

Fabrication of PEDOT:PSS-based Solution gated Organic Electrochemical Transistor Array for Cancer Cells Detection

Qingyuan Song,^a Weiyi Wang,^a Jinjin Liang,^a Chaohui Chen,^a Yiping Cao,^a Bo Cai,^b
Bolei Chen^b and Rongxiang He ^{*a}

^aInstitute of Interdisciplinary Research & Key Laboratory of Optoelectronic Chemical Materials and Devices of Ministry of Education, School of Photoelectric Materials and Technology, Jiangnan University, Wuhan 430056, China.

^bHubei Key Laboratory of Environmental and Health Effects of Persistent Toxic Substances, School of Environment and Health, Jiangnan University, Wuhan 430056, China.

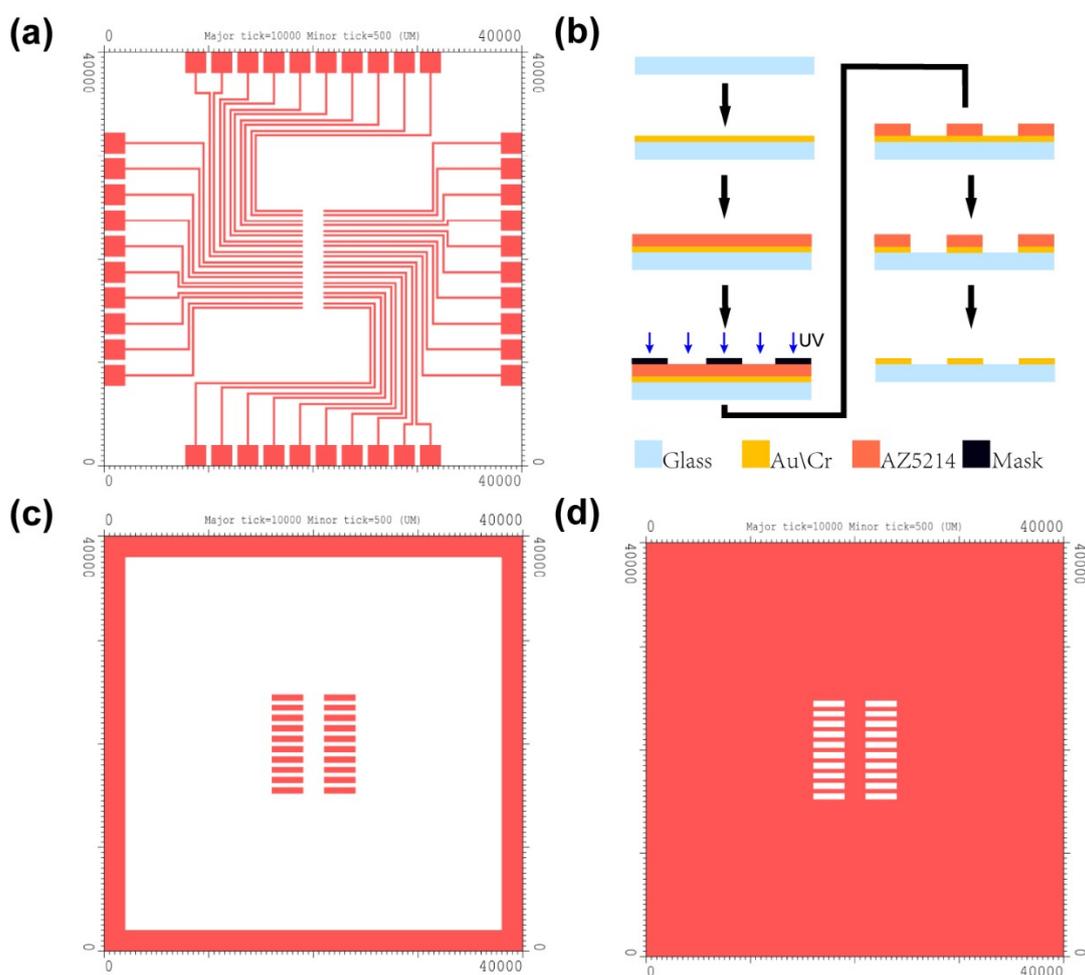


Fig.S1 (a) The photomask #1 of Au electrodes. (b)The process of Au electrodes fabrication using photolithography. (c) The photomask #2 of SU8 photoresist insulation layer. (d) The photomask #3 of PEDOT:PSS conductive film.

