Supporting Information for

High Precision Fabrication and Positioning of Nanoelectrodes in a Nanopore

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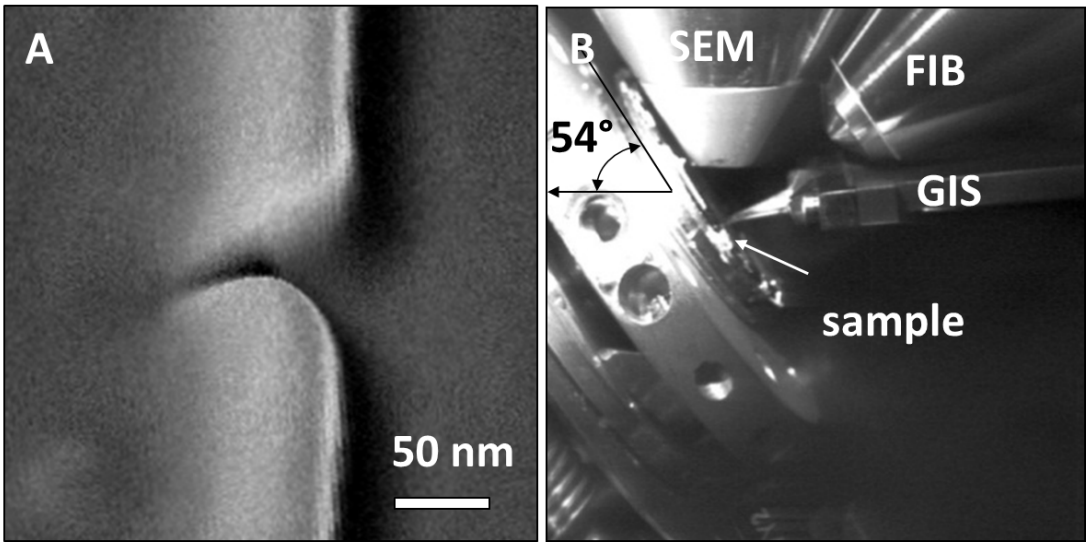

Figure S1 [A] 3D reconstruction image of nanogap/nanopore from SEM data. The lateral broadening effect is clearly visible along the electrode and close to nanopore. Tilting the sample with respect to the electron beam during EBID resulted in a decrease of the electrode width close to the nanopore visible in and in a decrease of the electrode height and gap distance close to the surface visible in [B] Image of the sample orientation with respect to the electron beam in the CrossBeam 1540XB.

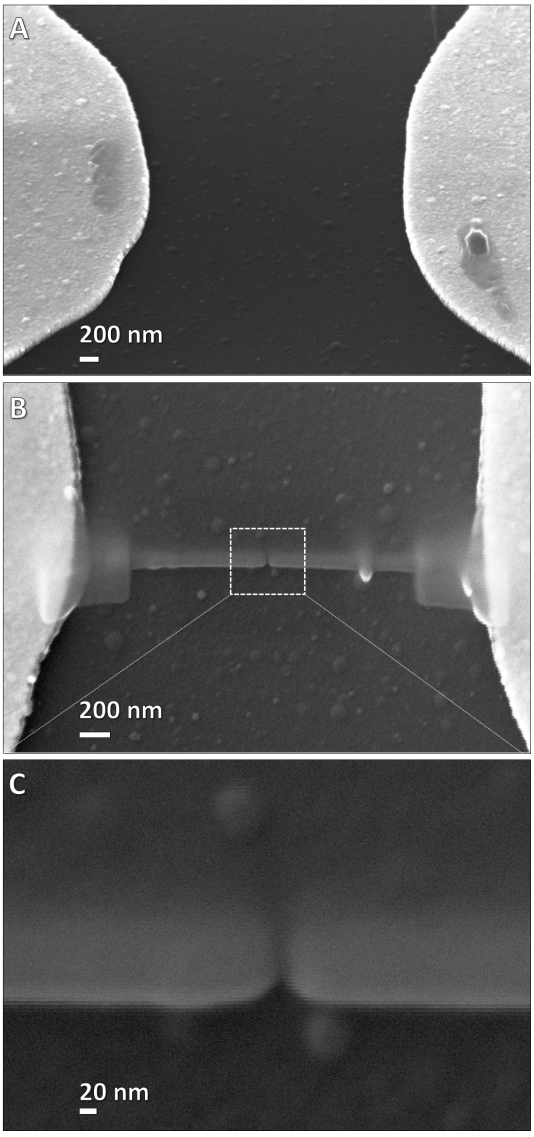

Figure S2: SEM images of SiNx/Si/SiNx chips with Au microeletrodes (*type 1*) [A] before and [B] after the deposition of pair of Pt nanoelectrodes by EBID. Additional Pt contact pads were deposited to improve electrical connection to the Au microelectrodes. [C] Magnified SEM image showing the nanogap

