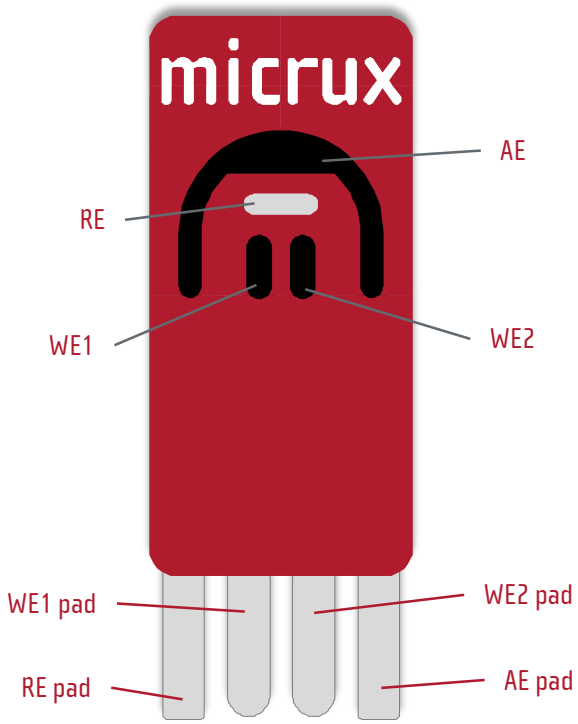
micrux
TECHNOLOGIES

Thick-film Dual-Electrodes

Thick-film dual-electrodes

Thick-film dual-electrodes *(ED-D2PE)* are fabricated by printing technologies on a flexible and high-resist PET substrate. These low-cost and disposable electrochemical sensors enable the use of small sample volume.

» Thick-film dual-electrodes features



Printing technologies enable the manufacture of planar dual-working electrodes suitable for simultaneous detection sharing the reference and auxiliary electrodes.

» Standard dimensions:	27.5 x 10.1 mm
» Substrate:	PET (white)
» Substrate thickness:	250 µm
» WE dimensions:	1,0x2.5 mm (2,3 mm^2)
» Sample volume:	20 – 50 µL
» Electrode material	
Working electrodes (WE1/WE2):	Carbon / Gold
Reference electrode (RE):	Silver
Auxiliary electrode (AE):	Carbon / Gold

» Thick-film electrode packs

Thick-film D2PE electrodes are supplied in 50 units packs. They should be stored at room temperature in a dry place.

» Applications

Printed dual-electrodes are a suitable tool for multiple applications, providing many advantages such as low-cost, disposable, multiplexing analysis, low reagent consumption as well as non-tedious pre-cleaning procedures.

Electroanalysis	Nanotechnology	Biosensors	Flow Analysis Systems
✓ Study EC reactions	✓ Modified electrodes	✓ Multiplexing analysis	✓ FIA Systems
✓ Trace EC analysis	✓ New nanostructures	✓ New recognition elements	✓ HPLC
✓ In-vivo measurements	✓ New nanomaterials	✓ POC / wearable systems	✓ Capillary Electrophoresis

