

Electronic Supplementary Information

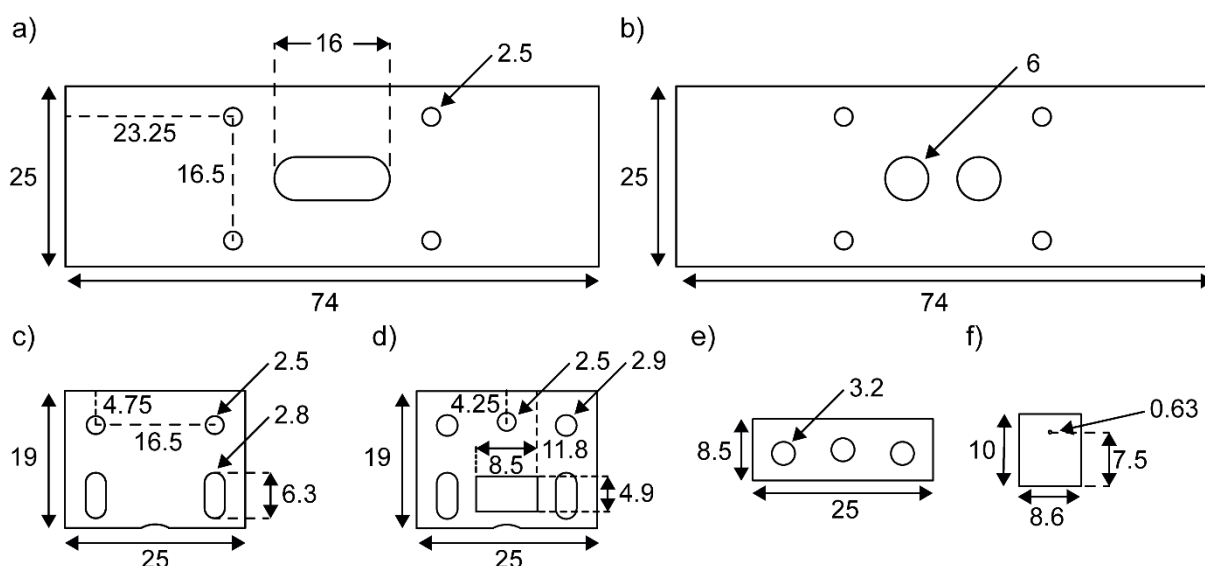
A handheld laser-cut device for the size-controlled assembly and electrical characterisation of lipid bilayers

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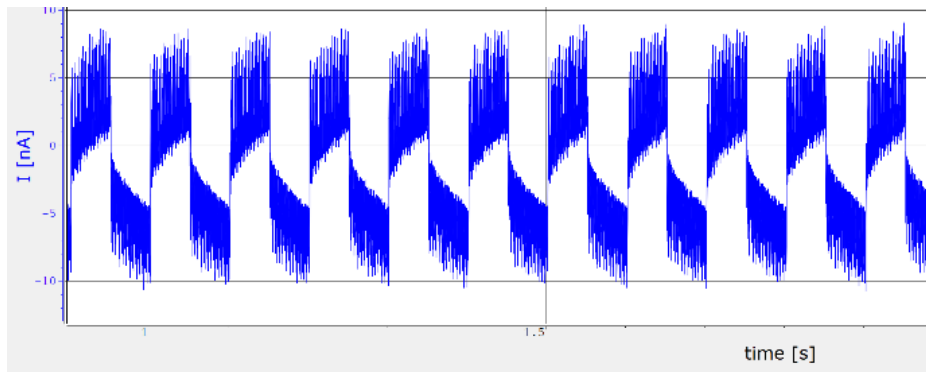
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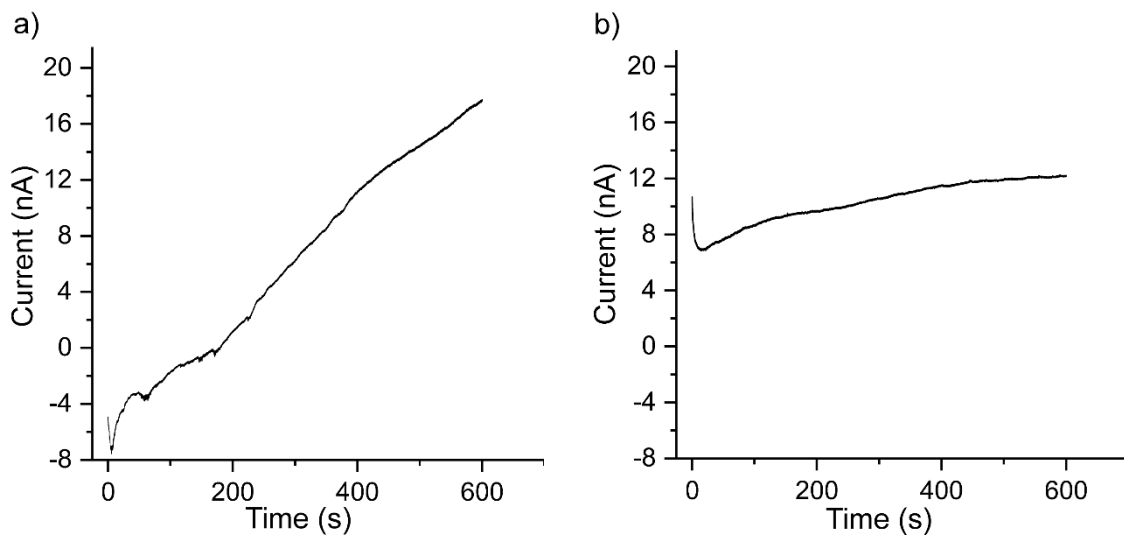


