

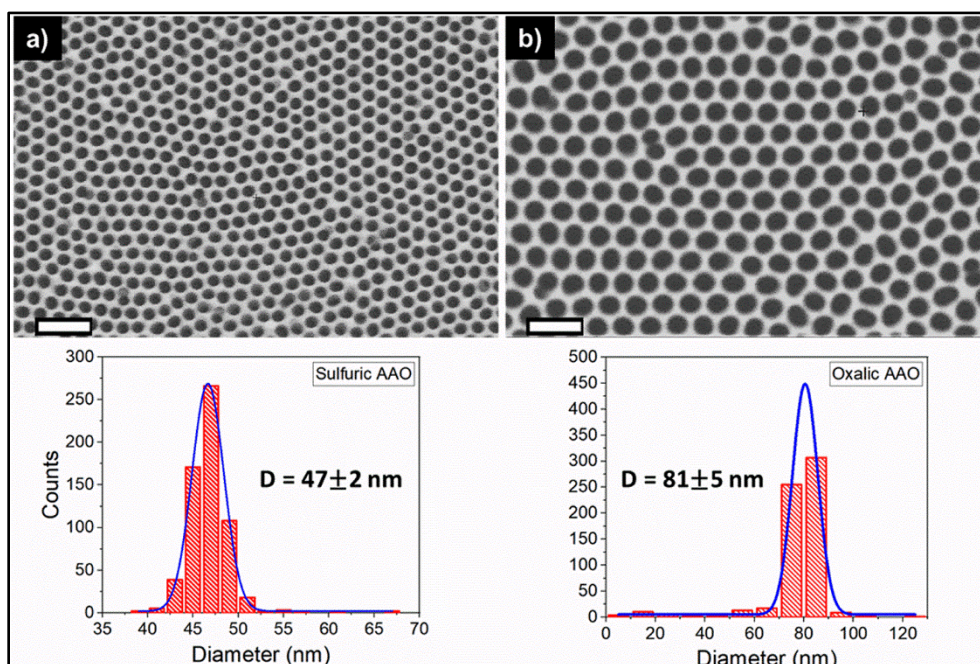
**Supporting Information**

**Towards three-dimensional nanoarchitectures: Highly ordered bi-layer assembly of tailored magnetic nanowire arrays via template-assisted electrodeposition**

