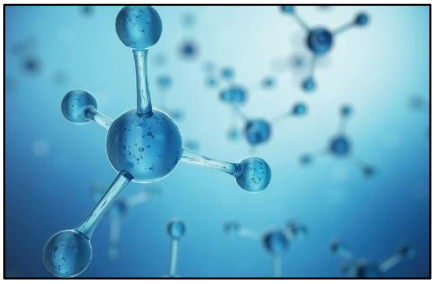
TECHNICAL TUESDAYS

NANOTECHNOLOGY IN TEXTILES – PART I

REF: TT/ NOVEMBER 2018 / WK 4

What is Nanotechnology?



Nanotechnology is the study and application of extremely small things and can be used across all the science fields. It deals with materials 1 to 100 nm in length. In nanotechnology, the properties of materials drastically change when their dimensions are reduced to the nanometer scale. It is a growing technology being seen as a new industrial revolution.

These nano-materials give excellent results in various fields, which include medicine, textile, paints, packing, reinforced materials, etc.

Nanotechnology in textiles

The textile industry has discovered the various possibilities of using nanotechnology. Nanotechnology in textile is defined as the understanding, manipulation, and control of matter at the above-stated length, such that the physical, chemical and biological properties of the materials can be engineered, synthesized and altered to develop the next generation of improved materials, devices, structures, and systems.

It is used to develop desired textile characteristics, such as high tensile strength, unique surface structure, soft hand, durability, water repellency, fire retardancy, antimicrobial properties etc.

Technical textile is one of the areas which are highly relying on nanotechnologies.

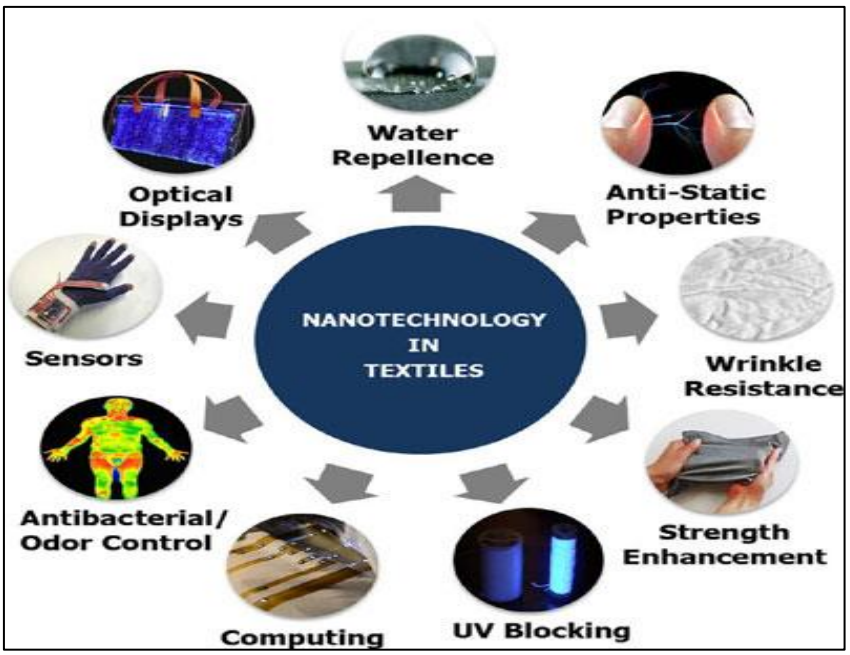


Fig 1.1 Application of nanotechnology in textiles

Nanotechnology has real commercial potential for the textile industry. This is mainly due to the fact that conventional methods used to impart different properties to fabrics often do not lead to permanent effects, and will lose their functions after laundering or wearing. Nanotechnology can provide high durability for fabrics, because nanoparticles have a large surface area-to-volume ratio and high surface energy, thus presenting better affinity for fabrics and leading to an increase in durability of the function. In addition, a coating of nanoparticles on fabrics will not affect their breathability or hand feel. Nanotechnology may impact favourably on the environment as well. By using less resource without deviating performance, nanotechnology may save raw material.

To be continued…

Wishing you a great week ahead!

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