

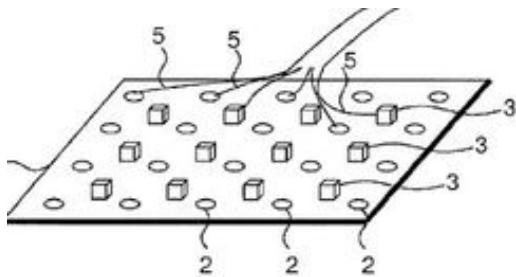
Technology Offer

Microelectrode array with combined optical stimulation

Reference Number 21-00019

Challenge

Electrocorticography (ECoG) is a key technology for mapping neural interactions and analysis of brain functions. Within the last years miniaturization of ECoG arrays with smaller electrodes strongly reduced spacing while the spatial and temporal resolution of recorded neuronal signalling has tremendously increased. Now, emerging technologies like optogenetics will challenge the field of neurological research again. In particular, the simultaneous application of electrode arrays and optical light sources requires exact spatial positioning of both devices. Consequently, demands towards the precision of the surgical intervention increase. Therefore, future research efforts will focus on the development of novel strategies to improve the combined implanting of microelectrode arrays and optical stimulation units.



Microelectrode array with integrated optical light sources.

Technology

The newly developed medical device comprises a microelectrode array with a sheet-like structure and a plurality of electrodes as well as light-emitting diodes. Of particular advantage, the electrodes and stimulating light sources are integrated into a transparent, film-like microelectrode array and do not have to be implanted as separate parts. Thus, a perfect spatial positioning of electrodes and optical stimulation units is assured. In addition, the transparency of the array enables combined optical stimulation and simultaneous recording of neuronal signaling, thus ensuring the highest possible spatial resolution and best signal-to-noise ratio. In summary, the novel medical device is perfectly adapted to the requirements of future optogenetic applications.

Commercial Opportunity

In-licensing or collaboration for further development is possible.

Development Status

A prototype has been developed and initial proof-of-concept studies have been performed.

Patent Situation

Patent have been granted in Europe (EP 3175784B1, EP 2914160B1) and US (US 10,966,624B2) with priority of 2012.

Further Reading

Janitzky K, Lippert MT, Engelhorn A, Tegtmeier J, Goldschmidt J, Heinze HJ, Ohl FW. 2015. Optogenetic silencing of locus coeruleus activity in mice impairs cognitive flexibility in an attentional set-shifting task. *Front Behav Neurosci.* 9:286, 1-8.

Licensing Contact:

Dr Torben Söker
Technology Manager
T: +49 511 53289-18
soeker@ascenion.de

Ascenion GmbH

Herzogstraße 64
D-80803 München
T: +49 89 318814-0
info@ascenion.de
www.ascenion.de