

More efficient detection of water-borne bacteria

NTU's Parasitometer saves time and money in sensing contaminants

By **EVE YEO**

IT WILL soon be cheaper and faster to detect contaminants in treated water. This is thanks to a laser-technology device that can detect these impurities in an hour, down from the usual seven to 48 hours for different types of contaminants.

The "Parasitometer" will also lower the cost of detecting the parasite, cryptosporidium, by about eight times.

According to a report by the European Policy Evaluation Consortium, the global market for environment sensing and monitoring tech-

nologies was estimated to be 7.4 billion euros (\$12.2 billion) in 2009.

Invented by Liu Ai Qun from Nanyang Technological University's School of Electrical and Electronic Engineering, the device is estimated to cost about \$15,000 when it is ready for the market.

"If everything goes well, we intend to have the product out in the market within two years," he said.

A start-up company will be created to market and further develop the product. Named "Water Optics Technology", it will be jointly owned by NTU and Professor Liu.

In the device, water is directed through a tiny channel and a laser is shone through the treated water. Bacteria or other microscopic contaminants can be detected by the way laser light bounces off and through it.

A small camera sensor then captures the data of light refraction, and identifies the contaminants. It is able to detect a single bacteria cell in a 10-litre water sample.

"Using our new technology, we are able to identify cells by knowing their cell shape, diameter, size and refractive index – how well they reflect light and let light through," said Prof Liu.

He added that the device has an accuracy rate of "up to 90 per cent" and that "this will definitely help water agencies when they need to perform tests and diagnostics of their water supply".

Some water-borne bacteria in drinking water can cause nausea and diarrhoea.

Funded by the Environment & Water Industry (EWI) programme

office, the project began in 2009 and is supported by the Singapore National Research Foundation under its Environmental & Water Technologies Strategic Research Programme.

The EWI was established in 2006 to lead the growth of Singapore's water industry. It aims to foster such technologies and create a research community in Singapore.

Said Chew Men Leong, chief executive of PUB and executive director of the EWI: "Together with the local research community, more than 340 research and development (R&D) projects have been carried out so far. We welcome individuals and organisations to step forward with more of such exciting R&D ideas that will benefit the global water industry."