Supplementary Fig 1. Technical drawings. a) Single-channel bottom layer for containing the aqueous phase. b) Double well layer for separating the ground electrode. c) Tray for positioning the assembly in the X-axis. d) Tray for positioning the assembly in the Z-axis. e) Bracket for positioning screws for raising and lowering the electrode. f) Electrode holder. All dimensions are in mm and all parts were cut from 5 mm thick acrylic.

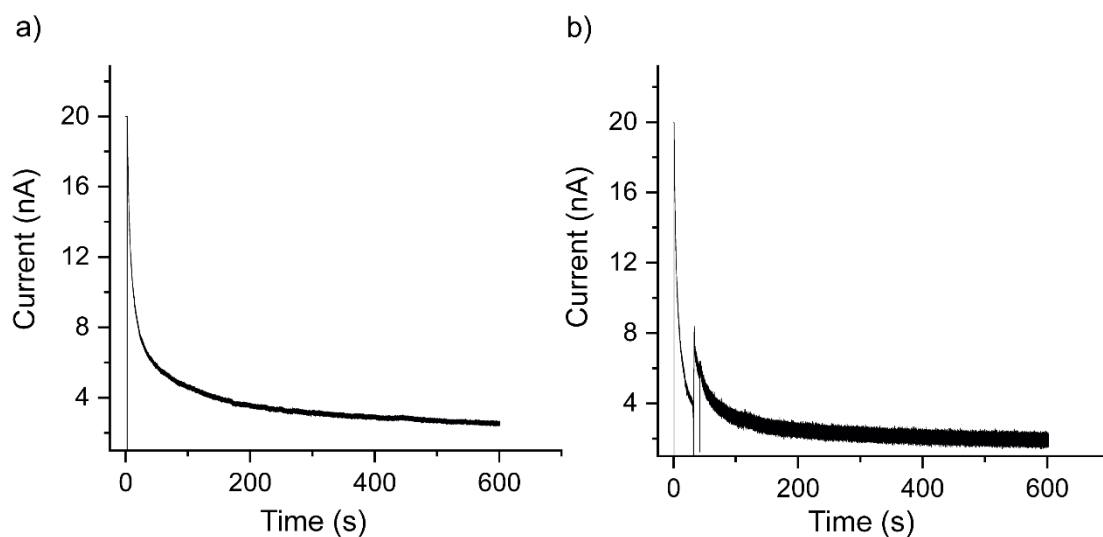
Preparation of lipid-oil solution: Lipid films were prepared by weighing DOPC in a glass vial, dissolving in chloroform and evaporating under a stream of N_2 . The resulting lipid film was transferred to a desiccator for a minimum of 1h before being dissolved in hexadecane. To assist with fully dissolving the lipids, the glass vial was capped, wrapped in parafilm, and transferred to a sonicator where it was sonicated at full power for 20 minutes.



Supplementary Fig 2. Bilayer capacitance of agar coated electrode. Representative measurement of control experiments of Ag/AgCl electrodes manually dip coated in 5% agar solution (n=3). Agar coated electrodes yielded larger bilayers compared to naked Ag/AgCl electrodes.



Supplementary Fig 3. Bilayer functionalisation with nanopores. a) - b) Repeat experiments as referred to in the main text. The traces show how the bilayer current increases in the presence of α HL nanopores.



Supplementary Fig 4. Bilayer current measurements in the presence of nanopores and the blocker TRIMEB. a) - b) Repeat experiments as referred to in the main text. The traces show how the increase in bilayer current is reversed in the presence of TRIMEB and α HL nanopores.



Supplementary Fig 5. Micrograph of Ag/AgCl electrode. The image shows a chamfer on the tip of the electrode which may have impacted the size of lipid bilayers formed. Scale bar = 500 μ m.