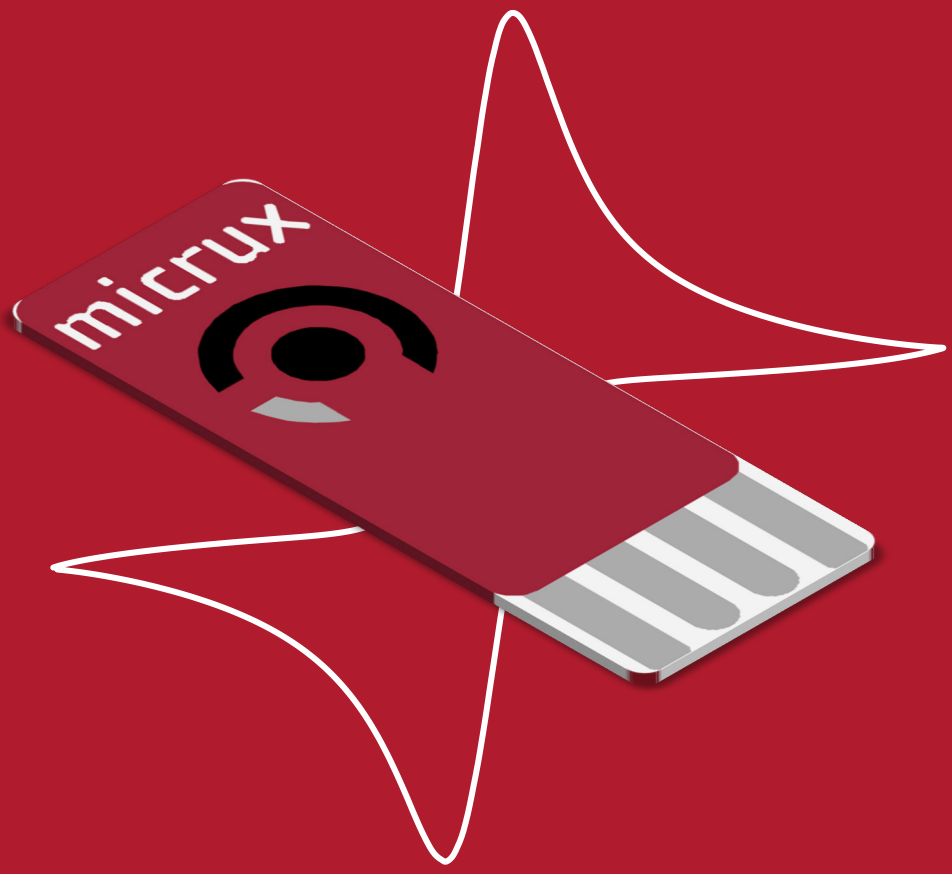
micrux
TECHNOLOGIES

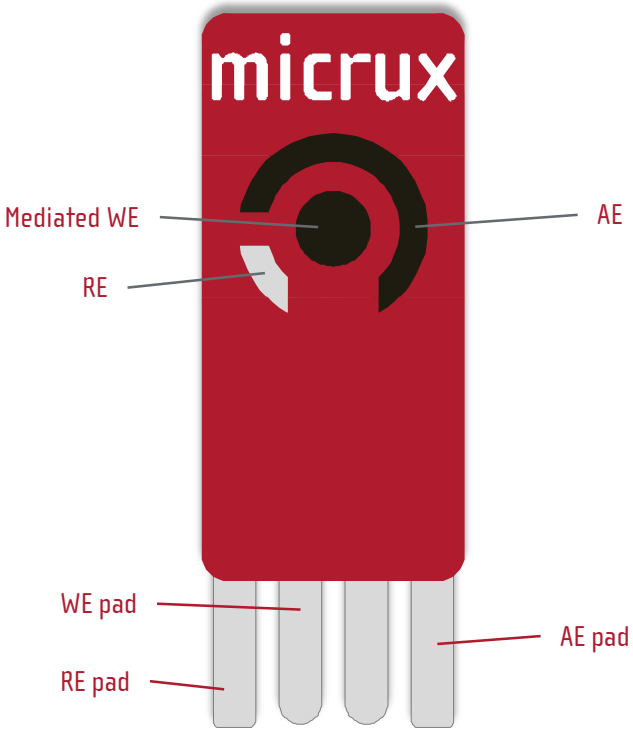


Thick-film Carbon Mediated Electrodes

Thick-film mediated single-electrodes

Carbon-mediated electrodes *(ED-S1PE-C/MED)* 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 based-electrode features