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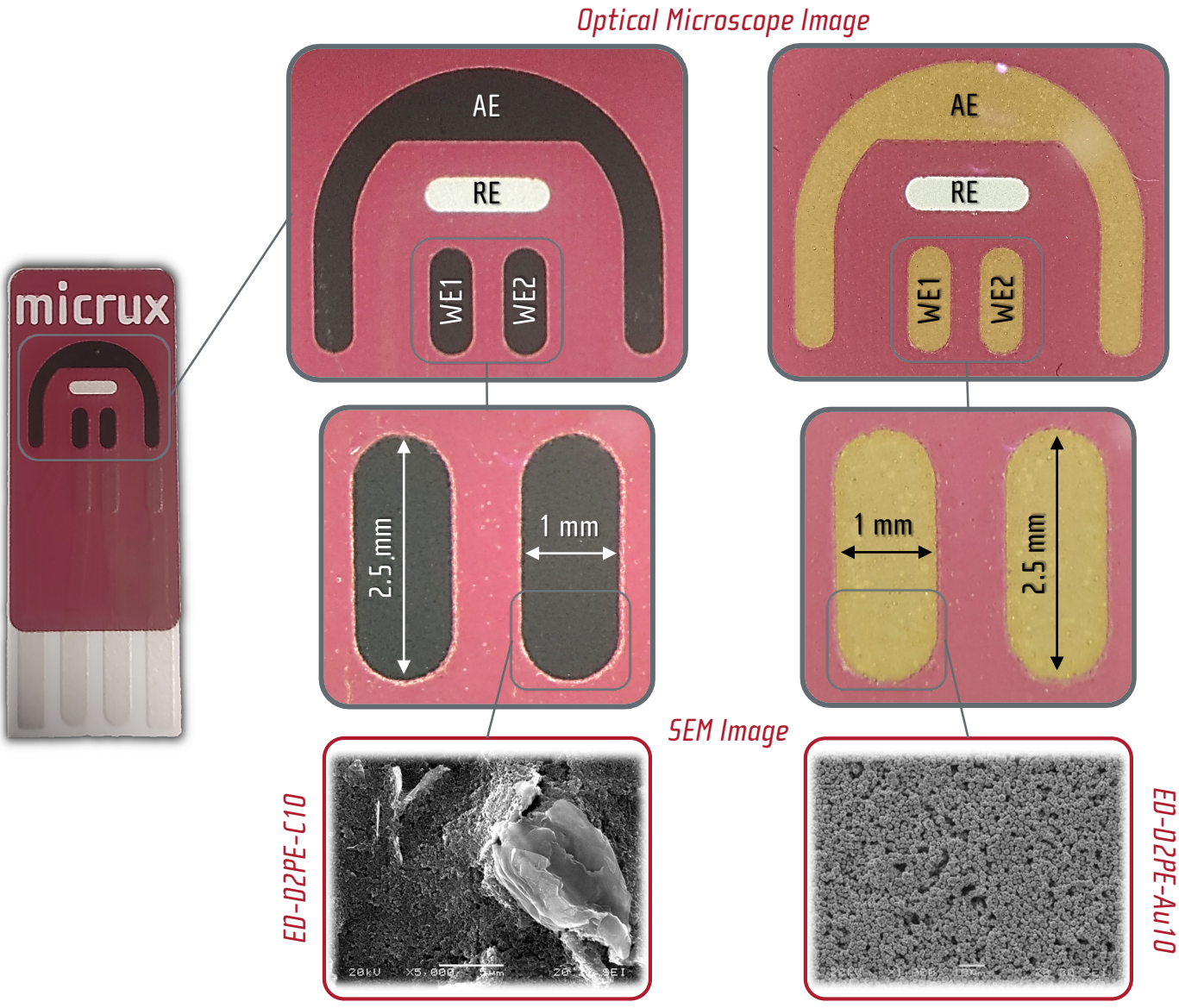
Thick-film dual-electrodes

» Dual electrochemical cell

Thick-film dual-sensors (*Ref. ED-D2PE*) are based on a four-electrodes approach with two working electrodes (WE1 / WE2), sharing a reference (RE) and an auxiliary (AE) electrode.



Printed dual-electrodes are very useful in order to avoid tedious polishing of traditional solid electrodes, and make easier the development of multiplexed chemical-sensors and bio-sensors for field analysis.

» Thick-film dual-electrodes

Screen-printed dual-electrodes (D2PE) are available in different materials.

SKU	Substrate	WE	RE	AE
» *ED-S1PE-C10*	PET	Carbon	Silver	Carbon
» *ED-S1PE-Au10*	PET	Gold	Silver	Gold

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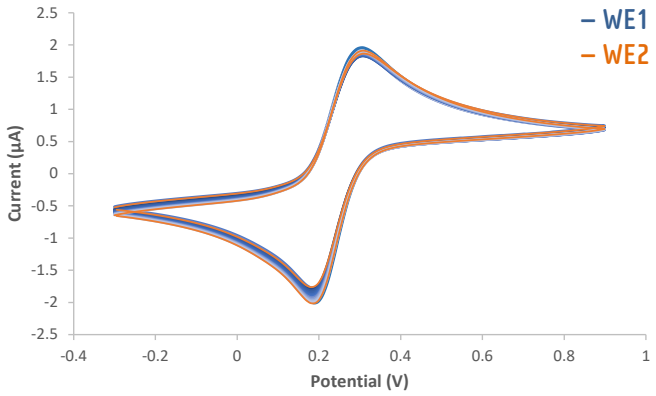
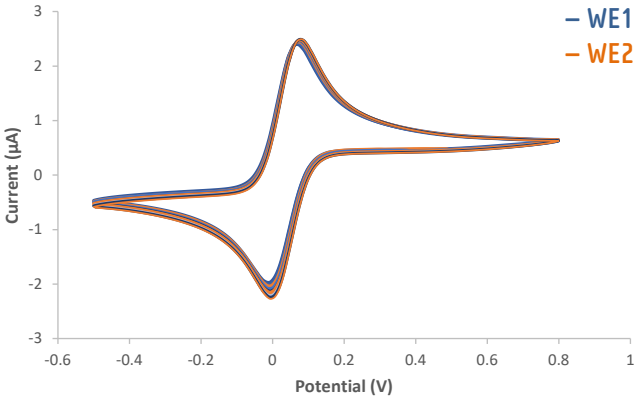
Thick-film dual-electrodes

