

Description

AquAffirm's thin-film planar gold electrodes are meticulously fabricated using sputtered gold on a PET substrate, with the cell volume delimited by screen-printed hydrophobic ink. The high-precision fabrication guarantees electrochemical consistency with minimal electrode-to-electrode variations, enhanced biosensing capability, seamless integration, and application versatility.

Features



Electrodes are designed to ensure robust performance and consistent outcomes through rigorous electrochemical experiments.



With a properly sized and positioned counter electrode, along with a screen-printed Silver/Silver-Chloride reference electrode placed in as close proximity as possible to the working electrode, electrodes are engineered to minimise the portion of uncompensated resistance correlated to the design and geometry of the electrodes.



Through high-precision sputtered and laser ablation manufacturing, we ensure impeccable uniformity, a level of consistency beyond the reach of screen-printed electrodes. Depending on the use application, this uniformity guarantees optimised mass transport/electron flow, consistent electrodeposition of material, reduced background noise, improved signal-to-noise ratio and sensor-to-sensor reproducibility.

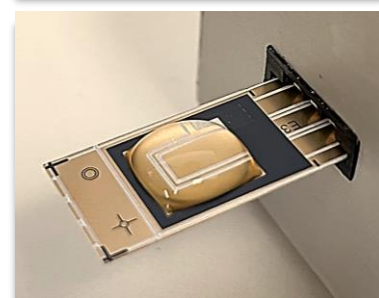
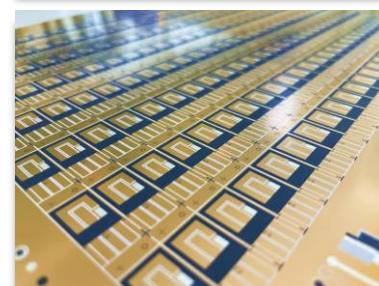
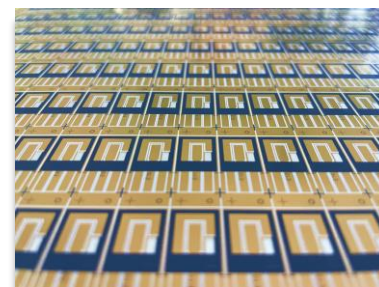


While being fabricated on flexible PET film, our electrodes offer the perfect blend of flexibility and rigidity. This unique combination allows for easy plugging and unplugging to any reader connector equipped with a 2.54mm/0.1in edge connector.



The incorporation of a gold layer offers unparalleled advantages for biosensor applications, enabling the utilisation of Au-Thiol interaction for the direct immobilisation of a wide range of bioreagents.

Part No. Au2-1W-R-1024



Applications

AquAffirm's thin-film Au-electrodes provide an effortlessly adaptable platform for a myriad of research applications, including but not limited to:

Sensors

- ❖ Environmental monitoring
- ❖ Clinical diagnostics
- ❖ Point-of-care (POC) tests
- ❖ Agri-food analysis

Electrochemistry

- ❖ General electrochemical research/analysis
- ❖ Reaction mechanism and kinetics studies
- ❖ *In vivo* diagnostics research

Flow Systems & Microfluidics

- ❖ Microfluidics research
- ❖ Lab-on-a-chip development
- ❖ Flow control systems

Nanotechnology

- ❖ Modified electrodes
- ❖ Nano-particles depositions
- ❖ Thin film characterisations
- ❖ Electrosynthesis

