

Smart Test Strip Enabled by Inkjet Printed Microfluids (#7505)

A smart test strip platform that allows for wireless, real-time data sensing

Georgia Tech Researchers had developed a smart test strip platform that incorporates microfluidics and RFID technologies to enable wireless, real-time data sensing. The testing platform is fabricated using an inkjet printing process, which is a cost-effective, environmentally friendly manufacturing approach. The microfluidic component of the test strip incorporates multiple chemical sensors on a single strip. The information from these sensors can be interpreted using a cell-phone camera. The testing strip is also embedded with electrical sensors, which obtain information such as temperature and transmit that information using an RFID chip. The combination of the microfluidic and RFID technologies create a wireless and portable, testing platform compatible with handheld devices.

Benefits/Advantages

- Cost effective manufacturing approach
- Eco Friendly
- Light-weight
- Zero-power required
- Results are real time and easily accessible
- Information can be transmitted wirelessle

Potential Commercial Applications

- Manufacturing control
- Environmental monitoring
- Point-of-care medical diagnostics

Background/Context for This Invention

Test strips are used to obtain chemical and biological information in virtually every industry, from industrial manufacturing control to personal healthcare. There are two distinct types of test strip technologies in the market; microfluidic and radio frequency technologies. Paper-based microfluidic analytical devices are sought after because they can integrate multiple chemical tests into a single testing strip. Radio-frequency identification (RFID) technologies are used in sensors to allow for real-time tracking of information. Current test strip platforms utilize either microfluidic or RFID technologies. Thus, there is a need for a platform that can incorporate both technologies.

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More Information

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/smart-test-strip-enabled-inkjet-printed-microfluids>

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot