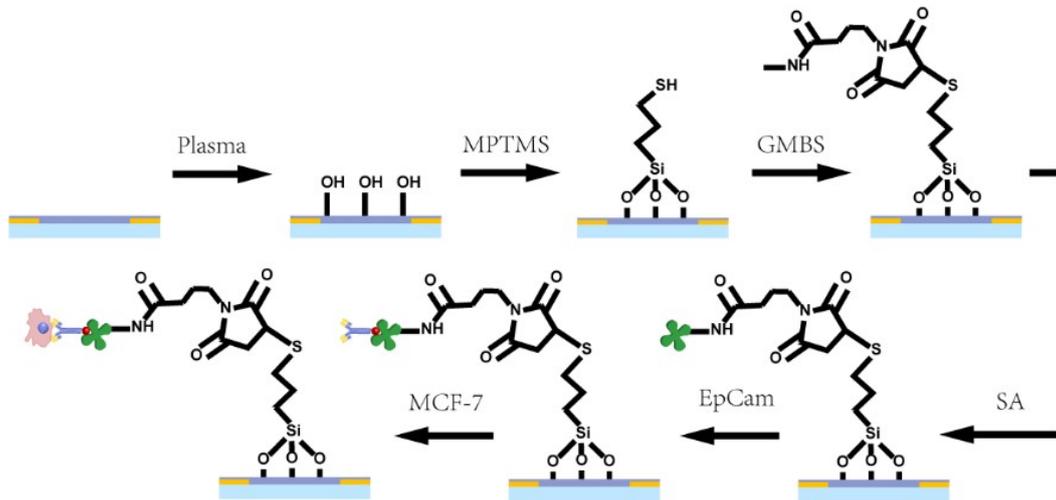


Fig. S2 Schematic diagram of the specific anti-EpCAM antibody modification on the PEDOT:PSS surface.

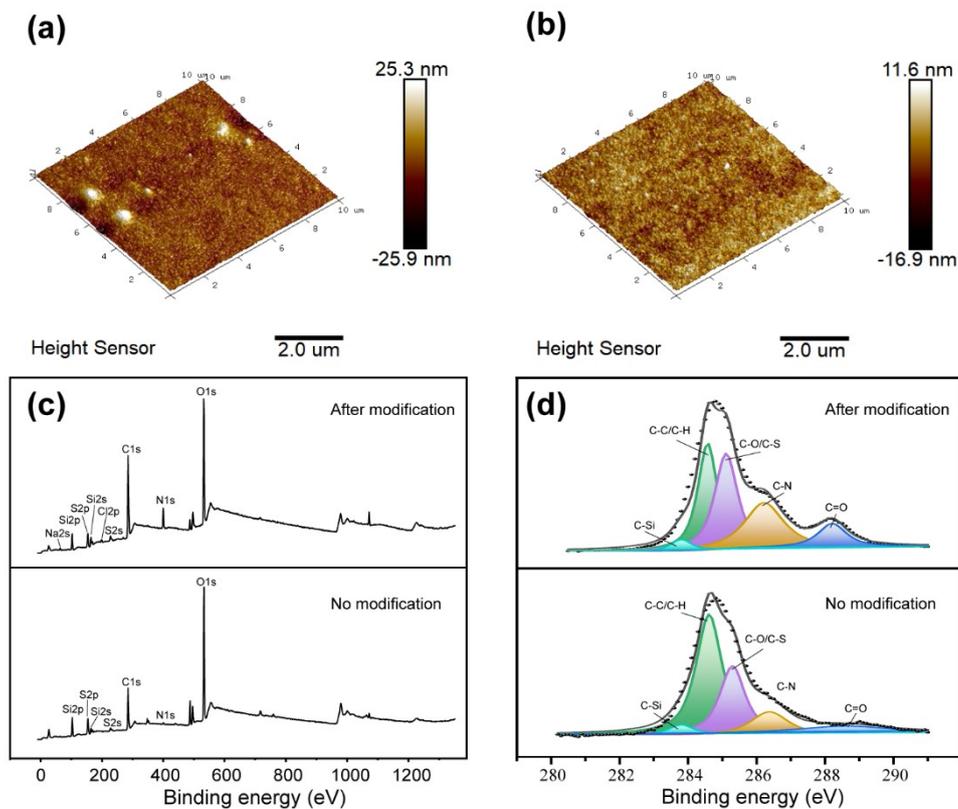


Fig. S3 (a) and (b) 3D AFM images of PEDOT:PSS film before and after antibody modification, respectively. (c) Survey scan and (d) C1s XPS characterization of the

PEDOT:PSS film before and after antibody modification.

