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Cleaning walls? No sweat - just add sunlight and rain

Scientist here develops new way of using chemical coating so it removes grime from aluminium if exposed to sun, rain

By **Ho Ka Wei**

IMAGINE cleaning the grime from windows or a car without lifting a finger - just add sunshine and rain.

The idea has been brought one step closer to reality by a scientist here who has come up with a chemical coating that works with the natural elements to clean aluminium and glass surfaces.

The coating is made from titanium dioxide, used widely in water and air purification, said Dr Chris Cai, 42, of the Singapore Institute of Manufacturing Technology.

When the coating is exposed to sunlight, it can break down most organic substances - such as bird droppings and mould - which are then washed away in the next downpour.

The coating is also 'hydrophilic', a property that spreads the rain as a film over the building's surface, as opposed to a Teflon- or wax-like effect that would make water roll off it.

This way any dirt will be flushed away more easily without soap or sweat.

Another plus is that the coating is permanent, as it is a chemical catalyst, which means that it speeds up the breakdown of other chemicals without being used up itself.

'Theoretically, it can last forever as long as it is exposed to sunlight.

'It's a very stable compound,' Dr Cai said.



This aluminium plate Dr Chris Cai holds has been exposed to the elements for six months and the portion with the self-cleaning coating appears whiter. -- JOYCE FANG

He will present his patent-pending breakthrough at a seminar for industry folk at the institute, which is based in Nanyang Technological University, on Monday.

Japan is one country which conducts leading research in such areas, and was where Dr Cai started some 10 years ago.

He earned a PhD in chemical engineering from the University of Tokyo.

Sanitary-ware maker Toto, from Japan, has been developing such technology, while Pilkington North America launched its self-cleaning glass in 2001 - but it is not yet available in Singapore.

Dr Cai has taken the technology further by making it cheaper to apply the coat and developing a way to apply it on painted aluminium surfaces as well as glass.

He said the material for the solar-driven, self-cleaning coat cannot yet be bottled and sold off the shelf, as it has to be applied on new aluminium panels in the factory.

This also means existing buildings with glass and aluminium surfaces will need some surface treatment processes before the coat can be applied - a tricky task as it requires at least two dry days for the coating to harden.

But Dr Cai is exploring putting the coating on a sticky film which can be pasted onto existing surfaces easily.

He is also optimistic about it being a solution for home or car owners.

After all, the idea started with him watching his wife do housework.

China-born Dr Cai, who came here in 1995 and is now a permanent resident, said with a laugh: 'With the self-cleaning solution, she could have an easier life!'

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