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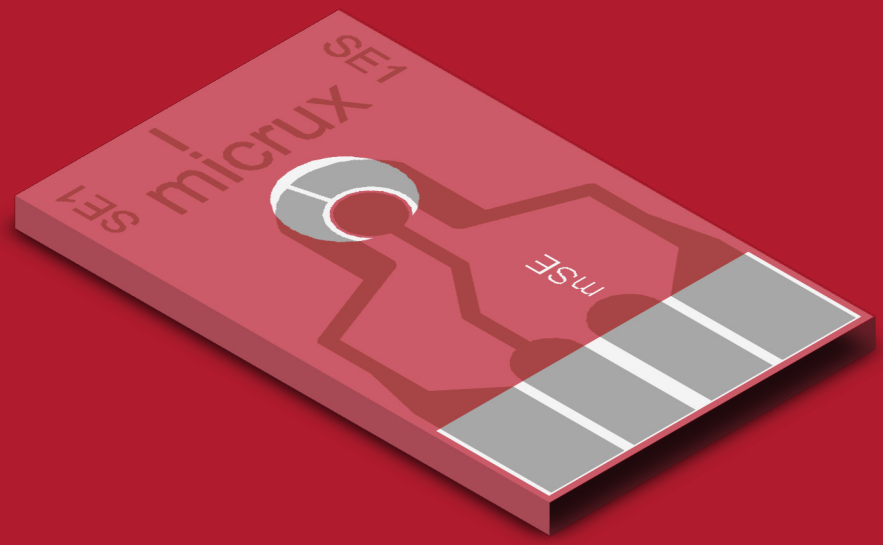
TECHNOLOGIES



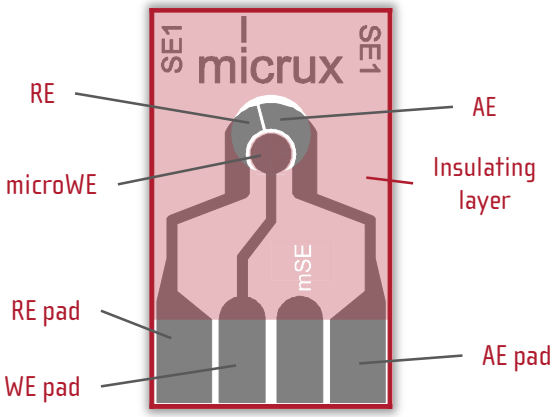
Thin-film Microelectrode Arrays

Thin-film Microelectrode arrays

Metal-based microelectrodes are fabricated by thin-film technologies on a Glass substrate. Microelectrode arrays (MEA) based on pinholes with a honeycomb microstructure can be manufactured on a working single-electrode.

» Thin-film based-electrode features

Thin-film technologies enable the development of small microstructures (<25 µm) with high resolution and precision.



» Standard dimensions:	10 x 6 x 0.7 mm
» Substrate:	Glass
» Protective layer:	SU8/PI resin
» Electrochemical cell:	2 mm Ø
» Sample volume:	1 – 5 µL
» Electrode material:	Platinum or Gold

» Thin-film electrode packs

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

» Applications

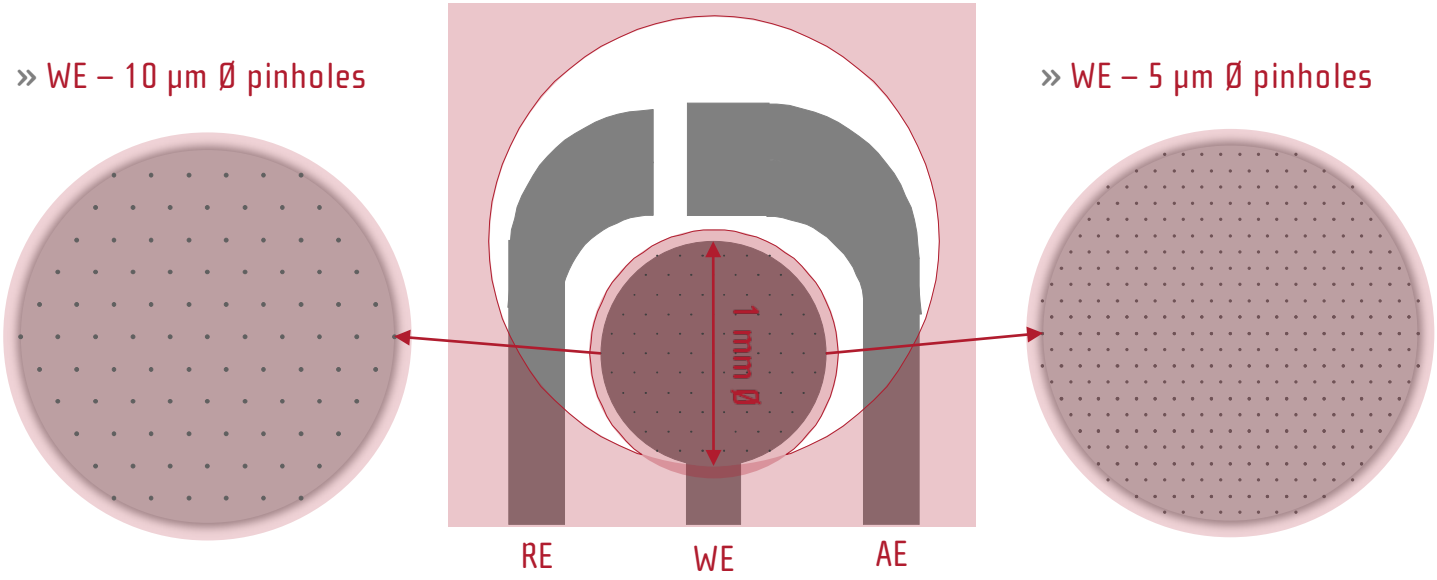
Thin-film microelectrode arrays are a useful tool for enhancing the analytical parameters in multiple applications taking advantages of their inherent properties such as low cost & disposables, reusable, high fabrication resolution, high sensitivity, low reagent consumption as well as non-tedious pre-cleaning procedures.

