

CHEMICAL AND BIOLOGICAL SENSOR TAPE

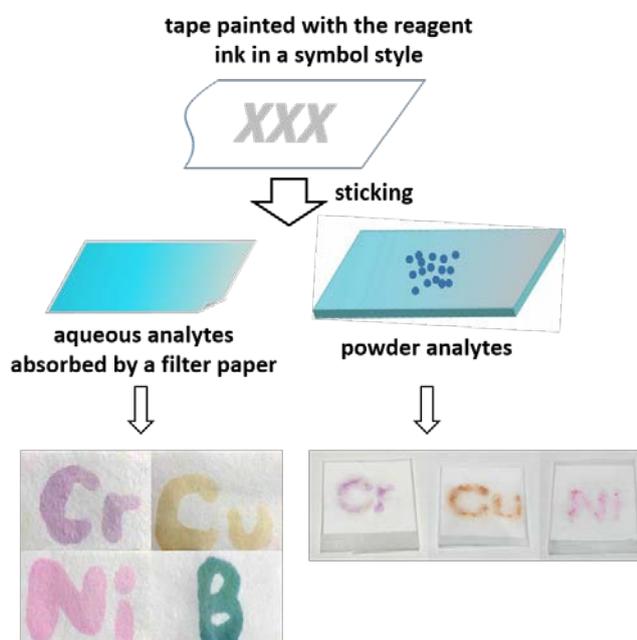
A novel low-cost platform technology for carrying colorimetric, fluorescent, or biological indicators to enable the substrates to detect and report the presence of target chemicals (heavy metal ions, salts, etc.) and biomolecules (proteins, biofilms, blood antigen-antibody identifications, other contaminants).

- **Low-cost diagnostic technology**
- **Biosensors for blood analysis**
- **Point-of-Care and portable environmental sensors**
- **Low cost manufacturing**

THE CHALLENGE

Analytical paper-based microfluidic devices developed by the Whitesides group since 2007, and threads by Wei Shen's group since 2010, have contributed in the field of microfluidic measurements, creation of device manufacturing methods, and the simplification of result output. However, paper- or thread-based analytical devices cannot achieve direct measurements of solid or particulate substances. Complex pre-treatment relying on laboratory environment is usually adopted to transfer solid analytes to become ions in solution so that analysis for target substances can be achieved on these devices.

There is another significant limit for paper-based analysis devices: when a drop of aqueous liquid sample is introduced onto a paper sensor, the reagents deposited on the paper can be washed away from the central detection region to the outside and may be concentrated on the contact line. As a result of this, the colour dispersed in the detection area is not uniform, negatively impacting the quality of the chemical analysis.



THE TECHNOLOGY

This new technology provides a novel low-cost platform technology for carrying colorimetric, fluorescent, or biological indicators, to enable the substrates to detect and report the presence of target chemicals such as heavy metal ions, salts, etc as well as biomolecules e.g. proteins, biofilms, blood antigen-antibody identifications and other contaminants.

This is a novel microfluidic device, which offers one-step and on-site detection for solid and particulate analytes, not only for aqueous samples but also for analytes in any solid, liquid or vapour form.

This new platform technology presents more opportunities for low-cost and point-of-care sensors for home use, as well as portable environment sensors.

Intellectual property: Australian provisional patent filed in 2019.

THE OPPORTUNITY

Monash seeks a partner to optimise and adapt this technology for developing new designs and products.

The Surface Engineering research team is the lead by Prof Wei Shen. The group has substantial experience in developing paper- and thread-based low-cost sensors for point-of-care applications, with a family of granted patents. Inventions by this group have been licensed to Australian industry partners. The group is also collaborating with industry partners and hospitals.

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