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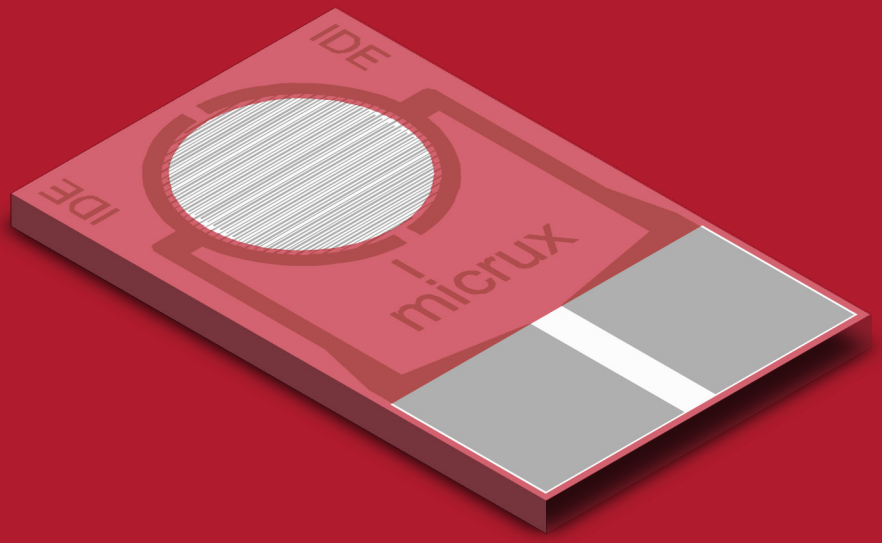
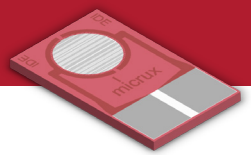


Thin-film InterDigitated Electrodes

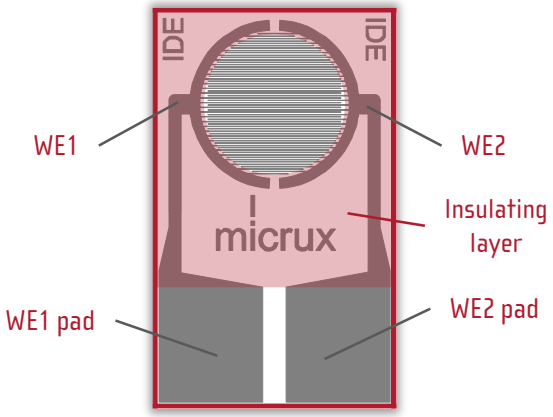
Thin-film Interdigitated Electrodes



Metal-based InterDigitated Electrodes (IDE) are fabricated by thin-film technologies on a Glass substrate. The interdigitated electrodes provide a suitable tool specially useful for impedance, capacitance and conductivity measurements as well as fuel cells.

» Thin-film based-electrode features

Thin-film technologies enable the fabrication of microelectrodes (<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:	3.5 mm Ø
» Sample volume:	2 – 10 µL
» Electrode material:	Platinum or Gold

» Thin-film electrode packs

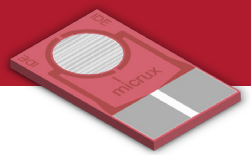
Thin-film IDµElectrodes are supplied in 50 units packs. They should be stored at room temperature in a dry place.

» Applications

Thin-film interdigitated electrodes 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.

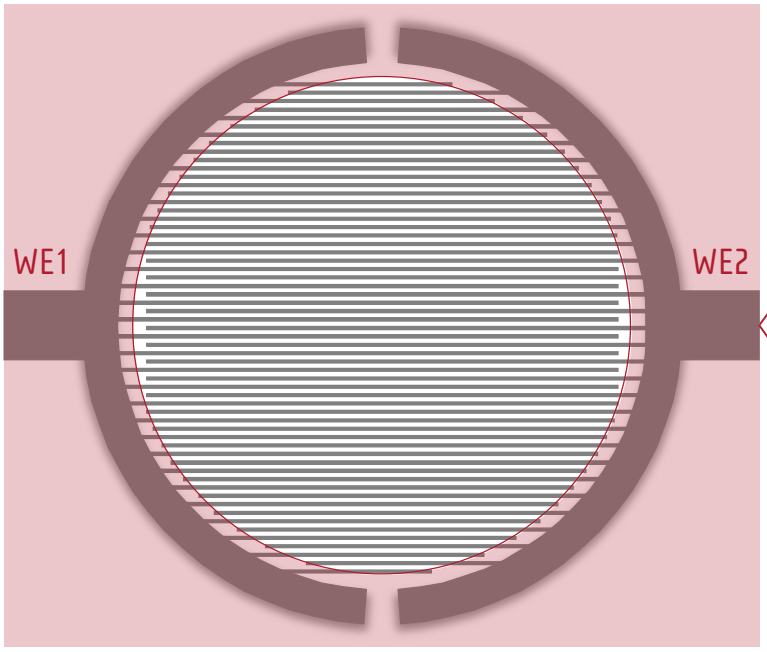
Electroanalysis	Flow Systems & microfluidics	Nanotechnology	Biosensors
✓ Study EC reactions	✓ FIA Systems	✓ Modified electrodes	✓ EC transducers
✓ Trace EC analysis	✓ Microchips Electrophoresis	✓ New nanostructures	✓ New recognition elements
✓ In-vivo measurements	✓ Capillary Electrophoresis	✓ New nanomaterials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

