# Multiplexed Sweat Extraction And Sensing Wearable Interface For Normalized And Periodic Analysis

Tech ID: 30573 / UC Case 2017-881-0

## SUMMARY

UCLA researchers from the Department of Electrical Engineering have developed a novel sweat induction and sensing platform to achieve personalized physiological monitoring non-invasively.

## BACKGROUND

Wearable electrochemical sensors have made sweat analysis possible for personalized medicine applications. Current technologies integrate flexible device fabrications and low-power electronics to perform in-situ sensing and sweat analytes. However, these existing platforms have issues with sweat sample access and degradation, which jeopardize the accuracy and applicability of the analysis. The inaccessibility is especially problematic on sedentary individuals. The lack of control of sweat secretion hinders the application of such platforms.

## INNOVATION

A novel sweat extraction and analysis platform was developed to resolve the aforementioned bottle neck issues. This platform uses an innovative iontophoresis electrodes/hydrogel for sweat induction. This method made sweat samples accessible on-demand for analysis and doesn't threaten the sample integrity. The platform includes a total of 8 compartments for analysis and a wireless circuit board for control, signal processing and wireless transmission. The compartments consist of arrays of biomarker sensors and calibrating sensors such as pH, skin temperature and sweat rate. This platform can be programed to perform analytic tasks with extreme operational flexibility.

## APPLICATIONS

- Molecular level monitoring of sweat analytes
- Sweat pH
- Skin Temperature
- Sweat Rate
- Can be potentially used to monitor glucose levels

## ADVANTAGES

- Wearable
- Total control and access to sweat samples
- Operational flexibility (Multi-tasking, programmable)
- Integratable to other electronic platforms

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| United States Of America | Issued Patent | 12,465,278 | 11/11/2025 | 2017-881 |

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Wearable Voltammetric Monitoring of Electroactive Drugs
- Mediator-Free Electroenzymatic Sensing with Enhanced Sensitivity and Selectivity for Wearable Metabolite and Nutrient Monitoring Applications
- A Wearable Freestanding Electrochemical Sensing System
- A 3D Microfluidic Actuation and Sensing Wearable Technology for In-Situ Biofluid Processing and Analysis
- A Wearable Platform for In-Situ Analysis of Hormones
- Ultra-Low Cost, Transferrable and Thermally Stable Sensor Array Patterned on Conductive Substrate for Biofluid Analysis

## CONTACT

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

Iontophoresis, electrodes, Hydrogel, Biomarker sensors, Sweat Analysis, Sweat Induction, Physiology Monitoring

### CATEGORIZED AS

- **Biotechnology**
  - Health
- **Sensors & Instrumentation**
  - Analytical
  - Biosensors
  - Medical

### RELATED CASES

2017-881-0

▶ In-Situ Sweat Rate Monitoring For Normalization Of Sweat Analyte Concentrations



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