

Self cleaning technology by ARCI helps develop 'sun wash' jeans

Wear “sun wash” jeans pant and contribute to conservation of energy and reducing pollution. Nanotechnology is at work. A “self cleaning” technology developed by a team at the International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad can do this.



A novel titanium dioxide (TiO₂) based material has been developed at ARCI for self cleaning textiles. This product has been proved for its high efficiency in “self cleaning” property. It can clean the adsorbed organic pollutants just by exposing to sun light for few hours. Technology has been transferred to one Indian industry for its application on textiles and the industry has successfully commercialized it.

These garments are launched in the market under the tag “Sun Wash”. The two leading denim jeans brands, “Splash” and “Flying Machine” have adapted the self cleaning technology. The Splash brand has named the denim jeans “Selfie”. One can find the products in all leading malls in big cities under the tag “Sun Wash”.

The “Self Cleaning” technology works on the principles of “Photocatalysis”.

The active Titania material absorbs photons of certain wavelength in the sun light which leads to an excitation of electron in the Titania molecule leaving a positive hole at lower energy level. Little moisture in the surrounding air reacts with the excited electron and creates a hole to form highly reactive hydroxyl radicals, which degrade the most organic pollutants in its contact and keeps the surface clean. The product developed at ARCI is in the

form of suspension of Titania microspheres in water. The specialty of this product is that the particles in the product are micrometer in size but possess all the special properties due to nanometer size. This drastically minimizes any risk related to nanotoxicology and still provides all the benefits of nano size, which make it safe for processing, handling and use. This multifunctional product also possesses an antibacterial and UV-protection property. ARCI has already applied for a patent for the process of Titania production. Application of this material on surfaces like textiles can reduce number of washings. This leads to huge saving of water, detergents and electricity required for running washing machines. The coating of this material on road side buildings can reduce air pollution by degradation of gaseous pollutants in air. Its usage in places such as public toilets can maintain better hygiene with fewer amounts of water and less maintainability. It has a great potential to clean the industrial effluents and air and water purification too.