eChem-Gold™

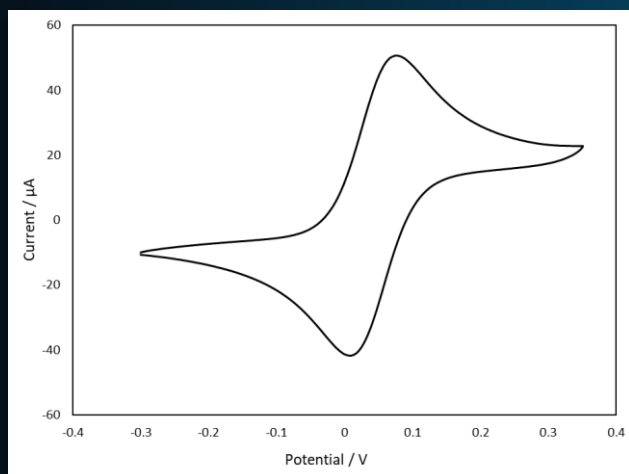
Thin-film planar gold electrodes



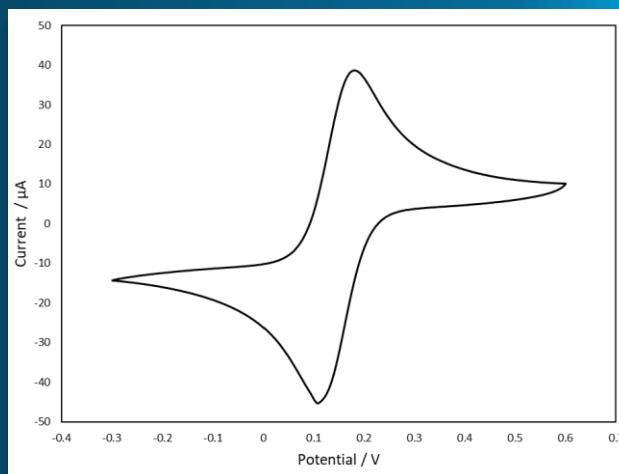
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Technical Specifications

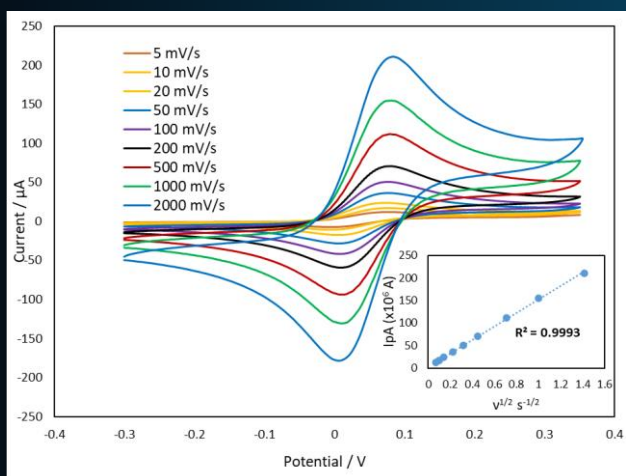
Type	3-Electrode, Au-Sputtered on PET substrate
Material	Au/PET
Sheet resistance	2 Ω/sq.
Reference Electrode	Screen-printed Ag/AgCl
Geometry and Dimensions:	
❖ Height (mm)	24 ± 0.1
❖ Width (mm)	10.3 ± 0.1
❖ Thickness (µm)	175 ± 15
❖ Working electrode geometry (mm ²)	(2.5 x 6) 15
❖ Counter electrode geometry (mm ²)	32.67
❖ Sensor Area (mm ²)	68.15



Cyclic Voltammogram of Ferrocenemethanol (2 mM) in KNO₃ (1 M) at 0.1 V/s scan rate.

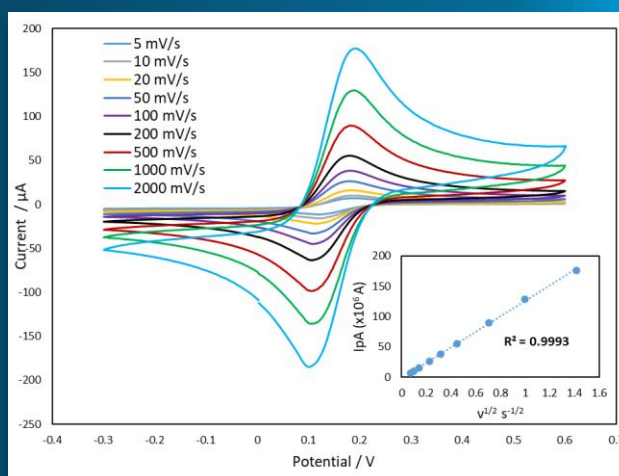


Cyclic Voltammogram of K₃[Fe(CN)₆] (2 mM) in KNO₃ (1 M) performed at 0.1 V/s scan rate.



Cyclic Voltammogram of Ferrocenemethanol (2 mM) in KNO₃ (1 M) performed at 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2 V/s scan rates.

Inset: Correlation between the sqrt of scan rate and current at the oxidation peak.



Cyclic Voltammogram of K₃[Fe(CN)₆] (2 mM) in KNO₃ (1 M) performed at 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2 V/s scan rates.

Inset: Correlation between the sqrt of scan rate and current at the oxidation peak.