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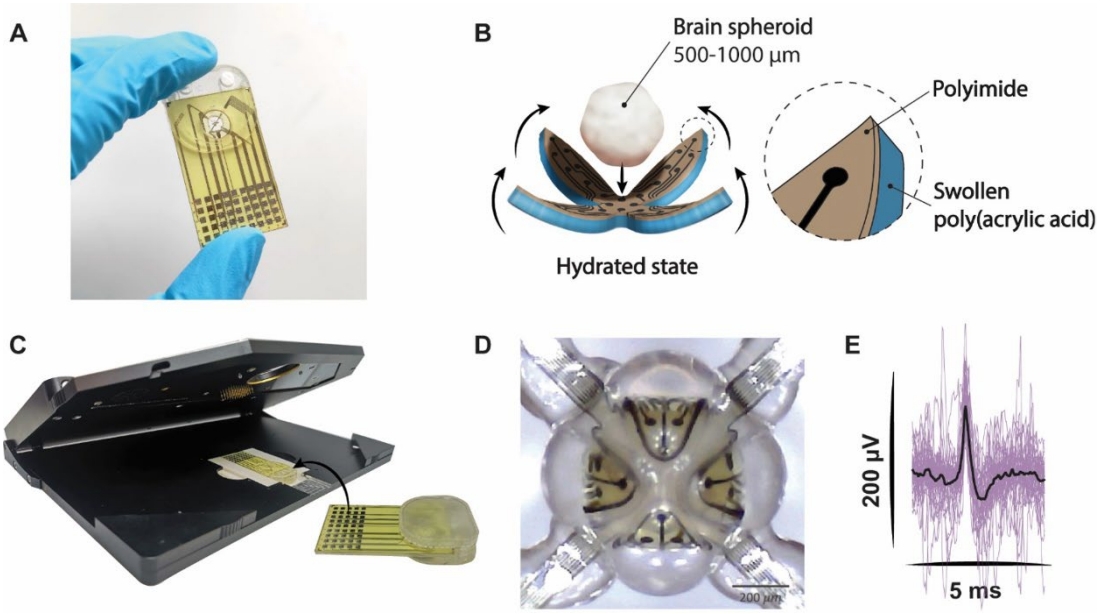
Licensing Opportunity

TTO – Technology Transfer Office

# e-flower: a 3-D MEA for in-vitro electrophysiology




(A) Optical image of the e-Flower platform. (B) Schematic illustration of the 2D-to- 3D shape reconfiguration of the e-Flower driven by the differential swelling properties of the PAA/PI layers.(C) The e-Flower seamlessly interfaces with the pogo pins of the MEA-2100 electrophysiological system. (D) Bright-field image of an actuated e-Flower wrapping around the surface of a brain spheroid. (E) Representative neural event detected by one of the electrodes of the e-Flower during a 5-min electrophysiological recording.

Ref. Nr

6.2465

Keywords

In-vitro, cell culture, organoid, spheroid, electrophysiology, microelectode array (MEA).

Intellectual Property

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Publications

Martinelli et al., Sci. Adv. 10, eadp8054 (2024)

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## Description

Traditional microelectrode arrays are limited to measuring electro-physiological activity in two dimensions and fail to capture the complexity of three-dimensional (3D) tissues such as neural organoids and spheroids.

The technology is an actuated self-folding microelectrode arrays (MEA) for cell culture that relies on adaptive materials capable of changing shape upon a trigger stimulus (e.g. liquid absorption pH change, pressure change) to enable the MEA to closely interface with 3D biological entities such as organoids, spheroid or any tissue.

The technology can be used for optical, thermal, electrical, physical and/or chemical interfacing with 3D tissues.

The adaptive materials can be tailored for different stimulus to trigger the shape change of the self-folding MEA.

## Applications

- Cell culture of 3D tissues such as organoids and spheroids.
- In-vitro electrophysiology.

## Advantages