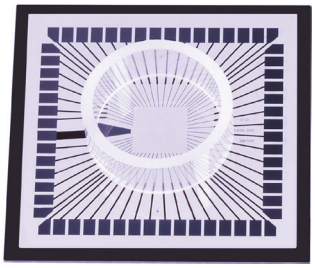
MEA Cleaning Quick Guide

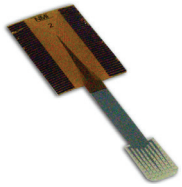
Cleaning of Micro Electrode Arrays



Cleaning of the MEA

Prepare a 1 % solution of Terg-A-Zyme (Sigma, order number 2273287), diluted in distilled water. Place the MEA in this solution overnight at room temperature. Apply gentle shaking or rocking, if possible. After Terg-A-Zyme treatment, rinse thoroughly with distilled water. Terg-A-Zyme solution can be stored at 4 °C and reused about a week. Dry the MEA and apply hydrophilic surface treatment, if necessary. If a MEA is going to be used as cell or tissue culture, autoclave the MEA at 121 °C for 30 minutes.

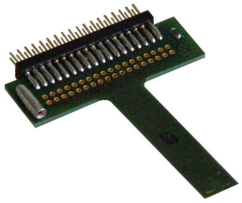
Warning: It is absolutely necessary to rinse the MEA thoroughly with distilled water after treatment with detergent, particular when using Terg-A-Zyme before dry-heat sterilization, which is not recommended! Otherwise the potential rests of the detergent may burn into the glass carrier of the MEA and may destroy the electrodes.



Cleaning of FlexMEAs

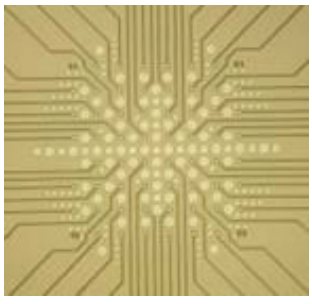
Warning: Do not use an ultrasonic bath for cleaning. The manufacturer recommends sterilization by rinsing with alcohol.

When using an autoclave at 121 °C, please make sure that the FlexMEA will not be exposed to the moisture. The FlexMEA itself must be dry and additionally sealed in a sterile package.



Cleaning of EcoFlexMEAs

EcoFlexMEAs are stable at a temperature range from 0 °C to 125 °C and can be autoclaved.



Cleaning of perforated MEAs

Warning: Do not use an ultrasonic bath for cleaning. Do not autoclave or sterilize pMEAs by heat.

These MEA types are not thermoresistant, and will be irreversibly damaged. Rinse with distilled water for cleaning and with alcohol for sterilization.

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MEA Cleaning Quick Guide

Storage and Hydrophilic Treatment of Micro Electrode Arrays

Cleaning of the MEA Contact Pads

Dirt on the contact pads of the MEA or on the pins of the MEA amplifier lead to bad contact and electrical noise. Pins and contact pads can be cleaned by wiping them with ethanol or isopropanol.

Storing the MEA

It is recommended to store a MEA in distilled water in the fridge. After use, remove biological material with water. A MEA should be stored in this condition and completely cleaned (see above) immediately before the next use. Change the water the MEA is stored in at least once a month.

Hydrophilic Surface Treatment

The surface of a new MEA is hydrophobic and even hydrophilic MEAs tent to become hydrophobic again during storage. A hydrophobic surface prevents attachement and growth of the hydrophilic cells.

Plasma Cleaning

Laboratories with access to electron microscopy facilities are likely to have a sputter device or a plasma cleaner (for example PDC-32G from Harrick Plasma, Ithaca NY United States, or Plasma Flecto30 from Plasma Tecnology, Germany).

The MEA surface is exposed to a gas plasma discharge, which makes the surface polar and thus more hydrophilic. This treatment gives a very clean and sterile surface that can be coated readily with water soluble molecules. Note that the effect wears off after a few days.

Parameters for the Plasma Cleaner: MEAs can be treated with low-vacuum plasma for 1 or 2 minutes at 0.2 mbar and 50 to 100 W. Additional apply of atmospheric air or Oxygen is recommended.

Protein Coating

If plasma cleaning is not available and protein coating is acceptable in the planned experiment, there is another way to render the surface hydrophilic. Clean and sterilize the MEA as described above. Place approximately 1 ml of a concentrated, sterile protein solution, for example albumin, fetal calf serum or similar onto the culture region for about 30 min. Wash the culture chamber thoroughly with distilled water afterwards. The MEA can now be directly used for the cell culture.

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