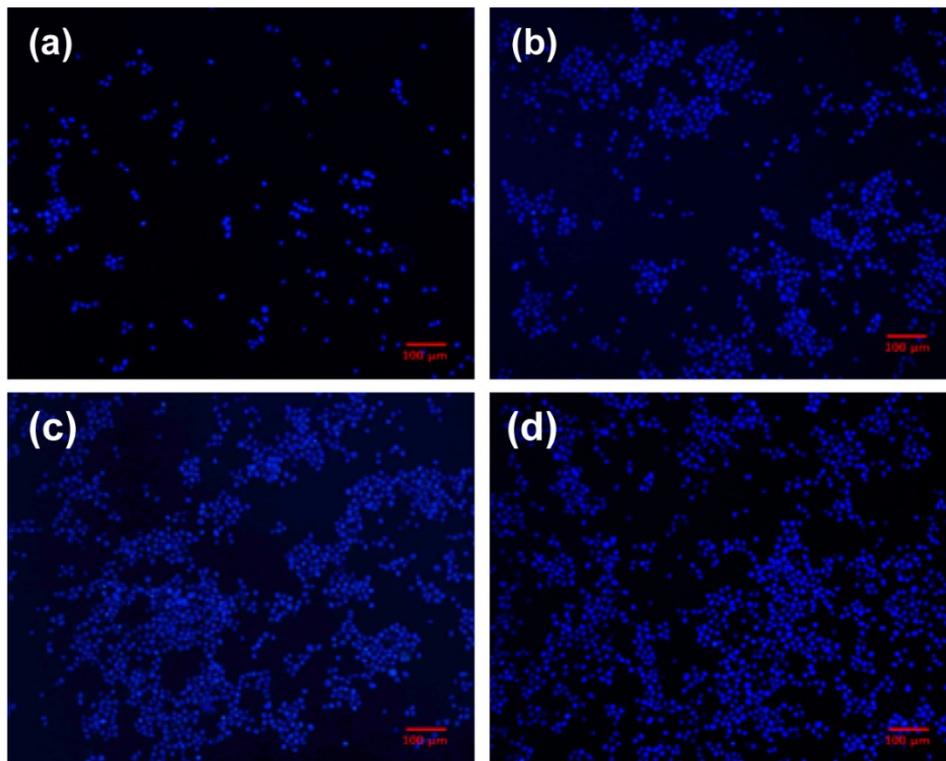


Fig. S4 Fluorescence images of MCF-7 cancer cells captured on the PEDOT:PSS film treated with oxygen plasma at different time: (a) 30 s, (b) 60 s, (c) 90 s and (d) 120 s. Cancer cells were stained by Hoechst 33342. Scale bars are all 100 μm .

