

Nanoelectrodes

No. 04-00006

Thank you for choosing a Sensolytics platinum nanoelectrode.

All our nanoelectrodes are previously polished and the diameter has been determined by cyclic voltammetry. However, we recommend polishing of each electrode prior to each use. After polishing, rinse the electrode alternately with isopropanol (or ethanol, acetone) and distilled water to remove any particles.

The actual size of the cleaned nanoelectrode needs to be characterized again by means of cyclic voltammetry using a free-diffusing, reversible redox mediator. The diffusion-controlled current i_{∞} is proportional to the size of the electrode. In order to calculate the actual radius of the cleaned electrode, the diffusion-controlled current measured via CV and the following equation is used:

$$i_{\infty} = 4 n F D c r$$

n = number of transferred electrons, F = Faraday's constant, D = diffusion coefficient of the redox species, c = bulk concentration of the redox species, r = radius of the electrode [cm]*

The copper wire is covered with an insulating polymer. The insulation is removed at the very end of the wire. *Please use only this part* for connection with the potentiostat. In order to clean the copper connection, use a rough emery paper. Please pay attention to hold the electrode at the copper wire and not at the glass body to avoid traction to the connection between copper and platinum wire while cleaning the contact.

* Please refer also to e.g. Bard, A. J.; Mirkin, M. V. *Scanning electrochemical microscopy*, 2nd ed.; CRC Press: Boca Raton, Florida, 2012, p 3 for further information.