

# Heated Dynamic Headspace Sampling Device for Volatile Organic Compounds (VOCs) from a Surface

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## ABSTRACT

Researchers at the University of California, Davis have developed a technology that offers a sophisticated solution for collecting and measuring gas emissions from surfaces, particularly skin, with high sensitivity and specificity.

## FULL DESCRIPTION

The technology encompasses devices, systems, and methods designed for the collection and measurement of gas emissions from a surface. It is particularly focused on capturing volatile organic compounds (VOCs) emitted from the skin, which can serve as biomarkers for various diseases and conditions. The technology addresses the challenges of sampling skin-emitted VOCs, including their low concentration and the influence of various factors on emission patterns, by providing a device that can be coupled with the skin surface to collect gas emissions efficiently and a system for analyzing these emissions with high sensitivity.

## APPLICATIONS

- ▶ Healthcare diagnostics for identifying biomarkers for diseases and conditions.
- ▶ Research in understanding the composition of gas mixtures emitted from the skin.
- ▶ Environmental monitoring by detecting and analyzing VOCs in various settings.
- ▶ Industrial and medical manufacturing processes that require gas analysis.

## FEATURES/BENEFITS

- ▶ Enables the collection of gas emissions directly from the skin surface.
- ▶ Incorporates a heater and temperature sensor to optimize the collection process.
- ▶ Designed for high sensitivity and specificity in detecting VOCs.
- ▶ Can be used in a wearable format, enhancing patient comfort and compliance.
- ▶ Facilitates real-time or near-real-time analysis of gas emissions.
- ▶ Overcomes the methodological and technical challenges of sampling skin-emitted VOCs.
- ▶ Addresses the issue of low VOC concentration levels emitted from the skin.
- ▶ Eliminates the need for complex analytical techniques and multiple sample collections.
- ▶ Makes VOC sampling accessible outside of laboratory or hospital settings.

## PATENT STATUS

Patent Pending

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

diagnosis, dynamic  
headspace, medical  
devices, sampling, skin,  
volatile organic  
compounds (VOCs)

### CATEGORIZED AS

- ▶ **Engineering**
  - ▶ Engineering
  - ▶ Other
- ▶ **Medical**
  - ▶ Devices
  - ▶ Diagnostics
  - ▶ Other
  - ▶ Research Tools

- ▶ Screening
- ▶ **Research Tools**
  - ▶ Bioinformatics
  - ▶ Other
- ▶ **Sensors & Instrumentation**
  - ▶ Biosensors
  - ▶ Environmental Sensors
  - ▶ Medical
  - ▶ Other
  - ▶ Scientific/Research

RELATED CASES

2024-536-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Non-invasive Monitoring of Cell Culture Health via Sampling of Bioreactor VOC Emissions

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