Printing technologies enable the manufacture of planar electrodes suitable for working with sample microdrop.

» Standard dimensions:	27.5 x 10.1 mm
» Substrate:	PET (white)
» Substrate thickness:	250 µm
» WE dimensions:	3 mm Ø (7,1 mm^2)
» Sample volume:	20 – 50 µL
» Electrode material	
Working electrode (WE):	Carbon/Mediator*
Reference electrode (RE):	Silver
Auxiliary electrode (AE):	Carbon

**Mediator: FeCN (Potassium Ferrocyanide), PB (Prussian Blue), CoPc (Cobalt (II) Phthalocyanine), MB (Meldola Blue)*

» Thick-film electrode packs

Thick-film S1PE mediated electrodes are supplied in 50 units packs. They should be stored at room temperature in a dry place.

» Applications

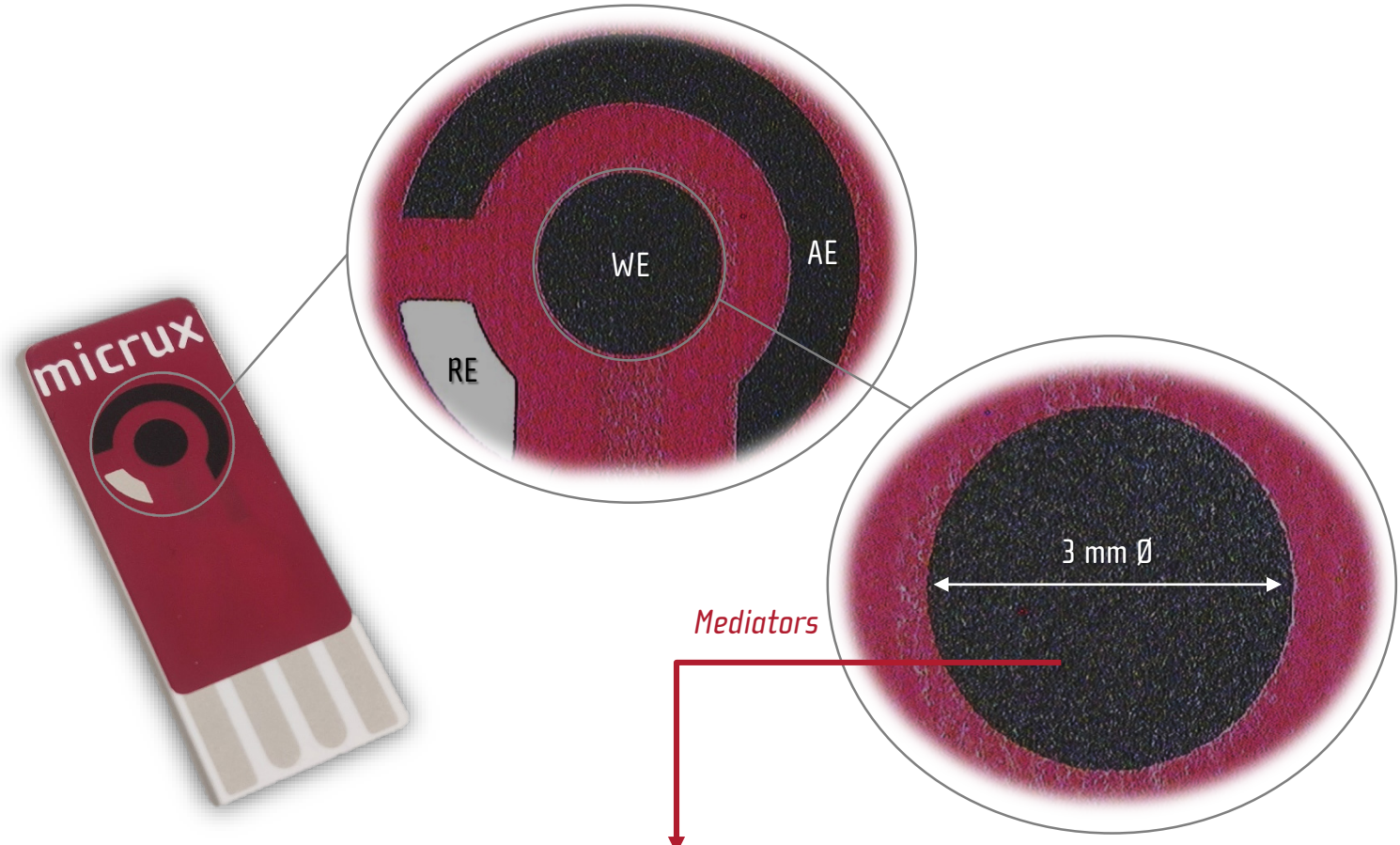
Printed electrodes are a suitable tool for multiple applications, providing many advantages such as low-cost, disposable, low reagent consumption as well as non-tedious pre-cleaning procedures.