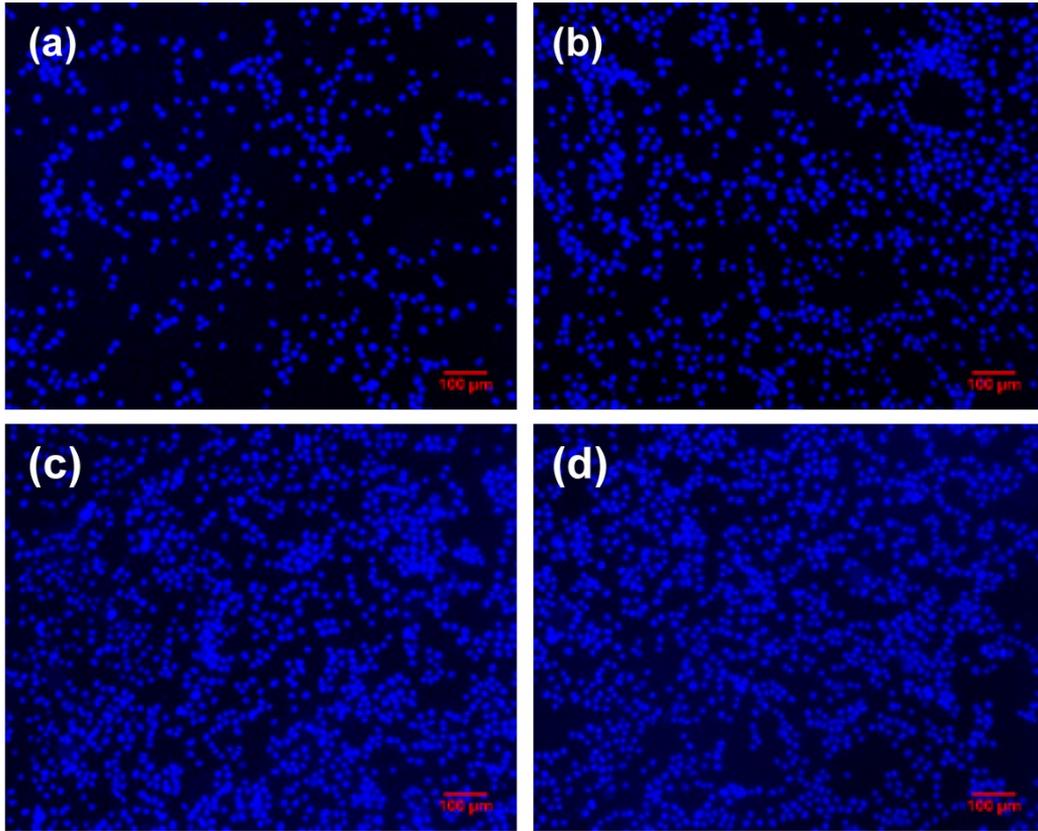


Fig. S5 Fluorescence images of MCF-7 cancer cells captured on the PEDOT:PSS film at different time: (a) 30 min, (b) 45 min, (c) 60 min and (d) 120 min. Cancer cells were stained by Hoechst 33342. Scale bars are all 100 μm .

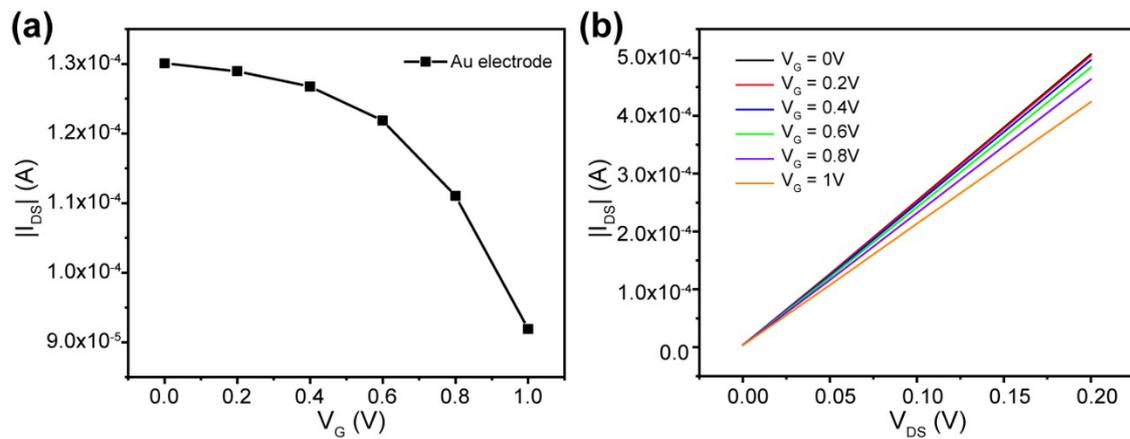


Fig. S6 Input and output characteristics of an OEET when Au electrode was used as the gate electrode.

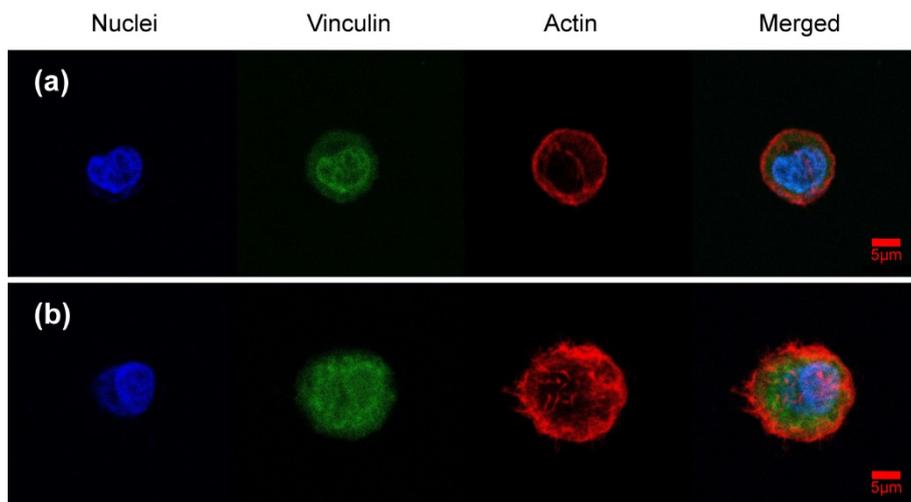


Fig. S7 (a) and (b) LSCM images of MCF-7 cancer cell morphology on the anti-EpCAM antibody modified PDOT:PSS surface after captured for 60 min and 120 min, respectively.

