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PENDING

(IN202411035221) Reference-less extended gate field effect transistor based sensor

NEED

Endocrine-disrupting chemicals like Bisphenol A (BPA) are found in 90% of plastic waste and drinking water samples. Existing detection systems use bulky reference electrodes and require lab setups. What if rapid, compact sensors made early detection easier at source?

TECHNOLOGY OVERVIEW

This invention presents a miniaturized, reference-less extended-gate field-effect transistor (EGFET) biosensor using interdigitated electrodes (IDEs) for detecting Bisphenol analogues. The sensor uses a biorecognition layer and surface modification on IDEs for label-free detection, eliminating the need for reference electrodes and enabling portable, low-cost, point-of-need analysis.

TECHNOLOGY KEY FEATURES

Reference-less architecture; IDE width 10–100 µm; gap 4–40 µm; FET-based detection; 11-MUA and monoclonal antibodies for specificity; adaptable to glass, plastic, FR4 substrates; ideal for compact diagnostic setups.

MARKET ANALYSIS

The global biosensors market is projected to reach $59.5B by 2033, growing at a CAGR of 8.5%. Growth is driven by rising demand for point-of-care diagnostics, environmental sensing, and personalized medicine. [Source: Market Research Future, 2024]

Target Industries

Diagnostic component suppliers and/or sensor platform integrators for water safety and/or field-deployable biosensor developers for healthcare, food, or chemical industries

AT A GLANCE

SDG 3 (Good Health), SDG 6 (Clean Water), SDG 9 (Industry & Innovation), SDG 12 (Sustainable Consumption)

Read more here

Technology is available for licensing/ co-development.

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