

Supporting information

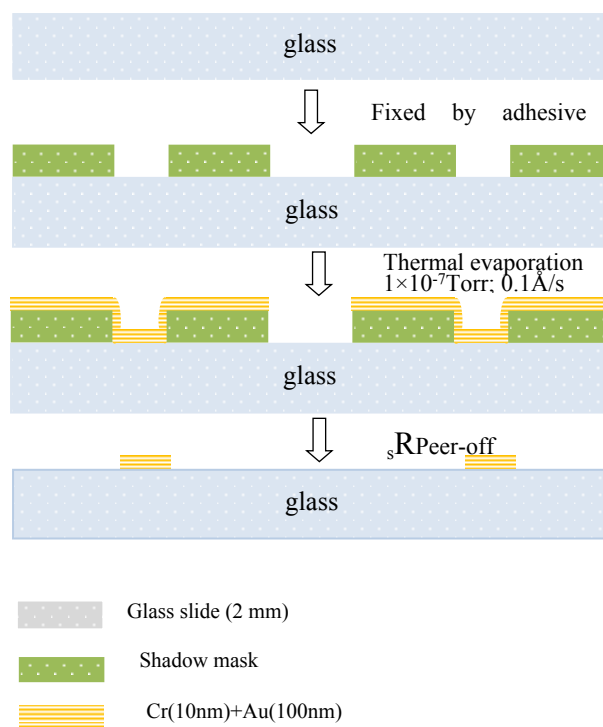


Figure S1 Process flow for source-drain electrode fabrication

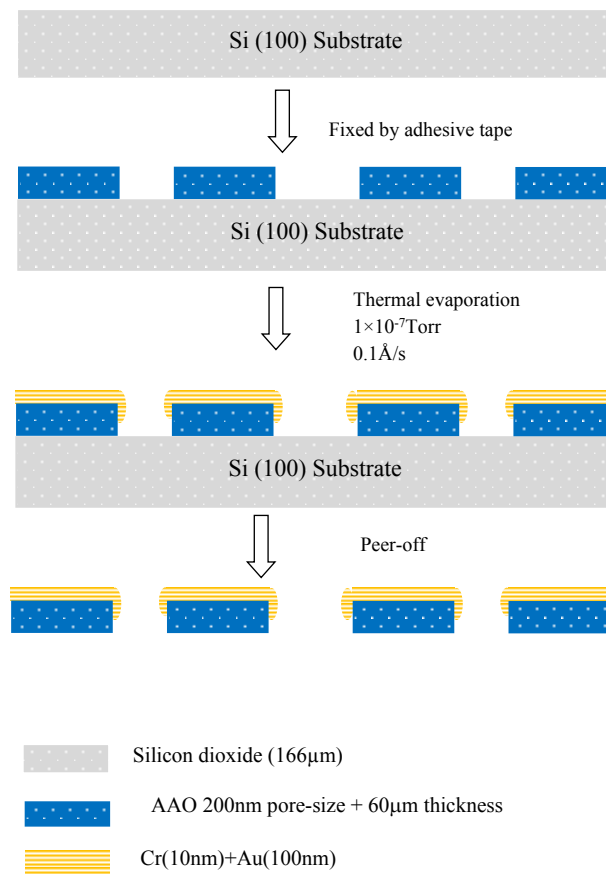


Figure S2 Process flow for nanoporous gold gate electrode fabrication

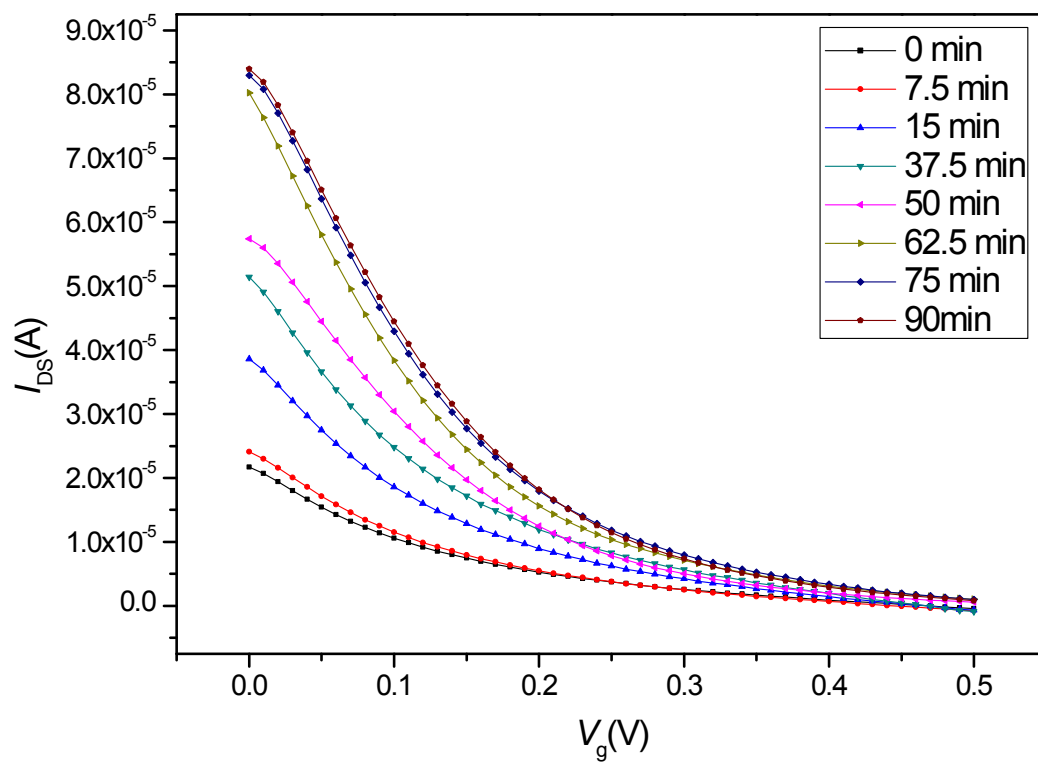


Figure S3 Transfer characteristic curves of OEET based on nanoporous gold gate electrode in 10 mM PBS containing 50 nM C-DNA target with different hybridization time. $V_{DS} = -0.1$ V.