Carbon-mediated electrodes have been optimized to provide superior electrochemical performance, enabling the detection of many analytes when used in conjunction with specific enzymes (*oxidase* or *dehydrogenase* type). These mediated-electrodes are suitable for improving the detection of hydrogen peroxide *(S1PE-C20/MED)* or NADH *(S1PE-C30/MED)* and the development of enzyme-based biosensors.

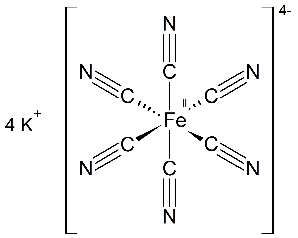
Thick-film mediated single-electrodes

» Electrochemical cell

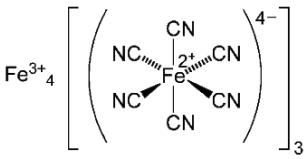
Mediated (*Ref. ED-S1PE-C/MED*) thick-film electrochemical sensors are based on a classical three-electrodes (working – WE, reference – RE and auxiliary – AE) approach.



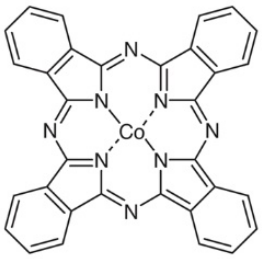
Potassium Ferrocyanide



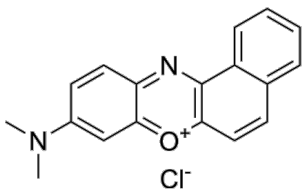
Prussian Blue



Cobalt(II) Phthalocyanine



