

Sea Urchin Nanostructured Nickel Cobaltite Modified Carbon Cloth integrated Wearable Patch for the on-site detection of Immunosuppressant Drug Mycophenolate Mofetil

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5 pages

2 calculations,

6 figures

Supporting Information

The average crystallite size;

$$D = \frac{0.94\lambda}{\beta \cos\theta} \quad \text{equation 1}$$

$$\lambda = 0.154 \text{ nM}$$

$$\beta \text{ (FWHM) } (\text{°}) = 0.99956$$

$$\text{Peak position } 2\theta \text{ (°)} = 36.64$$

$$D = (0.94 * 0.154) / (0.099956 * \cos(36.64/2))$$

$$D = 8.74080883 \text{ nM}$$

The limit of detection (LOD) was calculated using 3 sigma method

$$\text{LOD} = 3 * \text{SD of blank} / \text{slope of the calibration curve}$$

$$\text{SD of blank} = 0.025051 \text{ } \mu\text{A}$$

$$\text{Slope} = 0.0611$$

$$\text{SD of blank/slope of the calibration curve} = 0.41 \text{ nM}/\mu\text{A}$$

$$\text{LOD} = 1.23 \text{ nM}$$

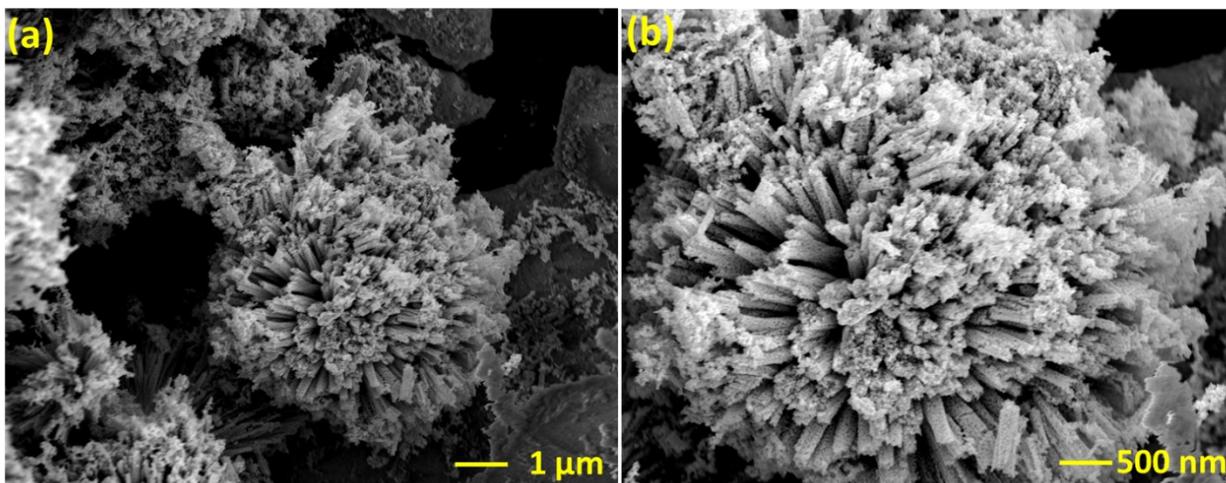


Fig. S1. SEM images of NiCo₂O₄-APTES at different magnifications.

