

NANOTECHNOLOGY IN TEXTILES – PART II

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Application of Nanotechnology in textiles

1. Water-repellent Finish

Nanotechnology improves the water-repellent property of fabric by creating Nano-whiskers, which are hydrocarbons and 1/1000 of the size of a typical cotton fibre, that is added to the fabric to create a peach fuzz effect without lowering the strength of cotton. The spaces between the whiskers on the fabric are smaller than the typical drop of water but still larger than water molecules. Water thus remains on top of the whiskers and above the surface of the fabric. However, the liquid can still pass through the fabric, if pressure is applied. The performance is permanent while maintaining breathability.

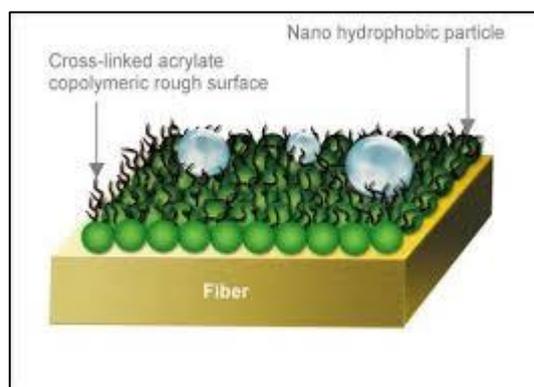


Fig 1.1 Water repellent textile

The suit worn during world-record breaking Olympic swimming championship includes a plasma layer enhanced by nanotechnology to repel water molecules. This is designed to help the swimmer glide through the water.



2. UV - Blockers

The most important functions performed by the garment are to protect the wearer from the weather. However, it is also to protect the wearer from the harmful rays of the sun. The rays in the wavelength region of 150 to 400 nm are known as ultraviolet radiations. The UV-blocking property of a fabric is enhanced when a dye, pigment, or ultraviolet absorber finish is present that absorbs ultraviolet radiation and blocks its transmission through a fabric to the skin.

Metal oxides like ZnO as UV-blocker are more stable when compared to organic UV-blocking agents. Hence, nano ZnO will enhance the UV-blocking property due to their increased surface area and intense absorption in the UV region.

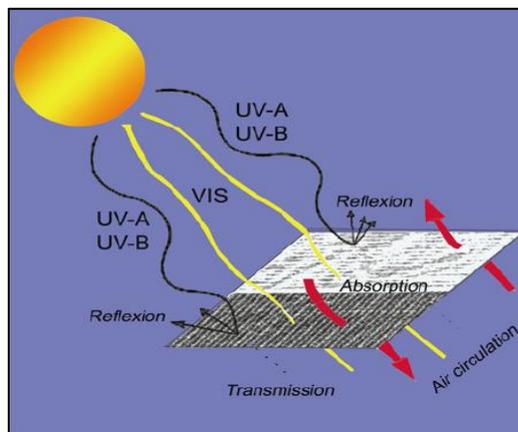


Fig 1.2 UV - Blocked textiles

To be continued...

Wishing you a great week ahead!

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