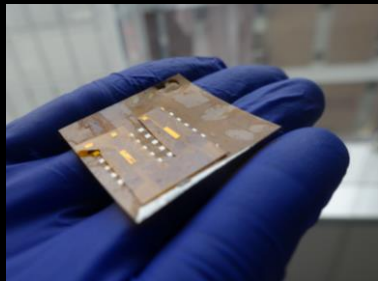


Next Generation Bio-Analyzer For Point-of-Care and In-Field Analysis



Prototype Bio-Analyzer Device for Point-of-Care Monitoring

Inventors:

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Protection Status:

US Provisional application
filed (July 25, 2023)
PCT application
filed (July 25, 2024)

Stage of Development:

Prototype
Validation with salivary and
blood serum biomarkers

Seeking:

Development Partners
Licensees

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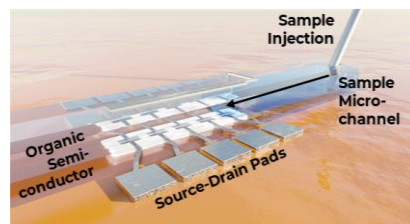
Carleton University,
Ottawa, Canada

Background

Biomarkers are a potent source of information about patient health, environmental and agricultural monitoring as well as food and beverage safety. Unfortunately, there is limited fast, economic, non-invasive, but accurate methods of quantifying biomarkers particularly at low concentrations such as biomarkers in saliva. Many useful biomarkers are thus still going untested.

Description of the Invention

Carleton researchers have developed a novel bioanalysis platform. This reliable, non-invasive device can quantitatively measure multiple useful biomarkers (hormones, proteins, small molecules etc.) in liquid analytes. Prototypes have been validated with salivary and blood serum biomarkers of varying types (including Dopamine – a small molecule neurotransmitter; Cortisol – a glucocorticoid steroid hormone and α -Synuclein – an intrinsically disordered neural protein)



Device schematic

Publications:

Massey, et al. ACS Sensors, vol. 8, no. 8, 2023, pp. 3116–26
(<https://pubs.acs.org/doi/10.1021/acssensors.3c00757>);
Massey, et al. IEEE Sensor Letters, vol.8, 2024, pp 1-4
(<https://ieeexplore.ieee.org/document/10555141>)

Key Benefits

- **Low sample volumes** required: 10 μ L for each analysis test
- **Excellent specificity and strong sensitivity** over a broad analyte concentration (over seven orders of magnitude variation from 27.3 mM to 2.73 pM) enabling early detection of the biomarker
- **Multiplexing** capabilities to detect and quantify multiple analytes
- **Ease of use and compact size:** for Point-of-Care and In-Field use
- **Cost effective:** reduced expenses over traditional lab testing
- **Room temperature** storage and device fabrication

Applications

- **Healthcare:** Point-of-Care devices with saliva, blood or other samples for diagnostics or patient health monitoring
- **Environment and Agriculture:** testing and monitoring for regulatory compliance, quality control and/or efficiency enhancement
- **Food and Beverage:** food safety quality control and analysis