

Invention of Water Repellent Nanofabrics in the Field of Textile Industry

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ABSTRACT

This paper discuss about the invention of nano fabrics in the field of textile engineering. Nano technology plays a big role in the industrial revolution. It deals with the materials of length 1 to 100 nm. The nano fabrics are made up of nano scopic fibres. In this paper we have analyzed the physical, chemical and biological properties of materials and it is modified to develop the new materials with some new inventions which lead to the characteristic improvisation such as soft hand, durability, water repellency, unique surface structure, fire retardancy and self cleaning properties.

KEY TERMS: nano silvers, nano whiskers, fiber, fabrics, anti microbial, antibacterial.

INTRODUCTION

In the emerging trend in nano technology will provide the high durability for the fabrics. To make the water resistant materials the fabric is embedded with the billion of tiny fibres known as nano whiskers which will provide the water proof by increasing the density of the fiber. And the stain will be eradicated from the fabric because it will create the mask of air around the cotton fiber therefore when something is spilled on to the fabric the nano whisker pop up the liquid drop to roll off as the water roll of in the lotus leaf and it will beads the point of whiskers it will compress the airs in the cavities. It will create the contact of dirt it adheres the beads to roll up on the surface so we can easily protect our fabrics from the stain.



FIG 1: NANO FABRIC WHICH EXHAUST STAIN

EXISTING SYSTEM

In the existing system the many textiles were wasted and damaged due to the stains and the products were eliminated due to the factors. So many of the textile industries were under loss due to some improper handling of materials and it will also create unsophisticated impression to the human being. Also normal textile clothes were easily affected by germs and other funguses. The fabric cloths may consist of some impurity in them.

PROPOSED METHODOLOGY

In the proposed system the textile industry were supposed to create the major change in the scientific world. Since nano technology were plays a vital role in the each and every field. This paper tried to implement the nano technology in the textile industry. This paper invents many nano fabrics in the field of textile industry.

WATER PROOF JACKET:

By implementing these properties the waterproof jacket was invented and it will be used in ice age periods because it gets warmer by running and walking. The water proof jacket will allow the moisture to escape otherwise it will get sweat, so the nano treated fabrics are used for the breathable materials. It will also prevent the water from the accumulating materials and this progress of material is called hydrophobic nano materials. Nano silver is also used in the waterproof jacket to kill the bacteria.



FIG 2: WATER PROOF JACKET

NANO MATERIAL REMOVES ODOURNESS

The nano particle used in the textile is also to remove the odourness from the clothes. The nano silver particle and the anti bacterial and anti microbial effects are used in the fabrics to eliminate the odourness from the fabrics. The clothes that treated with nano silver particles are athletic suits, socks, gloves, jogging outfits, camping cloths etc., because it will kill the bacteria that causes the odor.



FIG 3: NANO GLOVES

The nano whiskers which are having the hydro carbons and 1/1000 of size of cotton fiber are added to the fabric to create the peach effect which will not reduce the strength of the cotton. And the space between the whiskers on the fabric is smaller than the drop of water but it is bigger than the water molecules.

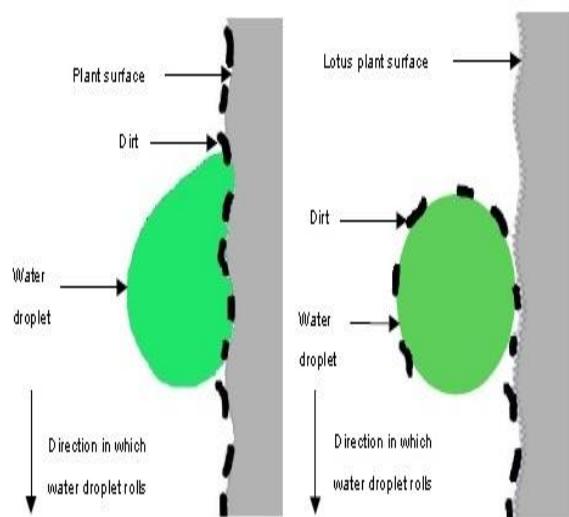


FIG 4: WATER REPELLENCE MECHANISM IN THE NANO FABRIC CLOTHES.

In the above diagram it clearly speaks about the water repellent mechanism and in that it will be discussed how it will be implemented in nano fabrics. The above picture exaggerates that how the water will not stick into the lotus leaf rather than in the normal plants. The lotus leaf has the wax coating which will not lead the water to stick into the surface. In the other plants there is no structure formation as it is in the lotus plant. The water will be easily stuck into the surface. Also the lotus leaf consists of the self cleaning process. The water that rolls on the surface of the lotus leaf it will also clear the dirt particle on the surface therefore it will be acted as the self cleaning process.

The same technology will be applied in the nano fabric cloths. And these processes were taken together in the fabric use of water repellent effect and for the self cleaning process.

WATER REPELLENT SWIM SUIT

The nano fabric is also used in the swim suit. Because it will be fabricated with the plasma layer which will enhance the nano technology to repel the water the water molecules this will help the swimmer to sail through the water easily without any disturbance. Also it will enhance the chance of the swimmer to win in the events.

The nano material also has the UV protection. The metal oxides like zinc oxide and the UV blocker this will incur the nano particles and act as a repellent for the ultraviolet radiation. It will also act as a sun protector.

CONCLUSION

This paper will provide the solution for how nano components are incorporated with the fabrics to give the new material and it will create the highest evolution in the textile industry. In this paper we have found the new invention of water repellent materials and the ray protected materials which will be very helpful to the user as well as it will be act as an environment friendly fabricated materials. There are some innovations to be proved in the field of nanotechnology and in the field of textile engineering.

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