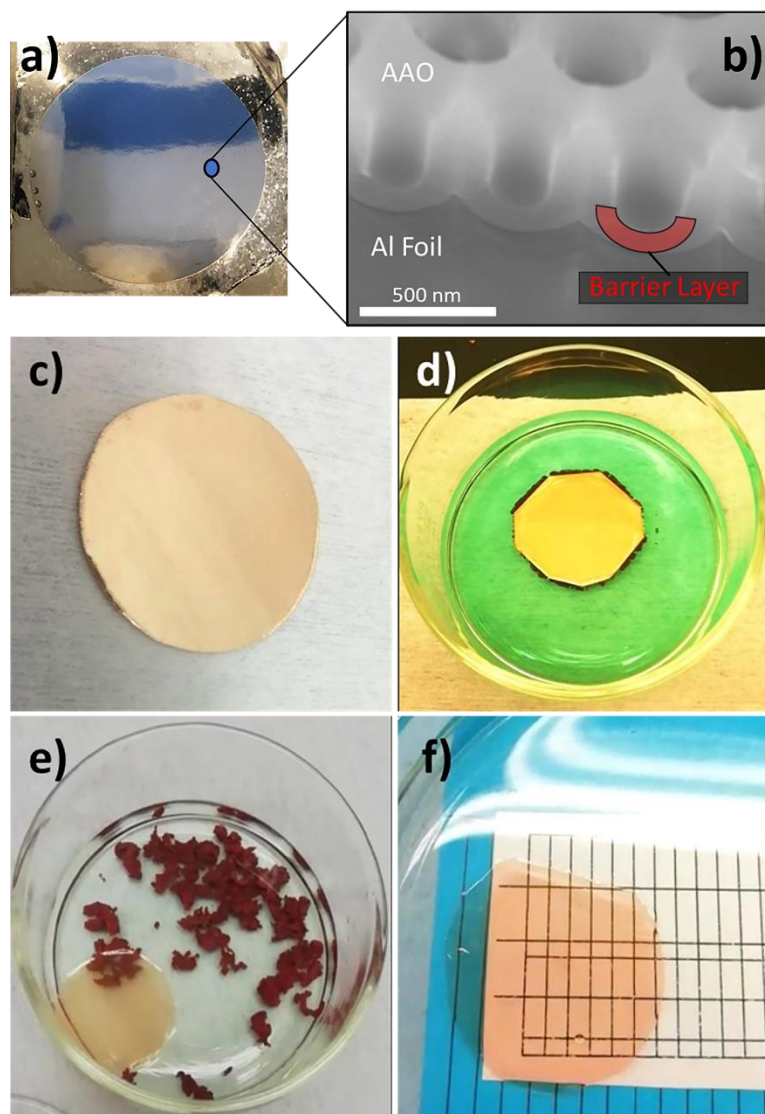
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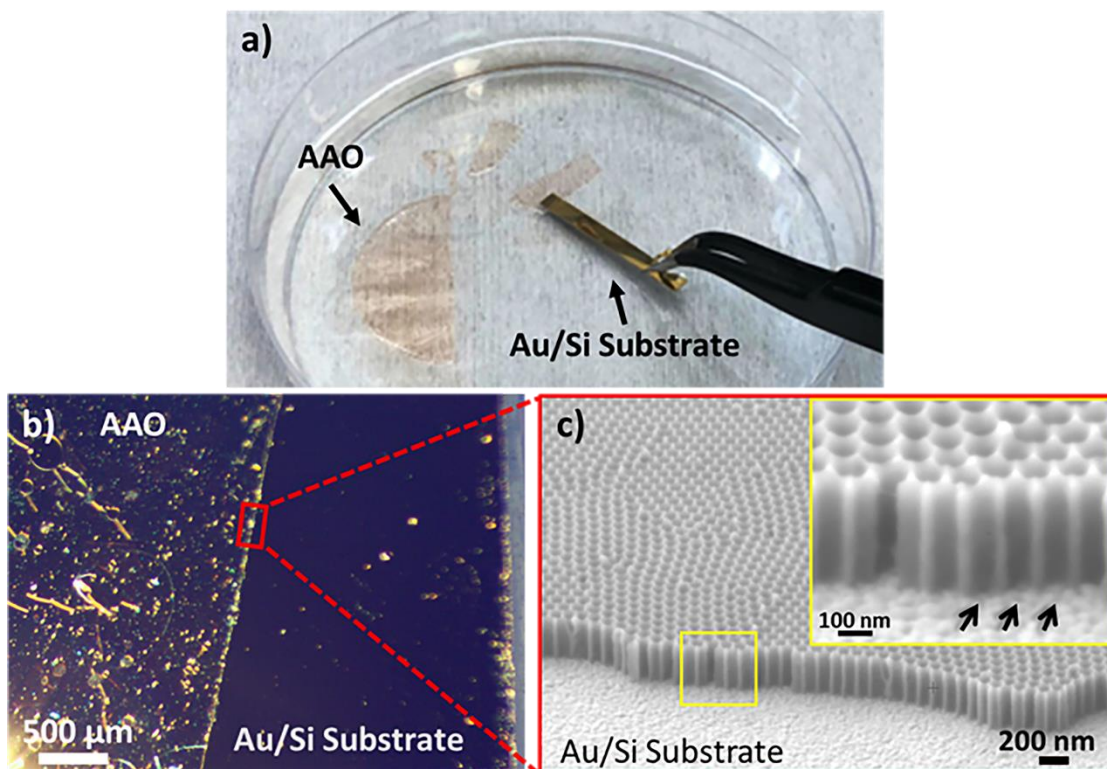
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**Figure S1.** SEM images of porous AAO anodized in a) 0.3 M Sulfuric acid at 25 V and b) 0.3 M Oxalic acid at 40 V. The size distribution of pore diameters is represented in histograms c) and d) for AAO anodized in Sulfuric and Oxalic electrolyte, respectively. The blue line represents the result of Gaussian fitting. Scale bars are 200 nm.



**Figure S2.** Process to remove the native Al foil and the AAO barrier layer. a) Optical image of Al foil showing the region where 2<sup>nd</sup> anodization took place characterized by a blue color. b) SEM image of (a) demonstrating the barrier layer of the AAO membrane embedded in the Al foil. c) AAO/Al foil after S1813/PMMA coating process. d) Etching of native Al in CuCl-HCl acid. e) Residual of Cu after Al has been successfully etched. f) AAO (after subsequent etching of barrier layer in 0.5M phosphoric solution) ready for transfer.



**Figure S3.** a) Transfer process demonstrating the AAO membrane floating on water (pink color is characteristic of polymers embedded within the nanopores), while the Au/Si substrate is manipulated underneath to position the AAO on the surface. b) Optical image of finalized transfer process after removing the S1813/PMMA polymers. c) SEM image of (b) where the transferred AAO membrane can be observed. The inset demonstrates a great adhesion at the AAO/Au interface and the successful etching of the barrier layer to create open nanochannels for chronoamperometric depositions.