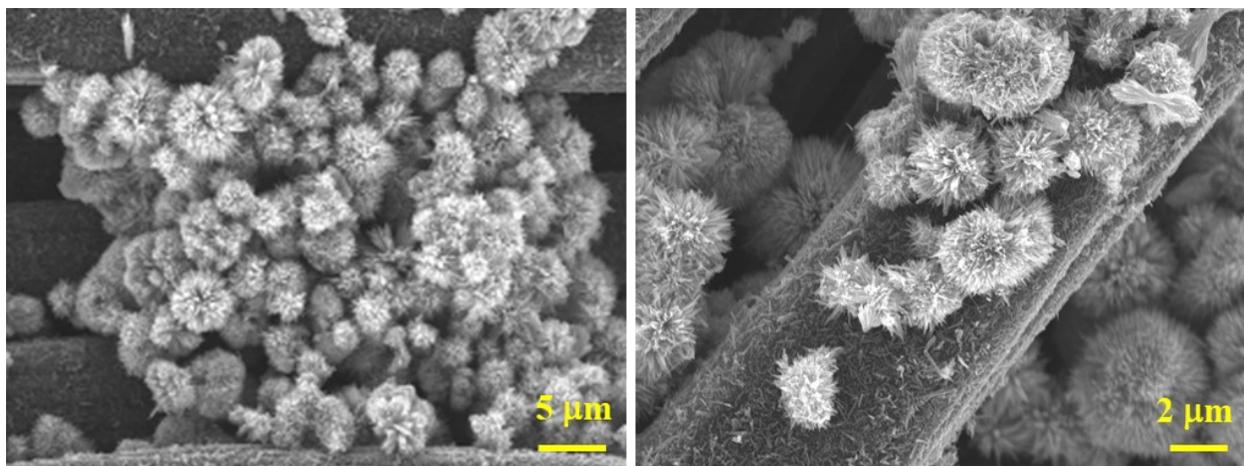


Fig. S2. SEM images of NiCo₂O₄-APTES on CC' at different magnifications.

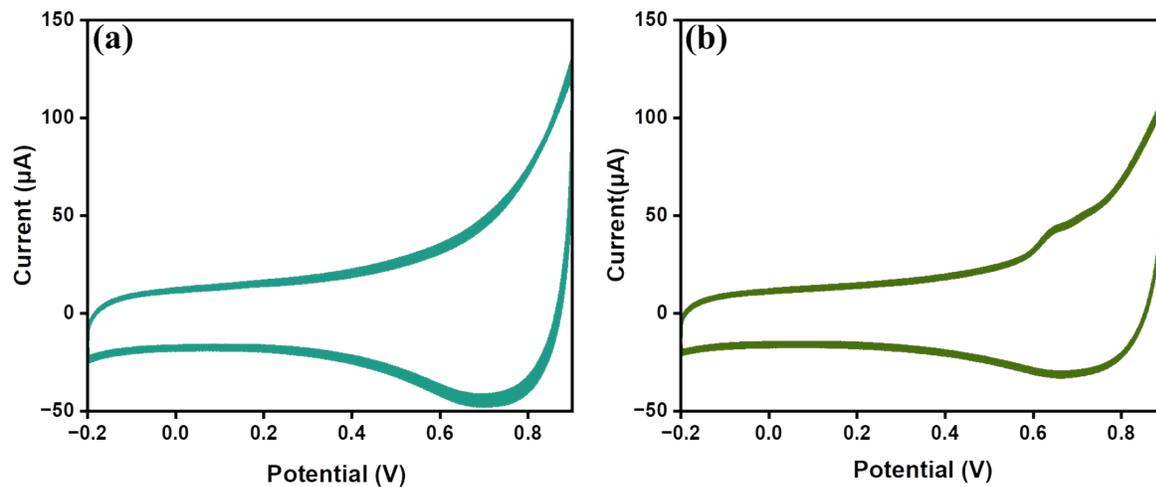


Fig. S3. (a) Cyclic stability of NiCo₂O₄-APTES in 0.1 M PBS for 10 cycles. (b) Cyclic stability of NiCo₂O₄-APTES in 0.1 M PBS containing 1 μM MpM for 10 cycles.

