

# Self-cleaning membrane by NTU is tougher, cleans faster

By AUDREY TAN

MEMBRANES are often used to filter impurities from waste water – but flushing away the debris that gathers on them is costly.

So researchers here have come up with a self-cleaning membrane that could save companies millions of dollars by doing away with the need for expensive cleaning chemicals.

The membrane is developed by Associate Professor Darren Sun of Nanyang Technological University's (NTU) School of Civil and Environmental Engineering.

"With more of the world's population moving into urban (areas) and generating more waste water, there is a real need for cost-effective technology," Prof Sun said.

The NTU membrane, made using patented techniques, contains titanium dioxide – an ingredient often found in household items such as toothpaste and sunblock.

The titanium dioxide particles, when exposed to ultraviolet light, pro-



duce a chemical reaction that cleans off any collected debris.

The membrane also works better than what is currently available.

While polymer membranes, for instance, need to be replaced every two or three years, the new one is expected to last twice as long and is more resistant to breakage, said Prof Sun.

In addition, it cleans water 10 times faster than commonly used polymer and ceramic membranes because of the nature of its nano-structured fibres, which allow water to pass

through more quickly.

Mr Joe Eades, a council member at the Institution of Engineers Singapore (IES), said the membrane has the potential to reduce the cost of waste water treatment significantly.

"It is also expected to have high mechanical strength and chemical resistance that could extend the life of the membrane from around three years to... potentially 20 years, in comparison with traditional polymer membranes," said Mr Eades, who is also deputy chairman of IES' Chemical and



Associate Professor Darren Sun (left) and Adjunct Professor Wong Ann Chai, the co-founder and managing director of start-up Nano Sun, with the new membrane. (Above) The membrane can take on different colours, depending on the additives. ST PHOTOS: ONG WEE JIN

Process Engineering Technical Committee.

The invention is being marketed by an NTU start-up called Nano Sun.

The two-year-old company, staffed by a team of seven, has already clinched several deals in the region, such as for an industrial paper mill in Guangzhou, China.

Nano Sun, which did not elaborate on how much the membranes cost, said it is also in talks with local water agencies and companies.

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