

Cell Phone Integrated Paper Microfluidic Device for Colorimetric Multiplexed Detection of Analytical Targets

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Categories:

- Materials and Manufacturing
- Micro & Nanotechnologies

Keywords:

- Environmental Pathogens
- Food Safety
- Infectious Disease
- Materials and Manufacturing
- Micro & Nanotechnologies
- Microfluidic Device
- paper microfluidic
- Patient Care
- Pollution
- Smartphones

Researchers at Purdue University have developed a new paper-based microfluidic device to measure multiplexed targets that is compatible with a mobile phone application for fast readout. The device can be used to detect analytes such as in infectious diseases, food safety, and environmental pollution applications. Challenges remain in manufacturing current paper-based microfluidic assays as they are often difficult to replicate with precision. Purdue researchers meet this need by fine-tuning AD paper substrates, commonly used in applications such as glucose monitoring, with uniform colorimetric sensors through unique a UV ink screen-printing technique. These papers produce a rapid color change in the presence of analyte of interest. In testing with mercury and arsenic as model targets in food items, the low-cost, versatile microfluidic device reliably indicates analyte presence with high sensitivity and accuracy and the mobile phone software program created by Purdue researchers captures results with excellent limit of detection and specificity.

Advantages:

- Reliable
- Fast Readout
- Low-Cost
- Versatile
- Portable

Potential Applications:

- Infectious Disease Testing
- Food Safety
- Verification
- Environmental Pollution Detection

Technology Validation: Testing with Hg and As analytes and finding LOD as well as conducting specificity analysis with cell phones for verification

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