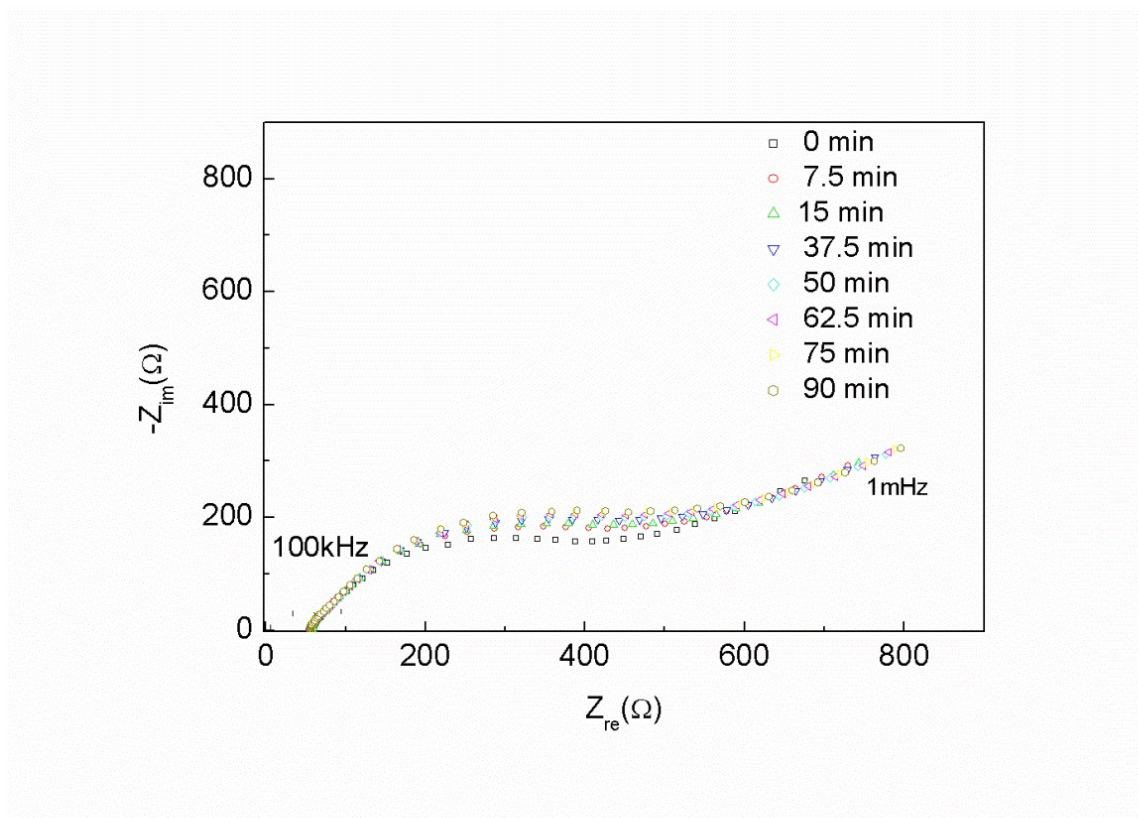


Figure S4 Nyquist plots of PNA/DNA hybridization process on nanoporous gold electrode in the presence of 10 nM C-DNA target with different hybridization time. Buffer: 10 mM PBS. Redox probe: 1 mM $\text{Fe}(\text{CN})_6^{3-/4-}$.

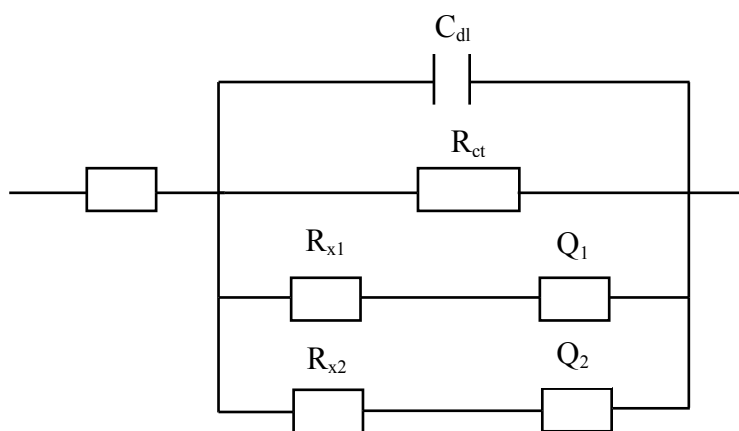


Figure S5 Equivalent circuit model for nanoporous gold electrode. R_s , solution resistance; C_{dl} , the double layer capacitance; R_{x1} , the resistance through PNA or PNA/DNA film; R_{x2} , the pinhole/defect resistance of nanoporous gold electrode; Q_1 and Q_2 are constant phase elements.