textiles to provide special support systems for individuals in dangerous professions or sports. Some garments can now provide life-signs monitoring, internal temperature monitoring, chemical sensing and also power generation and storage to enable communication with the outside world.

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Garments with this kind of technology can be vital for the safety of say firefighters working in dangerous situations in isolation from their colleagues, or even for skiers or their rescuers to give early warning signs of hypothermia.

In some establishments, research is ongoing into man-made nanofibres where clay minerals, carbon nanotubes or nanoparticulate metal oxides are used to impart new properties. These properties provide halogen-free, flame retardancy for a fabric, increased strength and shock-absorbency, heat and UV radiation stability, and even brighter colouration! Other work is ongoing in the very exciting area of inkjet printing onto textiles. This is opening up many possibilities, not just for the customised or localised printing of textiles to an individual design, but inkjet techniques can be used to create flexible electronic materials, sensing materials, and even the materials of the future with printed-on displays!

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