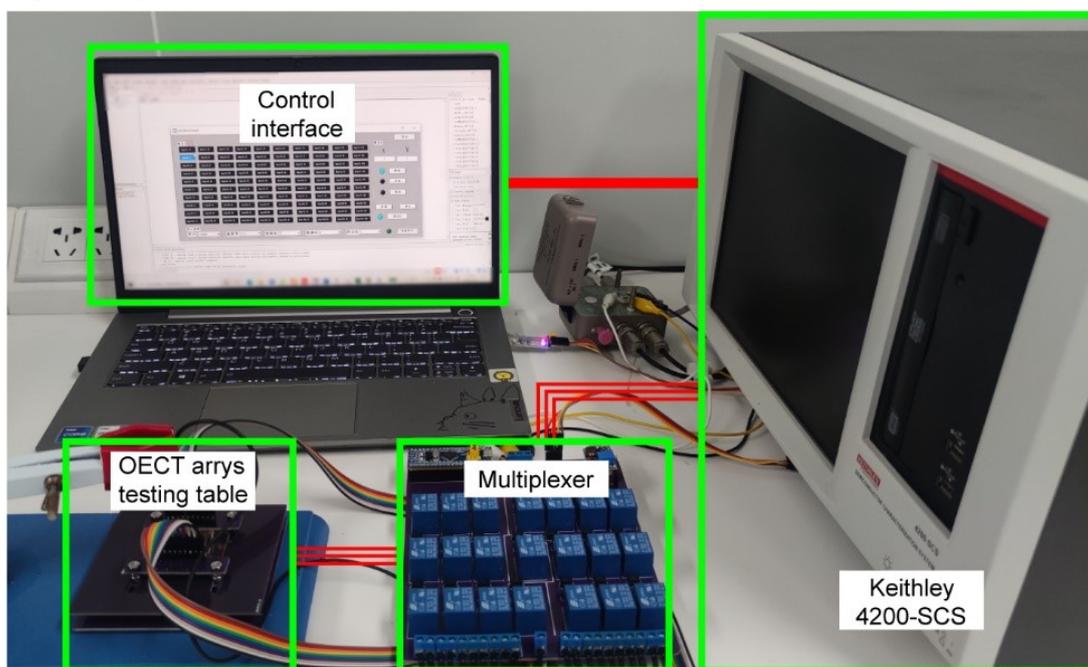


Fig. S8 Schematic diagram of the OECT array characterization test platform.

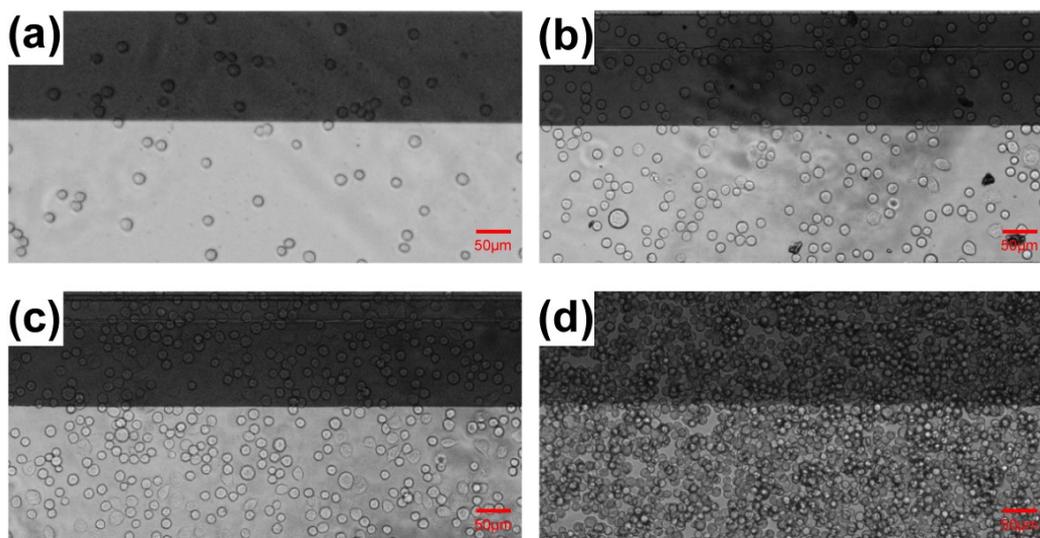


Fig. S9 Optical images of cancer cells captured on the PEDOT:PSS surface at different concentration: (a) 500 cells; (b) 1000 cells; (c) 2000 cells; (d) 5000 cells.