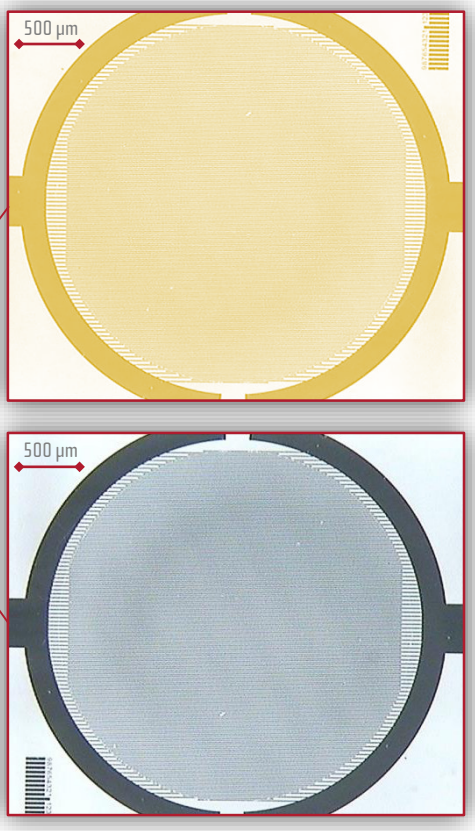
Thin-film Interdigitated Electrodes



» Electrochemical cell

The most basic interdigitated electrodes (IDE) consist of two individually addressable microelectrode array strips with an interdigitated approach. Non additional reference and auxiliary electrodes are included on the device.





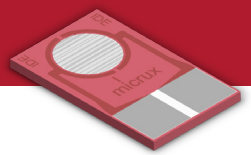
These lineal-band electrodes have been specially designed in a circular cell to work with very small sample drops (< 10 µL). The sample drop shape is well-adapted to the electrode cell in order to get the maximum performance and precision.

» Interdigitated electrodes

InterDigitated Electrode (IDE) designs are available in platinum or gold with different widths and gaps.

Reference	Material	µElectrode width	µElectrode gap	Number of feet	Thickness
» *ED-IDE1-Pt*	Ti/Pt	10 µm	10 µm	90 pairs	50/150 nm
» *ED-IDE2-Pt*	Ti/Pt	10 µm	5 µm	120 pairs	50/150 nm
» *ED-IDE3-Pt*	Ti/Pt	5 µm	5 µm	180 pairs	50/150 nm
» *ED-IDE1-Au*	Ti/Au	10 µm	10 µm	90 pairs	50/150 nm
» *ED-IDE2-Au*	Ti/Au	10 µm	5 µm	120 pairs	50/150 nm
» *ED-IDE3-Au*	Ti/Au	5 µm	5 µm	180 pairs	50/150 nm

Thin-film Interdigitated Electrodes



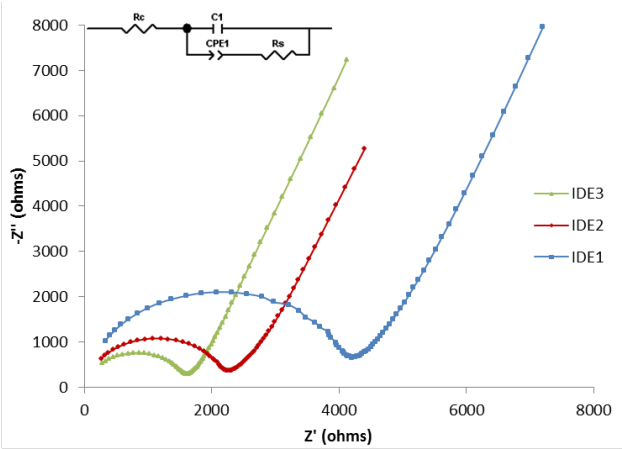
» Interdigitated electrodes performance

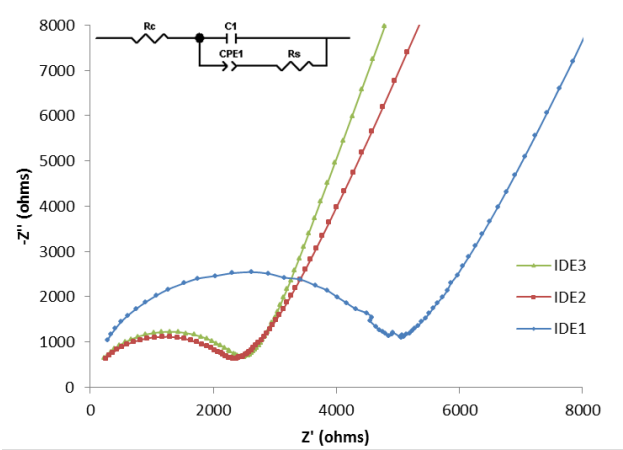
Electrochemical Impedance Spectroscopy (EIS) is a powerful, fast and accurate non-destructive method that can be used with the interdigitated electrodes (IDE) in multiple analytical applications.

