

OVERVIEW

Synkera Technologies has developed a line of inexpensive, disposable microelectrodes for electrochemical and materials analysis. Electrode arrays are available in multiple configurations, including interdigitated fingers, bands and dashes. The electrodes are embedded in a robust ceramic body, which allows re-polishing and exposure of fresh electrode surfaces. The electrode chips are also inexpensive enough to be disposable. Platinum and gold electrodes are readily available; other materials are available upon request.

CONCEPT

Synkera's microelectrode arrays offer an affordable option for making a wide range of electrochemical measurements. Interdigitated electrodes (Figure 1) have been used for the evaluation of the electrical properties of a wide variety of materials, including carbon nanotubes and intrinsically conducting polymers.

Other electrode configurations (Figure 2) are available that allow for characterization of materials in solution, such as the detection of heavy metals in water. In this design, it is possible to incorporate both working and auxiliary (counter) electrodes in a single chip. Preliminary development work at Synkera has demonstrated the feasibility of preparing a solid-state reference electrode on top of the chip, leading to a miniaturized, all solid-state device for electrochemical measurements in solutions.

ELECTRODE FEATURES

- Prepared using Synkera's unique multilayer fabrication process for low cost and high reproducibility.
- A wide range of electrode lengths and gaps are available.
- Chip sizes available from 0.12" x 0.06" up to 0.5" x 0.5".
- Rugged ceramic body withstands rough handling and temperatures up to 1000°C, alternate high temperature glass body available.
- Low-cost option allows disposable measurements.
- Electrodes are fully embedded in the chip body, allowing for polishing and reuse, if desired.

CURRENT STATUS

Interdigitated platinum electrodes are available as a standard product. A wide variety of gold and platinum band and dash electrode configurations are available for a nominal lot charge, depending on the complexity of the design. Development of the solid-state reference electrode design is ongoing.



Figure 1: Optical Image of Interdigitated Electrodes



Figure 2: Optical images of band and dash geometries incorporating both gold and platinum materials

PARTNERSHIP DEVELOPMENT

Partnerships are of interest for the continued development and commercialization of ceramic microelectrode arrays. For additional information, or to purchase standard products, please contact:

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