

# Dopamine and Striatal Neuron Firing Respond to Frequency-Dependent DBS Detected by Microelectrode Arrays in the Rat Model of Parkinson's Disease

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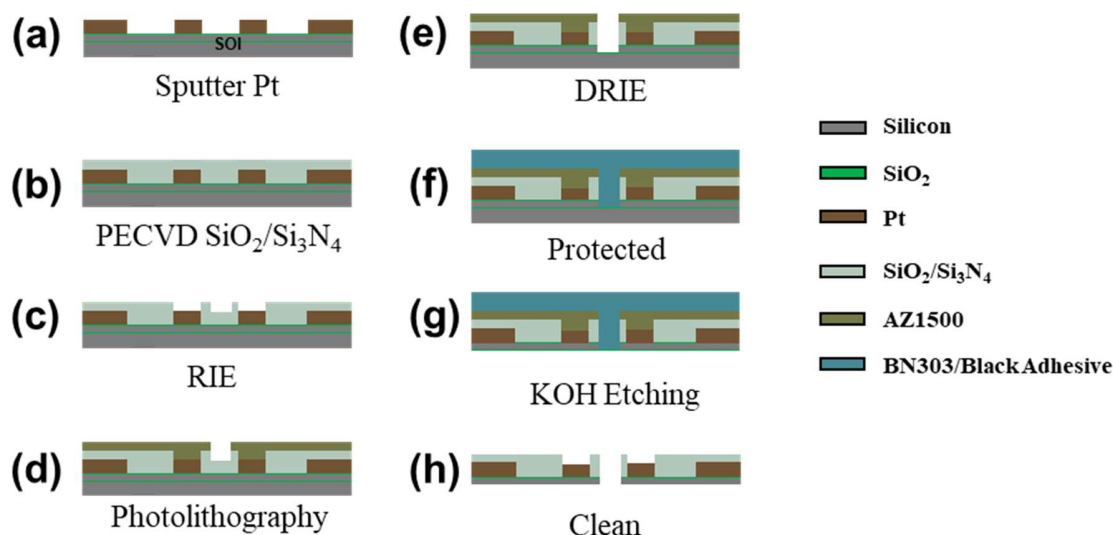
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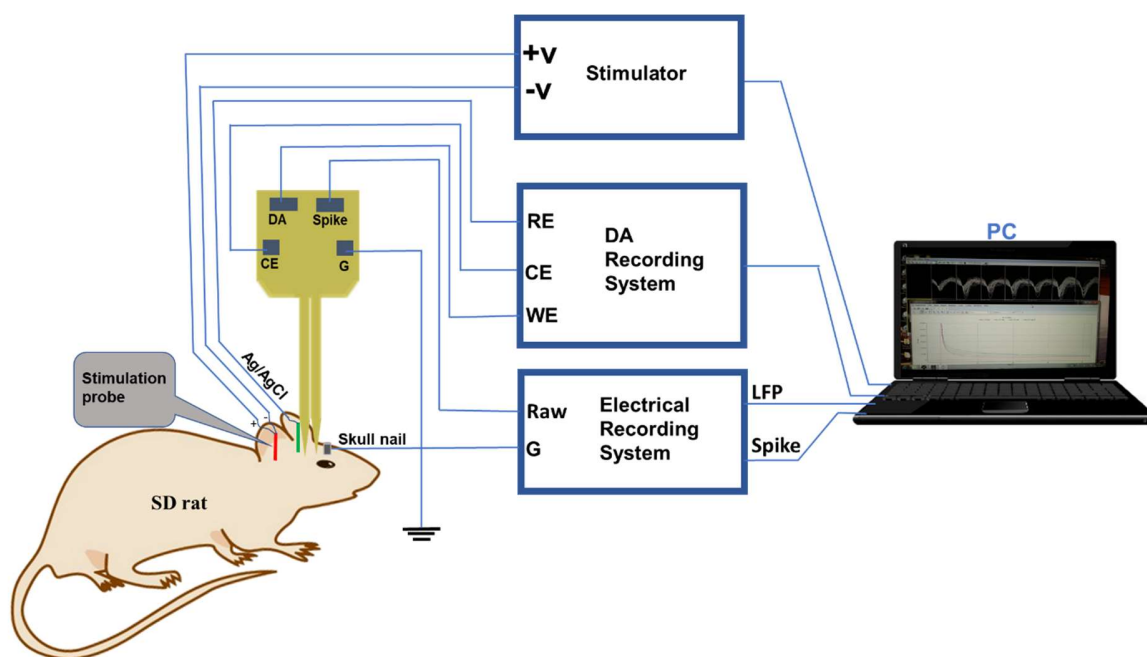
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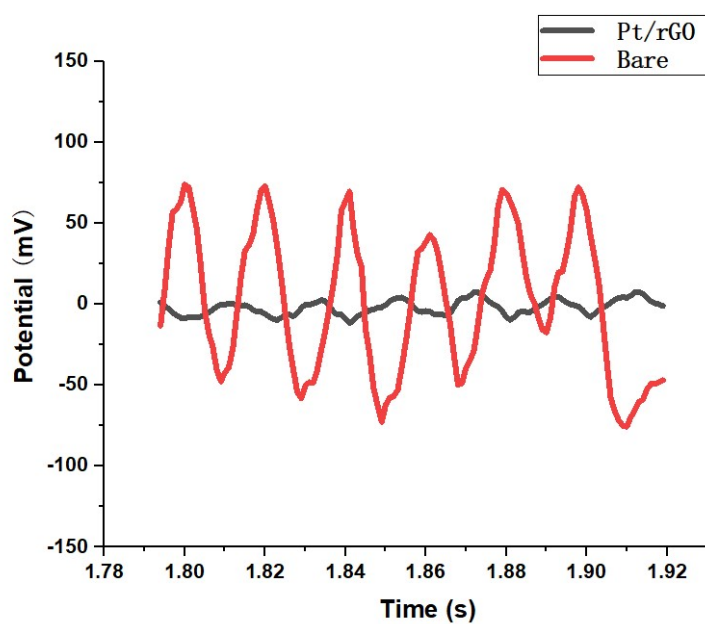
## 1 Supplementary Figures



