NTU professor invents device that detects bacteria in treated water

Updated 01:37 PM Mar 19, 2012

SINGAPORE - An hour, down from the previous two days, is all it takes to detect bacteria in treated water after a Nanyang Technological University researcher has developed a device, which could prove to be a boon for countries fighting water-borne diseases.

Professor Liu Ai Qun's "Parasitometer" works by directing water to flow through a tiny channel, about the width of a human hair, within a small chip and shining a laser through the treated water. Microscopic contaminants such as bacteria or sand and silt can be detected from the way laser light bounces off the matter and through it. A camera sensor captures the data of the light refraction, from which the contaminant can be identified.

Said Prof Liu: "We are able to identify cells by knowing their cell shape, the diameter and size, and their refractive index - how well their reflect light and let light through."

For instance, the pathogens Cryptosporidium and Giardia can cause diarrhoea in humans if present in drinking water.

The "Parasitometer" can pick up a single Cryptosporidium cell - four hundredths the width of human hair - from a ten-litre sample in one hour.

The technology can also detect e.coli in water as well.

The project which took three years, is funded by PUB's Environment and Water Industry Programme Office and supported by the Singapore National Research Foundation.

Commercialisation of the technology is expected to begin in June. A company called Water Optics Technology set up by Prof Liu and NTU is looking for S$2million of funding from businesses and venture capitalists. It is current in talks with investors and there has been "some commitment", said Prof Liu.

The global water monitoring market is estimated to be US$7.4 billion ($59.3 billion).