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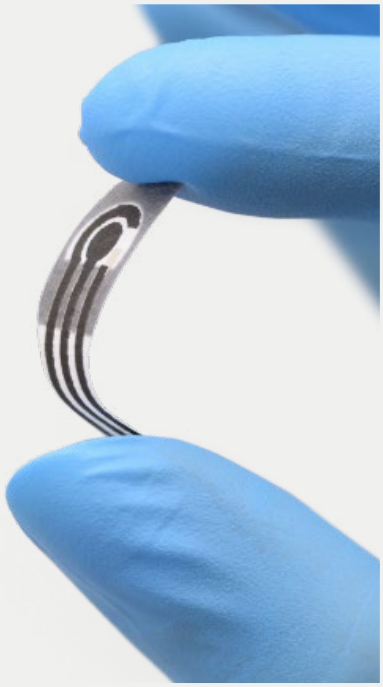
Paper-Based Screen-Printed Electrodes (SPEs)

Paper-based Screen-Printed Electrodes (SPEs) combine eco-friendliness with high-performance sensing technology. Manufactured using wax-assisted and screen-printing techniques on low-cost office paper, these devices are an innovative solution for sustainable and disposable electrochemical sensors.



KEY FEATURES

Electrode Components:

Working Electrode (WE):	Graphite
Reference Electrode (RE):	Silver
Counter Electrode (CE):	Graphite
Insulating Layer:	Wax

Design Specifications:

Standard Dimensions:	28 × 12 mm
Substrate Material:	Office paper (67 g/m²)
WE Surface Area:	12.56 mm²
Sample Volume Range:	20–100 µL

Performance Highlights:

High intra-electrode repeatability.
Consistent inter-electrode reproducibility.
Reliable cyclic voltammetry responses for various analytes.

CUSTOMIZATION

Paper-based SPEs offer exceptional design flexibility and can be customized to meet specific requirements. Customization options include:

- **Paper Types:** Choose from different kinds of paper substrates for tailored applications
- **Dimensions:** Modify electrode sizes to match application needs
- **Inks:** Use alternative conductive inks (e.g., gold, platinum, or modified carbon) to enhance sensitivity
- **Electrochemical Cell Configuration:** Adjust electrode arrangements or include additional components for unique sensing tasks

This adaptability makes paper-based SPEs ideal for bespoke solutions across diverse fields.

APPLICATIONS

Paper-based SPEs have versatile applications in:

BIOMEDICAL DIAGNOSTICS:
For rapid detection of biomarkers and metabolites

ENVIRONMENTAL MONITORING:
Assessing water quality and pollutant levels

MATERIAL TESTING:
Evaluating chemical properties of new materials

DEFENSE AND SECURITY:
Detecting chemical and warfare agents

ADVANTAGES

- **Eco-Friendly:** Constructed from recyclable and biodegradable materials
- **Cost-Effective:** Low-cost substrate materials and disposable use
- **Low Reagent Consumption:** Requires small sample volumes
- **Miniaturization:** Compact design enables portability and integration into various devices

Why choose Paper-Based SPEs?

These electrodes are a sustainable, high-performing, and cost-effective alternative for electrochemical sensing. Their customizability further enhances their utility for a wide range of research and industrial needs.

For more information, contact us!

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