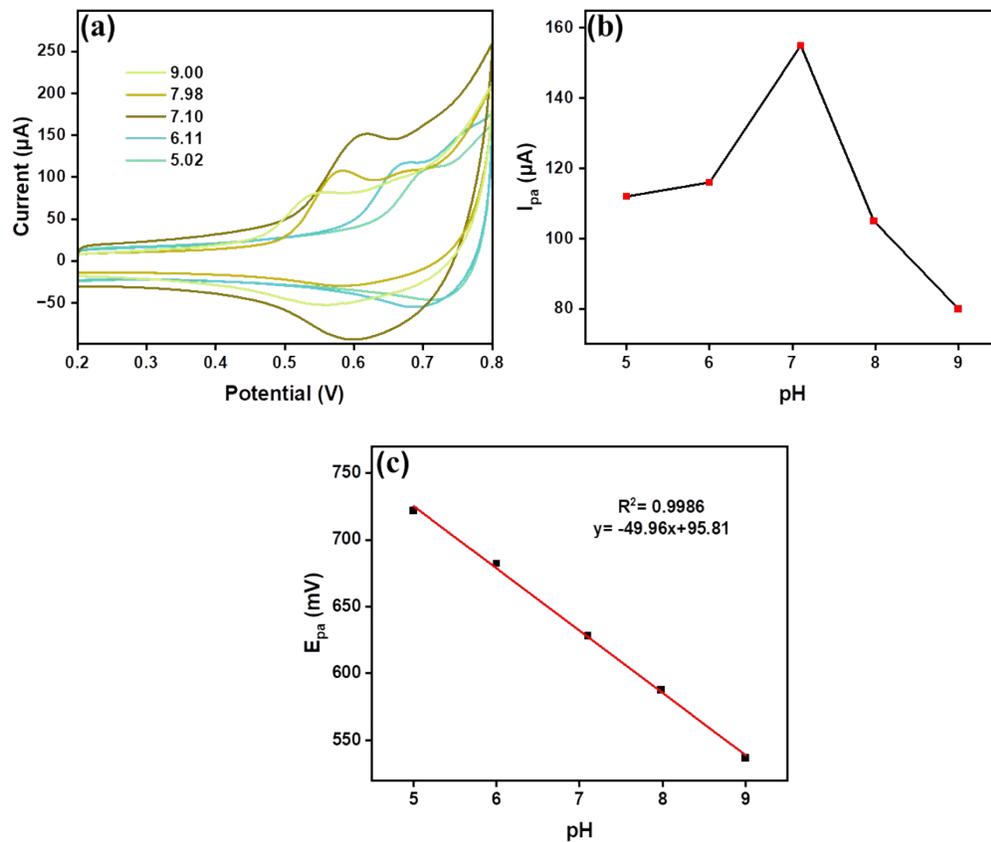


Fig. S4 (a) CV's obtained for 100 μM Mpm of varied pH (5.2, 6.5, 7.1, 8.3, 9.4) on NiCo₂O₄-APTES/CC at scan rate of 100 mVs⁻¹. (b) Relation between anodic peak current (I_{pa}) vs pH. (c) The relation between anodic peak potential (E_{pa}) and pH of the analyte solution.

