

SENSOLYTICS Microelectrodes

MICROELECTRODES

All microelectrodes offered by Sensolytics have a similar design. The electrode material is isolated by a glass sheath which forms the electrode body. Electrical connection is achieved by a copper wire. All electrodes are disk-shaped with a sharp tip.

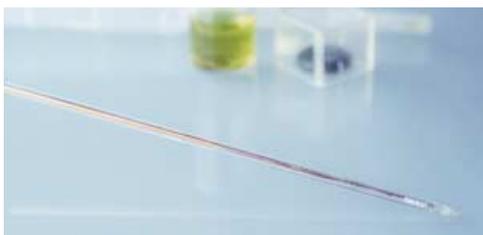
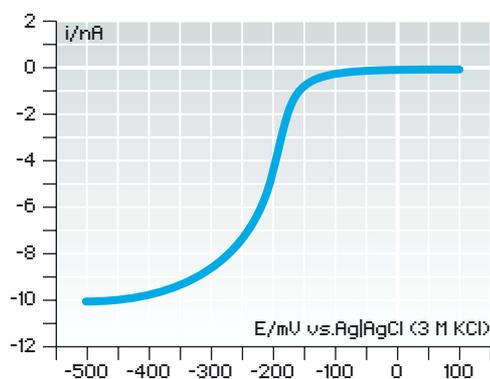


Figure 1: Photograph and scheme of a microelectrode

For quality assurance, all microelectrodes are tested by cyclic voltammetry. A typical voltammogram is shown in figure 2.



For a rough calculation, a cyclic voltammogram in a 5 mM solution of rutheniumhexamin or ferricyanide can be used. The diffusion controlled current i_{∞} in nA corresponds to the diameter in μm .

Figure 2: Cyclic voltammogram of a 10 μm Pt-microelectrode in 5 mM $\text{Ru}(\text{NH}_2)_6^{3+}$ /100 mM KCl solution

GOLD MICROELECTRODES

Gold disk microelectrodes are available in three different diameters. The gold core is sealed in soda glass with an outer diameter of 1 mm. They are especially suitable for thiol modifications.

PLATINUM MICROELECTRODES

Microelectrodes with platinum as the electroactive electrode material are the most chosen electrodes for SECM measurements. The insulating sheath of the platinum microelectrodes consists of borosilicate glass. They are suitable for a wide range of applications because of their wide potential window and chemical inertness. For standard SECM applications, it is recommended to use electrodes with a diameter of 25 μm or 10 μm .

PLATINUM NANOELECTRODES

Platinum nanoelectrodes are used for imaging in constant-distance mode SECM. The electrodes consist of a quartz-glass sheath which is pulled into a needle shaped form. The diameter of the active electrode surface varies from 200 to 500 nm. The needle-type shape of the electrode is set to vibrate during the measuring process. In order to keep the distance between electrode and sample surface constant, a shear-force based distance control is used.

Figure 3: Photograph of a platinum nanoelectrode



Sensolytics offers different types of electrodes with several electrode materials and diameters which are listed below.

Order No.	Name
04-00001	reference electrode Ag/AgCl
04-00002	counter electrode, platinum
04-00003	microelectrode, gold 10 μm
04-00004	microelectrode, gold 25 μm
04-00005	microelectrode, gold 50 μm
04-00006	nanoelectrode, platinum 200-500 nm
04-00007	microelectrode, platinum 10 μm
04-00008	microelectrode, platinum 25 μm
04-00009	microelectrode, platinum 50 μm
04-00010	microelectrode, platinum 100 μm

Feel free to ask for non-listed products...

