NTU scientist invents device that detects contaminants in treated water

Posted: 19 March 2012 1358 hrs

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Illustration of research scientists at work

SINGAPORE: A scientist from Nanyang Technological University (NTU) has invented a device that can detect contaminants in treated water in just one hour, instead of the current two days.

NTU said on Monday that Professor Liu Ai Qun, 51, uses laser-technology to manipulate light to detect bacteria in water.

It said this eliminates the cumbersome process of testing water in the lab for two days.

Called the Parasitometer, the stand-alone device can pick out a single bacteria cell out of a 10-litre drinking water sample.

It'll also reduce the costs of such water tests by about eight times, as there's no need for chemical reagents and lab facilities manned by trained personnel.

To market and develop the Parasitometer into a commercial product, NTU will be spinning off a start-up company, Water Optics Technology.

It'll be jointly owned by Prof Liu and NTU.

The device should cost about S$15,000 when it hits the market.

NTU said the invention will be a boon in the fight against water-borne diseases.

Prof Liu, who's from the School of Electrical & Electronic Engineering, said the technology targets pathogens that can cause diarrhoea in humans.

"We are able to identify cells by knowing their cell shape, the diameter and size, and their refractive index - how well they reflect light and let light through. We will be able to know what sorts of contaminants are found in the water sample, with up to 90 per cent accuracy, and this will definitely help water agencies worldwide when they need to perform tests and diagnostics of their water supply," he said.

The three-year project is funded by the Environment & Water Industry Programme Office.

It's supported by the Singapore National Research Foundation.

NTU said this is also the first time that a scientist has demonstrated how to manipulate and bend light in liquid, through the use of microfluidics.

A fellow NTU expert in optics and microfluidics, Associate Professor Claus-Dieter Ohl, said Prof Liu's technology has strong potential for novel applications in other fields.

These include instrumentation, signal processing and biomedical systems.