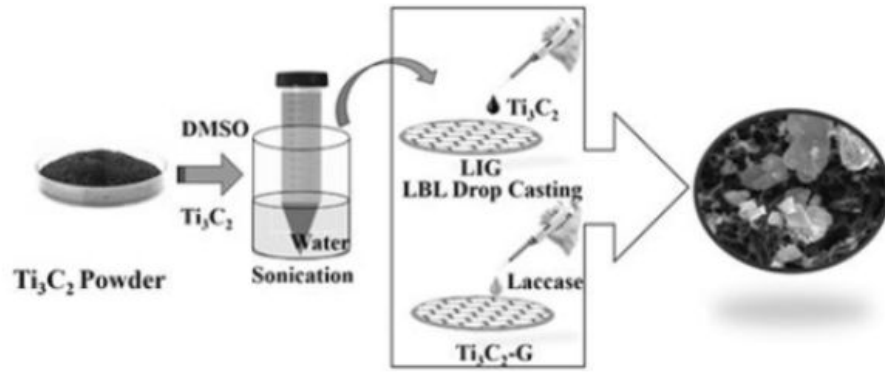


PENDING**(IN202111059663)**

An electrochemical microfluidic device and a process for preparing the same



NEED

Neurological disorders like Parkinson's affect over 10 million people globally. Early detection biomarkers like dopamine are unstable and hard to measure accurately using bulky, delay-prone lab systems. What if we could identify them at the point of care—before symptoms worsen?

TECHNOLOGY OVERVIEW

This invention offers a portable electrochemical microfluidic device with integrated detection and sample handling zones. It uses a graphene-based three-electrode system and 2D nanomaterials to measure specific analytes like dopamine via enzyme immobilization, enabling on-site biochemical sensing with high sensitivity, compact form, and minimal sample volume.

TECHNOLOGY KEY FEATURES

Laser-induced graphene electrodes, 2D nanomaterial with immobilized enzyme, leak-proof microfluidic chamber, and just 120–150 μL sample volume. Enables sensitive analyte detection without bulky lab tools. A new technology is changing the game—without disrupting existing systems.

[Read more here](#)

MARKET ANALYSIS

The global microfluidics market is projected to reach USD 58.8 billion by 2033, growing at 15.7% CAGR. Key drivers: demand for point-of-care diagnostics, lab-on-chip innovations, and personalized healthcare. India's biosensor market alone sees 10.5% CAGR. (Source: Global Market Insights, 2023; IMARC, 2024)

Target Industries

1) Biotech diagnostics firms developing lab-on-chip biosensors 2) Healthcare platform integrators deploying point-of-care tools 3) Research R&D institutes working on neurochemical monitoring or clinical screening of biochemical markers in small volumes

AT A GLANCE

- SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation and Infrastructure)

Technology is available for licensing/ co-development.

Reach out to Prof. Deepak Chitkara, Coordinator, BITS Technology Enabling Centre,
BITS Pilani Contact Details: tec.bits@pilani.bits-pilani.ac.in, 91 1596-255913