Miniaturized in vitro Device for Electrical Stimulation (MiDES)

CSIC, Universidad Autónoma de Madrid and University of Florida have developed a miniaturized device for in vitro electrical stimulation of cells and tissues. MiDES has unique nanostructured electrodes that provide high charge injection capacity and safe stimulation. This device has a compatible design with commercial standard cell culture systems and microscopy slides. Industrial partners from laboratory devices for modern cell culture technology are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

Broad Range of Safe Stimulation

The use of electrical stimulation in regenerative medicine research is growing rapidly. MiDES is an in vitro electrical stimulation device with advanced nanostructured electrodes that are able to provide effective and safe stimulation for biological systems. Electrical stimulation in biological systems should be done in the potential range that water molecules do not split (electrolysis), to avoid pH drop-off and chemical bioproducts that are harmful for the living cells. Due to superior effective surface area, nanostructured coatings provide larger charge transfer in a narrow potential window that is safe and effective for stimulating cells with no electroporation.

Unique Universal Design for Biology Tests

MiDES has a unique universal design that matches commercial cell culture systems (i.e., Slide Chambers) and microscopy setups. MiDES has 8 individual test wells (culture area) that can be stimulated separately or simultaneously and designed to be stackable. The silicone cell culture chamber is detachable and provides convenient postprocessing for multiple tests. MiDES has a universal frame for better handling of the fragile high-quality imaging slides that fits in all microscopy set ups (standard slide size). Observation windows and glass bottom make the in-situ imaging possible.

Main innovations and advantages

- High performance nanostructured electrodes
- Broad range of effective and safe stimulation for biological systems
- Multiple test conditions on one slide
- Universal design to match standard cell culture and microscopy systems
- Easy postprocessing and in situ imaging

Patent Status
Priority patent application filed

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