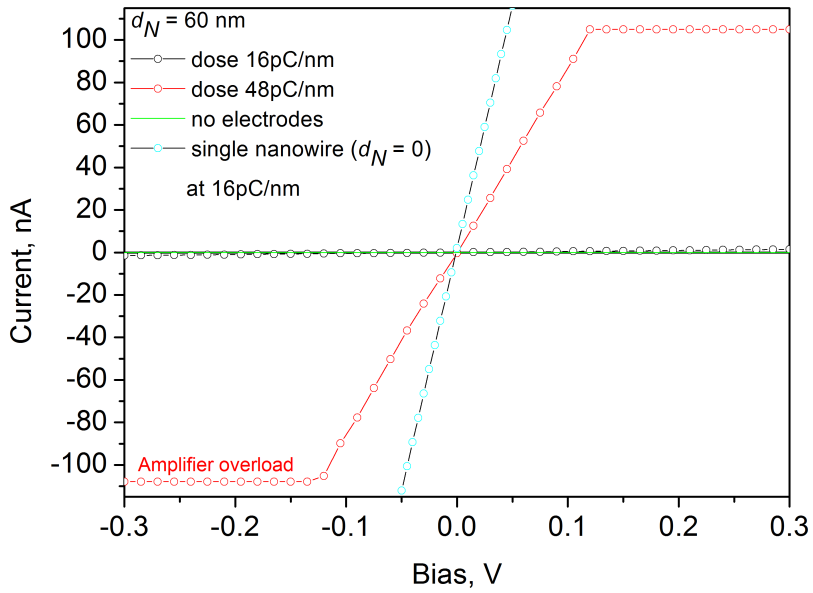

Figure S3: Higher dose times resulted in higher deposition of material in the gaps. Increasing the linear dose from 16 pC/nm to 48 pC/nm, resulted in nearly 200 fold increase in the gap conductance (from 4.6 nS to 860.5 nS) and overloading of our amplifiers as shown in the figure. This is additional confirmation that the electron transport was dominated by the gap. For single nanowire bridging both Au microelectrodes (d_N=0) at dose of 16pC/nm the gap conductance was 2281.9 nS