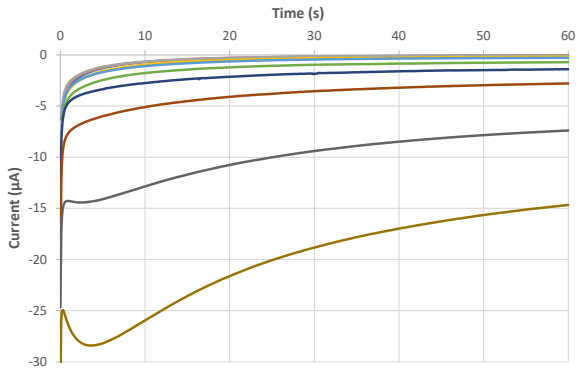
Meldola Blue



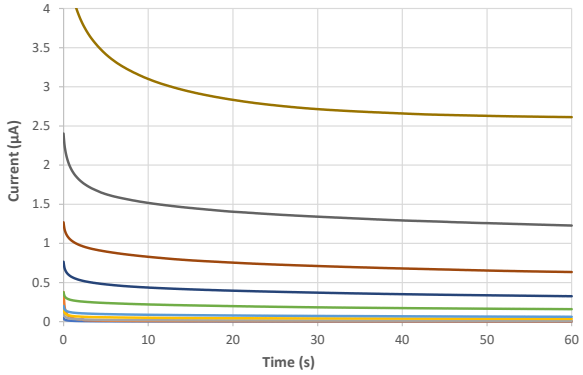
Reference	Substrate	WE	RE	AE
» *ED-S1PE-C20/FeCN*	PET	Carbon/$K_4Fe(CN)_6$	Silver	Carbon
» *ED-S1PE-C20/PB*	PET	Carbon/Prussian Blue	Silver	Carbon
» *ED-S1PE-C20/CoPc*	PET	Carbon/Cobalt Phthalocyanine	Silver	Carbon
» *ED-S1PE-C30/MB*	PET	Carbon/Meldola Blue	Silver	Carbon

» Thick-film mediated-electrodes performance

» BATCH ANALYSIS

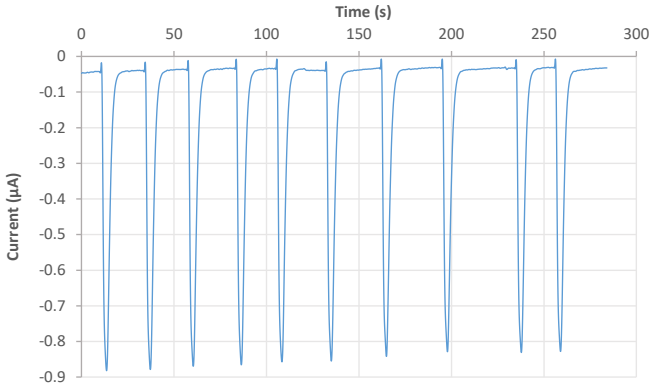


Amperometric response for 10 µM to 5 mM H_2O_2 using different thick-film Carbon/Prussian Blue electrodes (ED-S1PE-C20/PB). E_d = -0.1 V, BGE: PBS pH = 7.4.

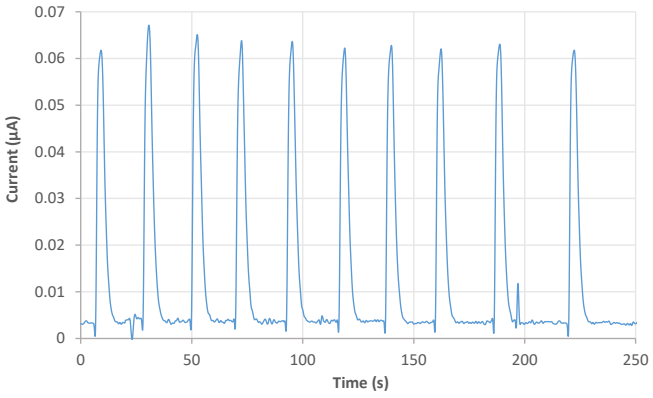


Amperometric response for 1 µM to 5 mM H_2O_2 using different thick-film Carbon/Cobalt Phthalocyanine electrodes (ED-S1PE-C20/CoPc). E_d = +0.4 V, BGE: PBS pH = 7.4.

