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HIGH ASPECT RATIO ELECTRODE ARRAY MOLD

BIOTECHNOLOGY

Three-dimensional lithography deposition shadow mask technique that facilitates reproducible electrode array production.

TECHNOLOGY TYPE

Biosensors
Neurology

STAGE OF DEVELOPMENT

- Prototype in development.

- Ongoing research to test prototype efficacy.

IP PROTECTION

U.S. Utility Patent Issued

Structure and methodology for a shadow mask having hollow high aspect ratio projections
US10172558B2

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Reference Number: U-6017

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TECHNOLOGY SUMMARY

Three-dimensional microfabrication may one day enable less expensive and more expedient production of electrode arrays for use as neuroprosthetics and neural research tools. However, conventional 3D microfabrication techniques cannot yet produce high aspect ratio patterns or consistent results.

Researchers at the University of Utah have created a novel technique for the 3D microfabrication of electrode arrays. This method uses 3D lithography to construct a mold for electrode arrays. A layer of electrode array substrate is deposited onto the electrode array, using pre-existing arrays, and is then dissolved under the mold. The resulting mold enables consistent, inexpensive electrode array production.

FEATURES AND BENEFITS

- Facilitates deposition of a patterned layer on highly dense 3D microstructures.
- Enables hollow microneedle production.
- Demonstrates potential use in various micro-molding applications.

RECENT PUBLICATIONS

Shandhi, M.M., Leber, M., Hogan, A.L., Warren, D.J., Bhandari, R., Negi, S. (2017). Reusable high aspect ratio 3-D nickel shadow mask. *Journal of Microelectromechanical Systems*. 26(2): 376-384.
doi: [10.1109/jmems.2017.2654126](https://doi.org/10.1109/jmems.2017.2654126)

INVENTOR PROFILE

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