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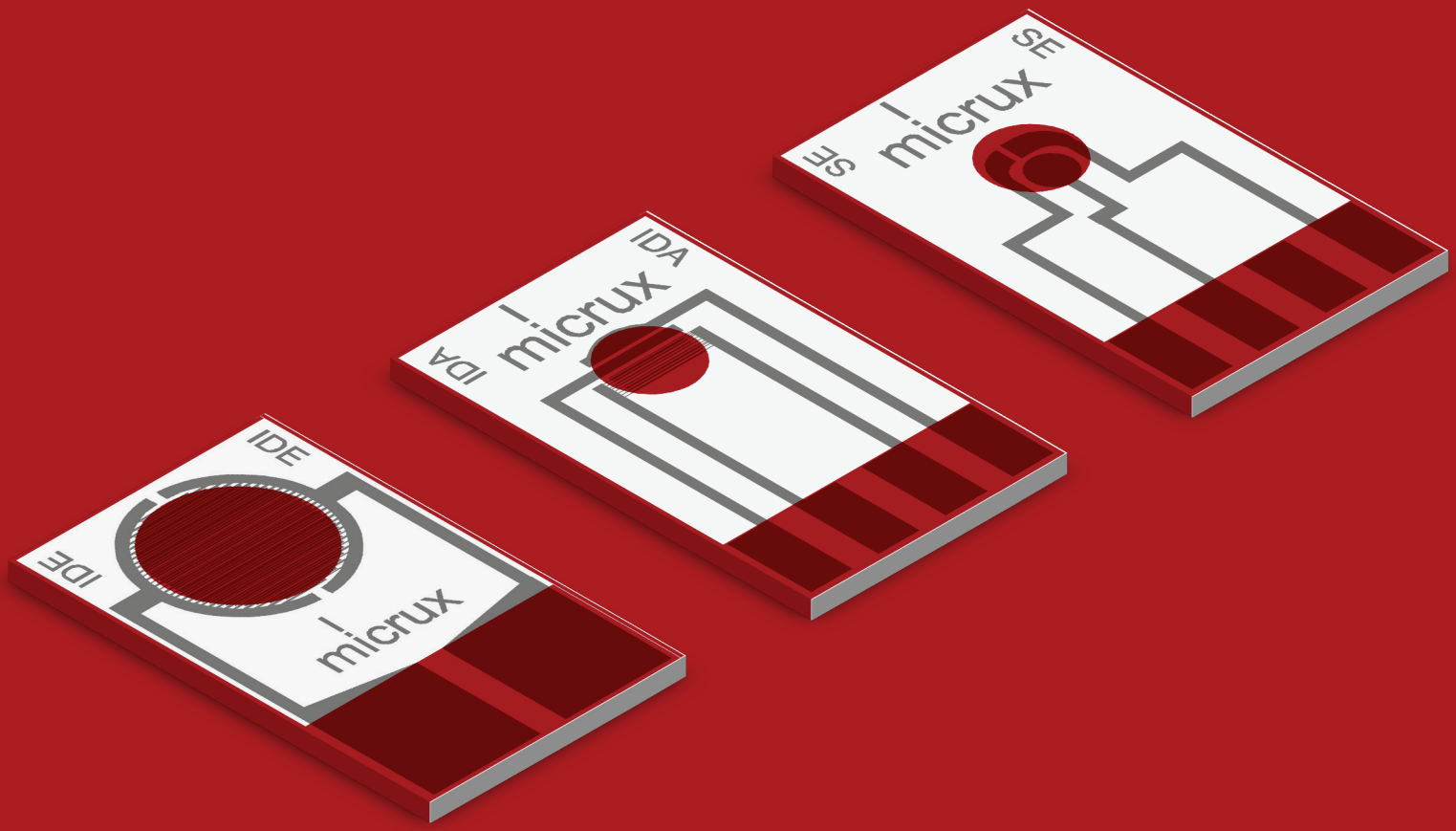


Thin-film (micro)electrodes surface cleaning & activation

Cleaning & Activation

Metal-based thin-film (micro)electrodes require a surface pre-cleaning in order to remove any particle or dust that can affect to the electrochemical performance; repeatability, reproducibility and shelf-life. These protocols are also very useful for regenerating the electrode surface and re-using them in multiple analytical applications.

» Electrochemical cleaning procedure

Metal surface could be cleaned by generating hydrogen and oxygen, using an electrochemical procedure, in order to remove any particle or dust.

Platinum-based thin-film (micro)electrodes	Gold-based thin-film (micro)electrodes*
- *Cyclic voltammetry between -1.5 and +1.5 V*	- *Cyclic voltammetry between -1.0 and +1.3 V*
- *Number of scans: at least 10 cycles (about 10 min.)*	- *Number of scans: at least 12 cycles (about 10 min.)*
- *Sweep rate: 0.1 V/s*	- *Sweep rate: 0.1 V/s*
- *Background electrolyte: 0.1M KCl*	- *Background electrolyte: 0.05M H_2SO_4*

***CAUTION:** Gold-based thin-film electrodes must not be used with chloride-based solutions. Gold is peeled off from the electrode surface with chlorides when it is used in a potential window out of the range -0.3 – +0.6 V (solution pH may modify this potential range).*

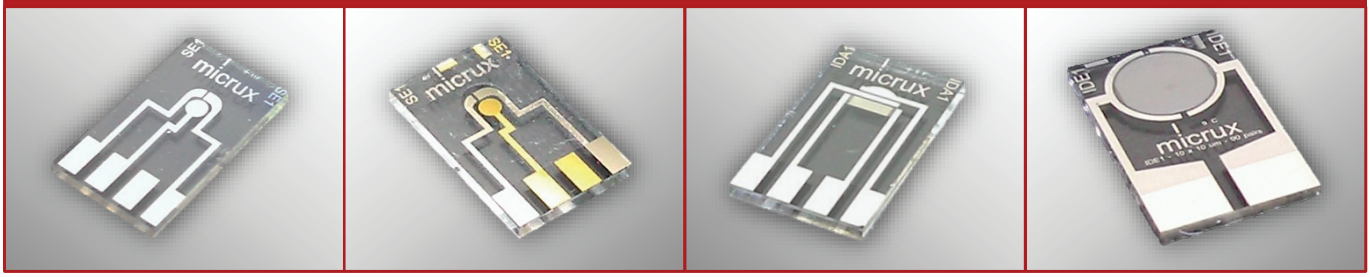
» Chemical cleaning procedure

Organic residues present on the surface could be also removed by immersing the electrodes in a *piranha solution* (H_2SO_4:H_2O_2 3:1) and rinsing with DI water.

In the case of Interdigitated Electrodes, these are very sensitive and should be handled with extreme care in order to avoid any damage on the surface. Some particle adhered to the electrodes can scratch the surface and even, they can trigger a short circuit in the measurements. In these cases, electrodes may be cleaned in order to remove the particles:

i. *Ultrasonicate in isopropyl alcohol (IPA) for 15 - 20 min.*
ii. *Ultrasonicate in DI water for 15 - 20 min.*
iii. *Dry in a nitrogen stream.*

MicruX' Thin-Film (micro)electrodes range



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