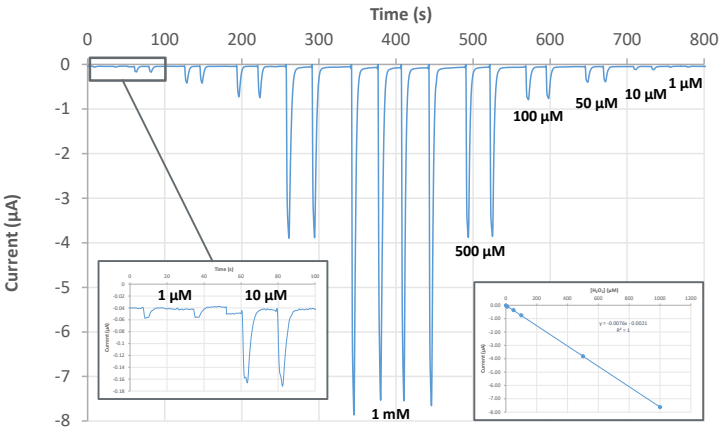
» FIA SYSTEM



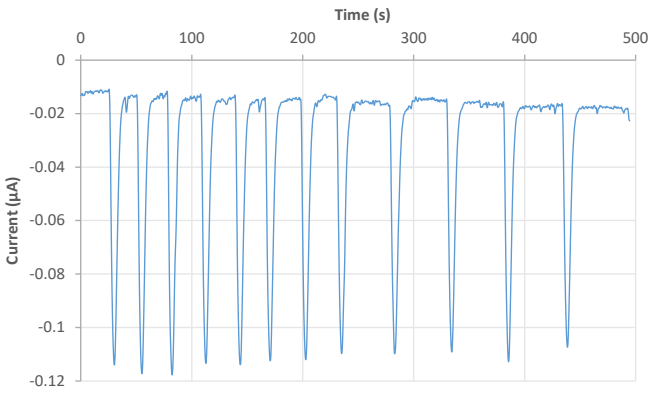
Successive injections of 100 µM H_2O_2 in a FIA system using a thick-film Carbon/Prussian Blue electrode (ED-S1PE-C20/PB). E_d = -0.1 V, flow rate: 2 mL/min, carrier: PBS pH = 7.4. RSD = 3.0% (n = 10)



Successive injections of 100 µM H_2O_2 in a FIA system using a thick-film Carbon/Cobalt Phthalocyanine electrode (ED-S1PE-C20/CoPc). E_d = +0.4 V, flow rate: 2 mL/min, carrier: PBS pH = 7.4. RSD = 2.5% (n = 10)



Amperometric response for 1 µM to 1 mM H_2O_2 in a FIA system using a thick-film Carbon/Prussian Blue electrode (ED-S1PE-C20/PB). E_d = -0.1 V, flow rate: 2 mL/min, carrier: PBS pH = 7.4.



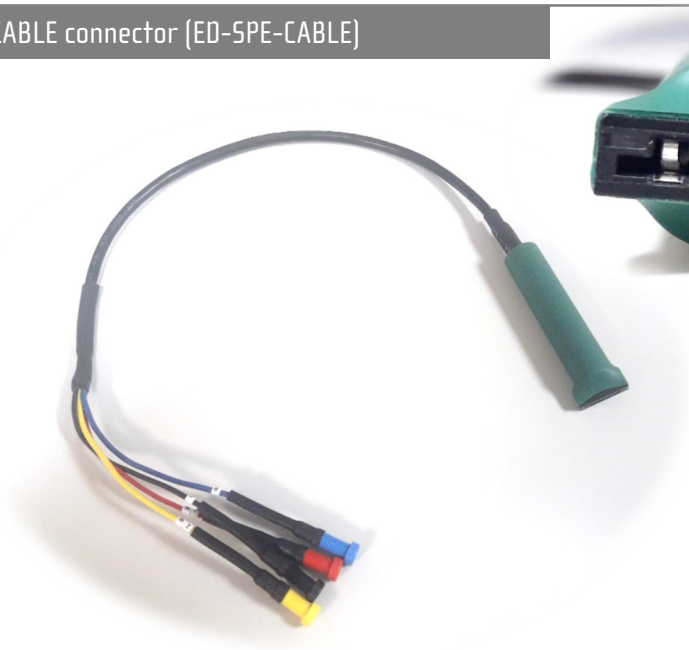
Successive injections of 100 µM H_2O_2 in a FIA system using a thick-film Carbon/Potassium Ferrocyanide electrode (ED-S1PE-C20/FeCN). E_d = -0.1 V, flow rate: 1 mL/min, carrier: PBS pH = 7.4. RSD = 4.5% (n = 12)

Thick-film 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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