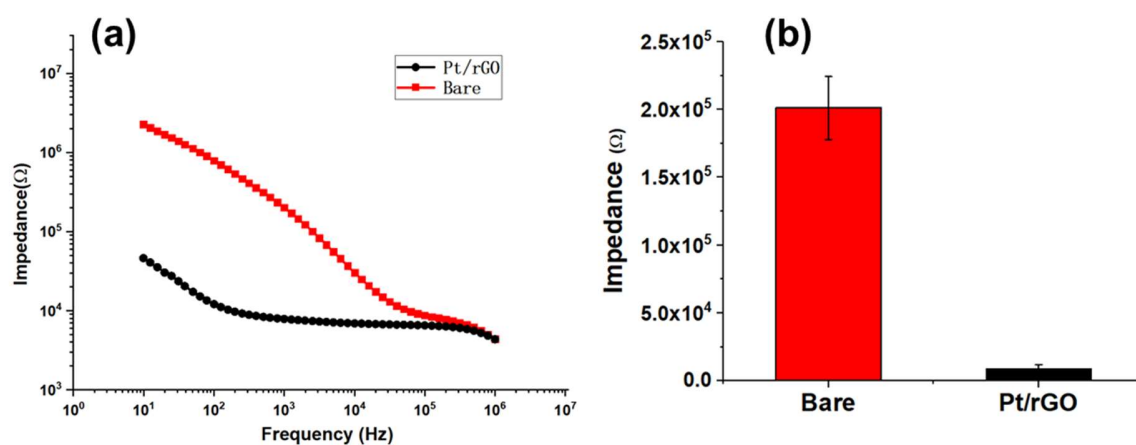
**Figure S1** The fabrication process of MEA. (a) Ti/Pt were sputtered onto the SOI wafer following lift-off. (b) SiO<sub>2</sub>/Si<sub>3</sub>N<sub>4</sub> were deposited using PECVD. (c) The sensitive electrodes were opened by RIE. (d) Photoresist used as mask for individual MEA separation. (e) Frontal silicon was etched by DRIE. (f) BN303 and black adhesive was spin-coated to protect the frontal pattern. (g) The back silicon was etched by KOH. (h) The individual MEA was released from wafer and cleaned by acetone.



**Figure S2.** The schematic diagram of detection system including DA recording and electrical recording under stimulation. MEA(yellow), stimulation probe (red), Ag/AgCl reference electrode (green), and skull nail (grey) are implanted in the specific areas as described in the manuscript.



**Figure S3.** Background noise comparison before and after modification of Pt/rGO.



**Figure S4.** Impedance comparison before and after modification of Pt/rGO. (a) Bode plot (impedance-frequency plot) comparison of  $|Z|$  values between bare and Pt/rGO electrode. (b) The mean impedance comparison at 1 kHz between bare and Pt/rGO electrode.