» Thick-film dual-electrodes performance

» Screen-printed Carbon Dual-electrodes

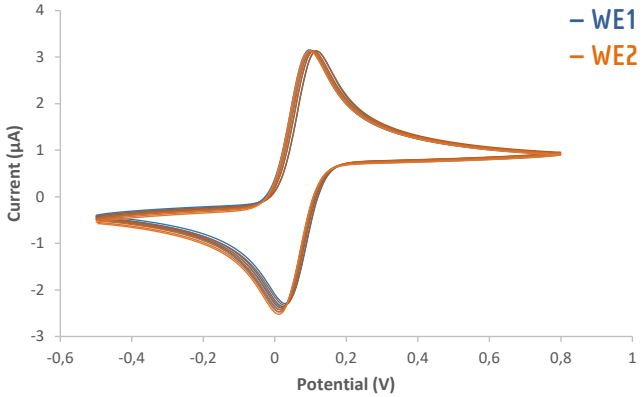


Successive cyclic voltammograms for 1 mM $K_4Fe(CN)_6$ in 0.1 M H_2SO_4 at thick-film carbon dual-electrode (ED-D2PE-C10). v = 50 mV/s, n = 20 (10+10), RSD = 2%

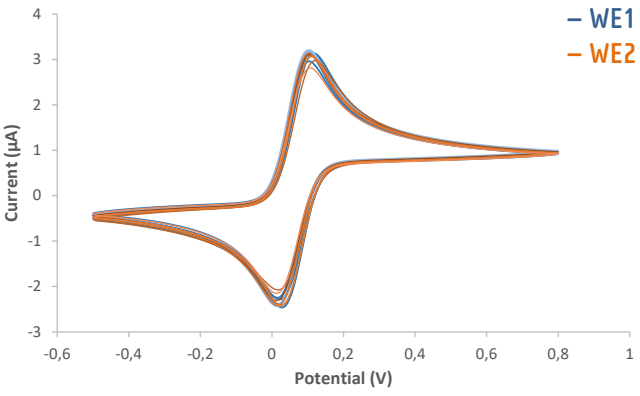


Successive cyclic voltammograms for 1 mM ferrocene methanol in 0.1 M H_2SO_4 at thick-film carbon dual-electrode (ED-D2PE-C10). v = 50 mV/s, n = 20 (10+10), RSD = 2%

» Screen-printed Gold Dual-electrodes



Successive cyclic voltammograms for 1 mM ferrocene methanol in 0.1 M H_2SO_4 at the same thick-film gold dual-electrode (ED-D2PE-Au10). v = 50 mV/s, n = 10 (5+5), RSD = 2%



Successive cyclic voltammograms for 1 mM ferrocene methanol in 0.1 M H_2SO_4 at different thick-film gold dual-electrode (ED-D2PE-Au10). v = 50 mV/s, n = 10 (5+5), RSD = 3%

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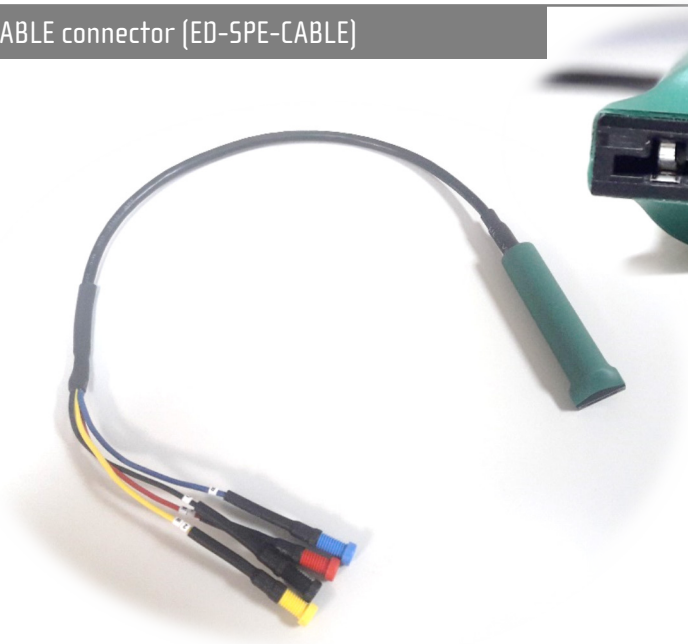
Thick-film dual-electrodes

» Thick-film electrodes related accessories

Different connectors for interfacing the printed electrodes with any commercial potentiostat are also available at MicruX.

» CABLE connector (ED-SPE-CABLE)



The CABLE connector *(Ref. ED-SPE-CABLE)* provides an interface between the electrodes (up to four contact pads) with the potentiostat, enabling the use of microvolume (20 – 50 µL sample drops) or dipping into a solution. The cable ends are available with **2 mm female or male bananas**.

Dimensions: 50 cm long

» BOX Connector (ED-SPE-BOX)

The small BOX connector *(Ref. ED-SPE-BOX)* provides an interface between the electrodes (up to four contact pads) with any kind of potentiostat, enabling the use of microvolume (20 – 50 µL sample drops). The interface ends are available with **2 mm female bananas**.

Dimensions: L58 x W40 x H15 mm

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Draw a smile on your research :-)

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