

Nanocoatings: A bathroom that cleans itself



Cleaning bathrooms may become a thing of the past with new coatings that will do the job for you. Researchers at the University of New South Wales are developing new coatings they hope will be used for self-cleaning surfaces in hospitals and the home.

Led by Professor Rose Amal and Professor Michael Brungs of the ARC Centre for Functional Nanomaterials, a research team is studying tiny particles of titanium dioxide currently used on outdoor surfaces such as self-cleaning windows.

The particles work by absorbing ultraviolet light below a certain wavelength, exciting electrons and giving the particles an oxidising quality stronger than any commercial bleach.

These nanoparticles then kill microbes and break down organic compounds. And because surfaces coated with titanium dioxide have another property called 'superhydrophilicity' -- meaning droplets do not form -- water runs straight off the surface, washing as it goes.

Presently, titanium dioxide can only be activated by the UVA present in sunlight. But the UNSW team is working on ways to activate titanium dioxide with indoor light.

The team is modifying titanium dioxide nanoparticles with other elements such as iron and nitrogen so they can absorb light at longer wavelengths.

Lab trials show that glass coated with the new nanoparticles can be activated by visible light from a lamp to kill *Escherchia coli*.

"If you've got this on tiles or shower screens you don't need so many chemical agents," says Professor Amal.

So far the team has been working at laboratory scale. "It's probably a year before we can talk to industry and test outside the lab," says Professor Amal.

Source: University of New South Wales

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