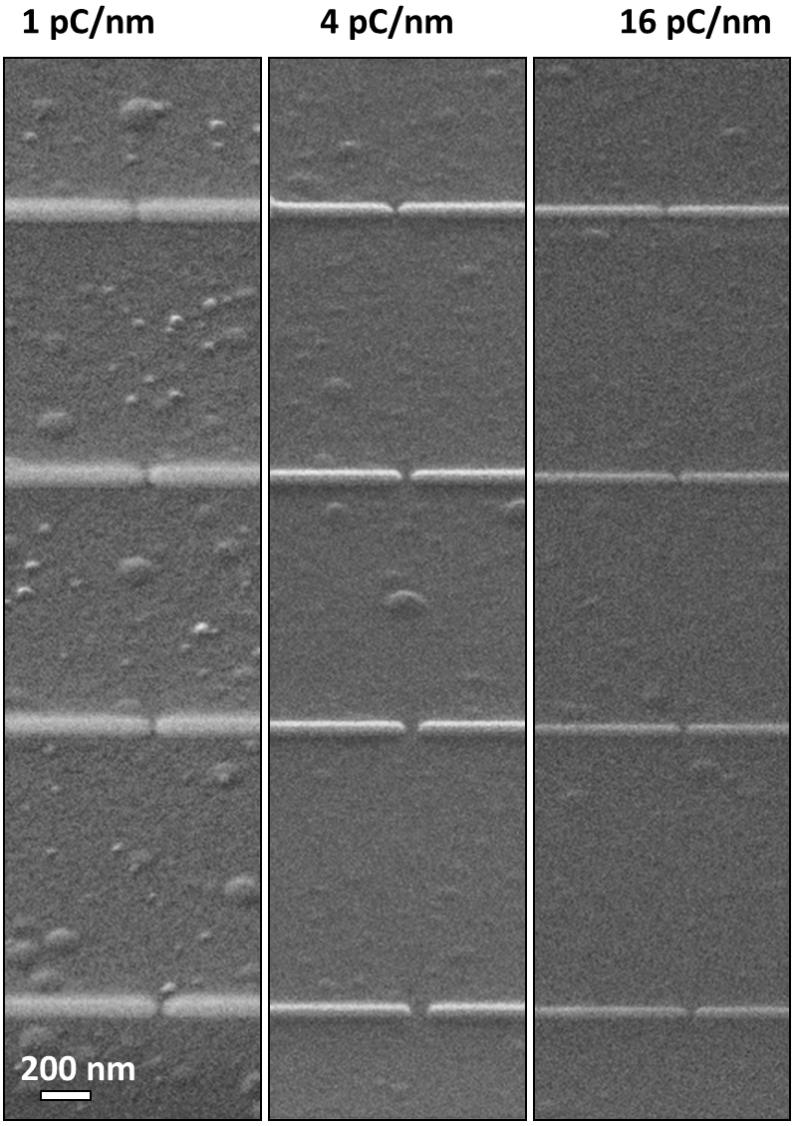

Figure S4: SEM images of three different 4-electrodes arrays with tunable gap distances. The arrays were fabricated with linear doses of 1, 4 and 16pC/nm, respectively on SiNx/Si/SiNx chips with Au microeletrodes.

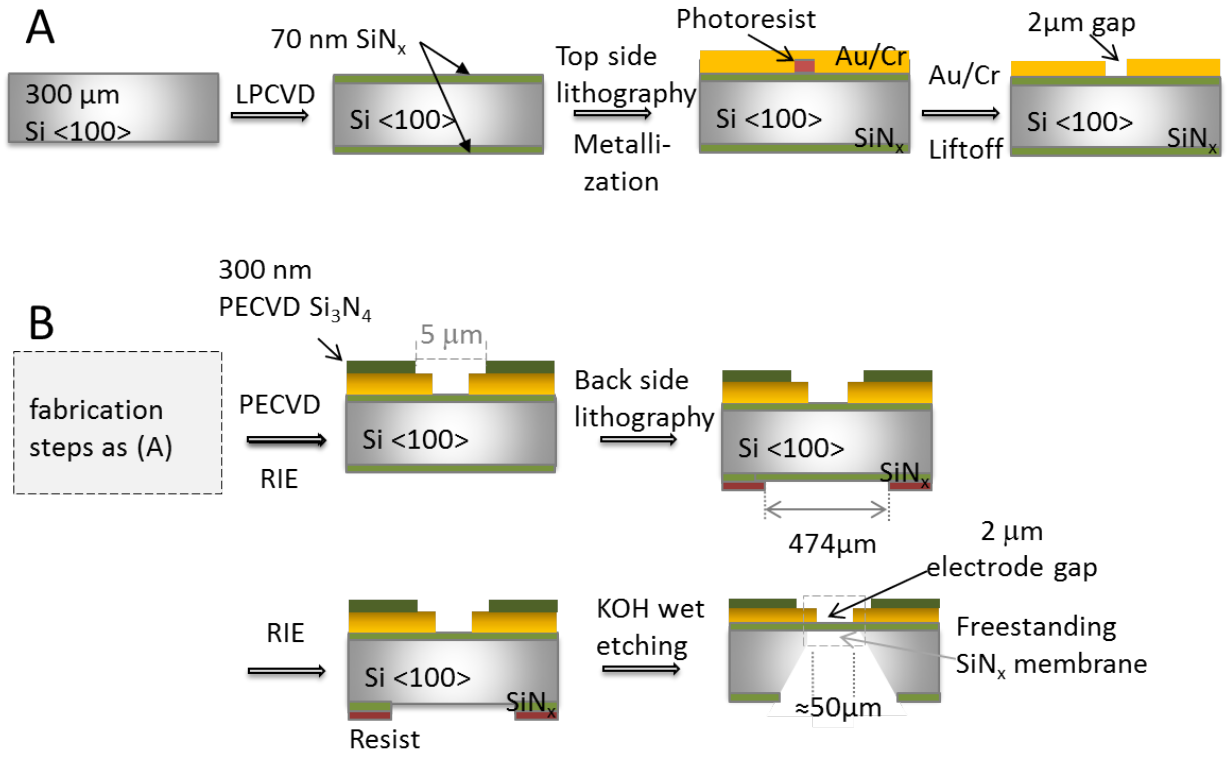

Figure S5: Chip fabrication on a wafer scale. [A] fabrication steps for SiNx/Si/SiNx chips with Au microeletrodes and [B] fabrication steps for $SiN_x/Si/SiN_x$ devices with 70 nm SiNx freestanding membrane