» Platinum Thin-Film Interdigitated Electrode

» Gold Thin-Film Interdigitated Electrode

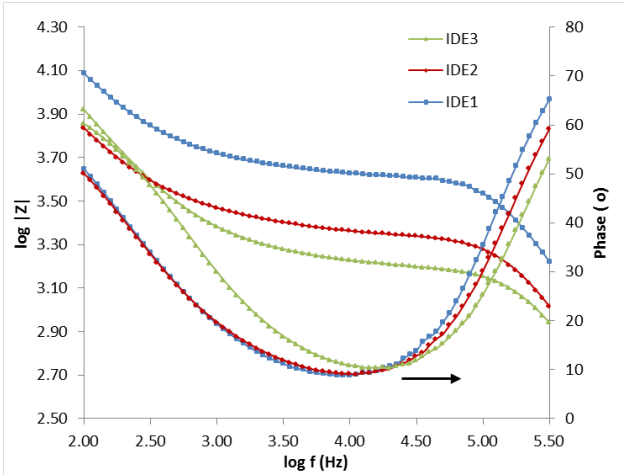
-,- NYQUIST PLOTS -,-

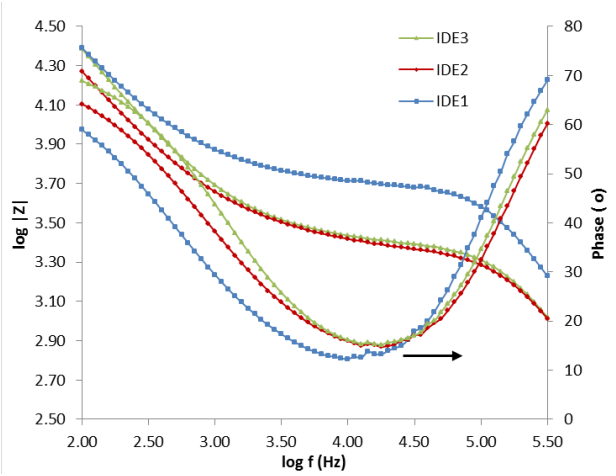




Nyquist plots using different gold and platinum thin-film interdigitated electrodes in a low conductivity NaCl solution (6.0 mS/cm). Frequencies range: 500 kHz – 100 Hz, Vp-p = 25 mV. Inset: *equivalent electric circuit.*

-,- BODE PLOTS -,-

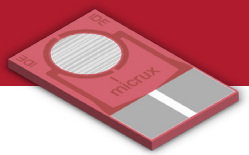




Bode plots using different gold and platinum thin-film interdigitated electrodes in a low conductivity NaCl solution (6.0 mS/cm). Frequencies range: 500 kHz – 100 Hz, Vp-p = 25 mV.

**Impedance spectra data were provided by Nanobiotechnology for Diagnostics (Nb4D) Group from Advanced Chemical Research Institute of Catalonia (IQAC-CSIC), Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Barcelona, SPAIN.*

Thin-film Interdigitated Electrodes



» Thin-film electrodes related accessories

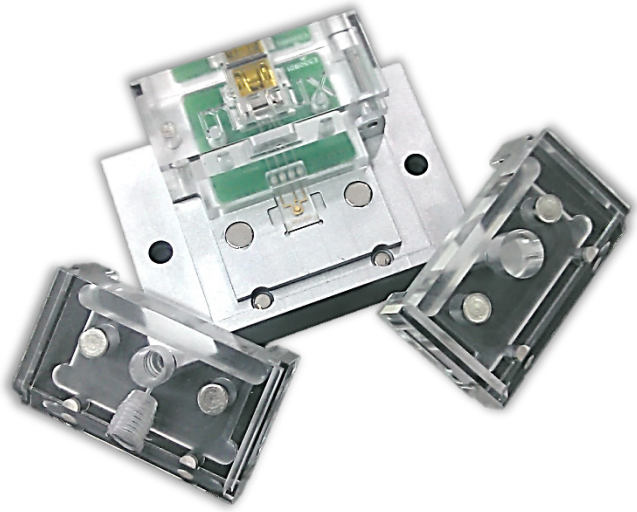
» Drop-cell connector

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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