Electroanalysis	Flow Systems & microfluidics	Nanotechnology	Biosensors
✓ Study EC reactions	✓ FIA Systems	✓ Modified electrodes	✓ EC transducers
✓ Trace EC analysis	✓ Microchips Electrophoresis	✓ New nanostructures	✓ New recognition elements
✓ In-vivo measurements	✓ Capillary Electrophoresis	✓ New nanomaterials	✓ POC systems
	✓ HPLC		

Thin-film Microelectrode arrays

» Electrochemical cell

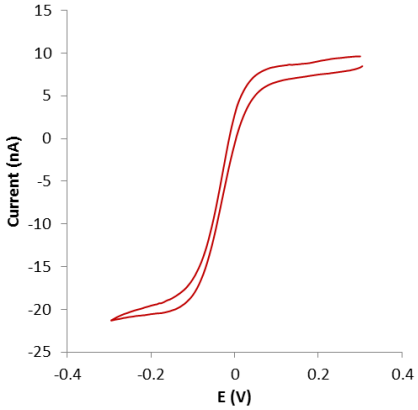
The electrochemical mSE sensor is based on a three-electrodes (working – WE, reference – RE and auxiliary – AE) approach. The working electrode (*1 mm diameter*) consists of a metal surface (*platinum* or *gold*) coated with *SU-8 resin* in which is defined different microholes array with a honeycomb structure.



Reference	Electrode Material	Working Electrode Microstructure			Electrode Thickness
		µHoles diameter	µHoles pitch	µHoles number	
» *ED-mSE-5-Pt*	Ti/Pt	5 µm	50 µm	500	50/150 nm
» *ED-mSE-10-Pt*	Ti/Pt	10 µm	100 µm	90	50/150 nm
» *ED-mSE-5-Au*	Ti/Au	5 µm	50 µm	500	50/150 nm
» *ED-mSE-10-Au*	Ti/Au	10 µm	100 µm	90	50/150 nm

» Thin-film microelectrode performance

Thin-film MEA electrodes show the typical microelectrode behavior to enhance the analytical signals by reaching the steady-state in a short time.



Cyclic voltammogram for 1 mM ferrocene methylalcohol in 0.1 M H_2SO_4 at a thin-film gold microelectrode array (ED-mSE-10-Au). v = 10 mV/s.

Electrode pre-cleaning by cyclic voltammetry between -1.5V and +1.5 V (n = 10, v = 100 mV/s) – BGE: 0.1 M H_2SO_4.

» Thin-film electrodes related accessories

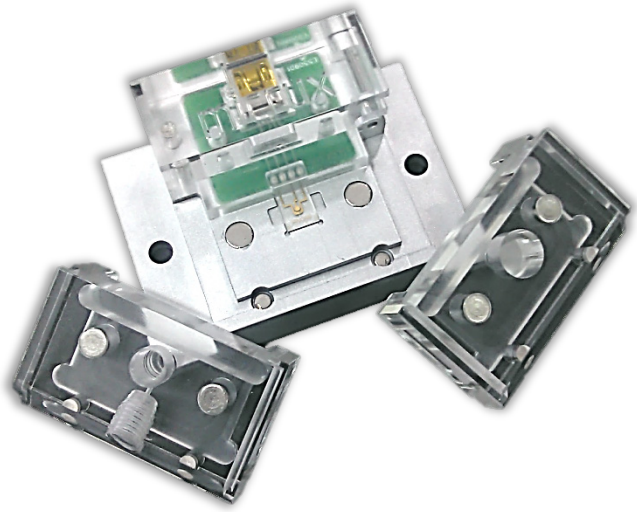
» Drop-cell connector

The drop-cell connector *(Ref. ED-DROP-CELL)* provides a true user-friendly and robust (long life-time) interface with the potentiostat, enabling the use of microvolume (1 – 10 µL sample drops) with all standard (10 x 6 mm) thin-film (micro)electrodes.

» All-in-One Platform

The innovative All-in-One cell *(Ref. ED-AIO-CELL)* provides an unique multipurpose interface with movable add-ons that can be easily interchanged for using the standard (10 x 6 mm) thin-film (micro)electrodes.

The AIO-cell enables the use of the thin-film (micro)electrodes in static (*Drop / Batch-cell*) or dynamic (*Flow-cell*) conditions, fulfilling the requirements of multiple electroanalytical applications.



» All-in-One Platform Add-ons

Different standard **methacrylate** (PMMA) Flow-cell and Batch-cell add-ons are available for using in combination with the AIO platform. Transparent **PMMA** is a suitable material for most of the analytical applications.

Flow-cell and Batch-cell add-ons are also available in **PEEK** (polyether ether ketone) on demand. **PEEK** offers advantages for applications where high mechanical and chemical resistance is required.

The drop-cell connector and AIO platform are supplied with an universal cable compatible with any commercial potentiostat

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Mora-Garay Industrial Park · Juan de la Cierva, 2C, Bldg. # 6
33211 · Gijón (Asturias) · SPAIN

Phone/FAX: +34 984151019

E-mail: info@micruxfluidic.com
Web: www.micruxfluidic.com

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