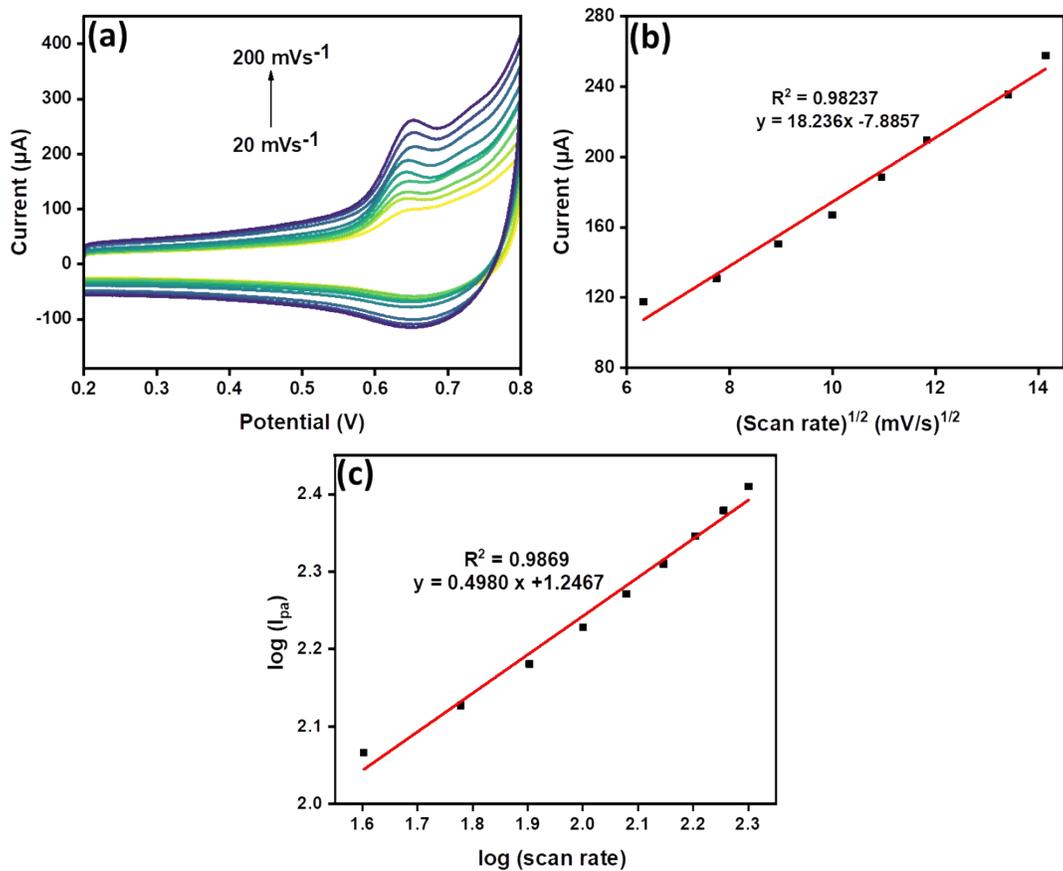


Fig. S5 (a) CV's of NiCo₂O₄-APTES/CC electrode at different scan rates varying from 20 to 200 mV/s.(b) Calibration plot of anodic peak current vs square root of scan rate. (c) Calibration plot of log anodic peak current vs log scan rate.

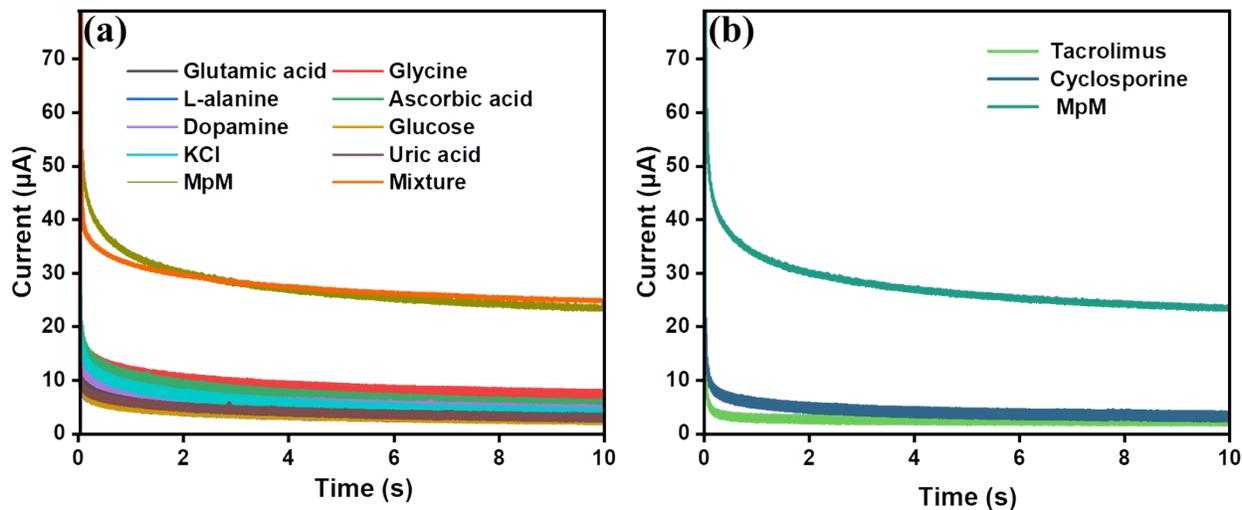


Fig. S6 (a) CA plot showing Selectivity of MpM in the presence of different interfering analytes GA, GLA, ALA, AA, DA, GLU, KCl, UA, and Mixture (b) Selectivity of MpM in the presence of Tacrolimus (Tac) and Cyclosporine in 10 times higher concentration than MpM.

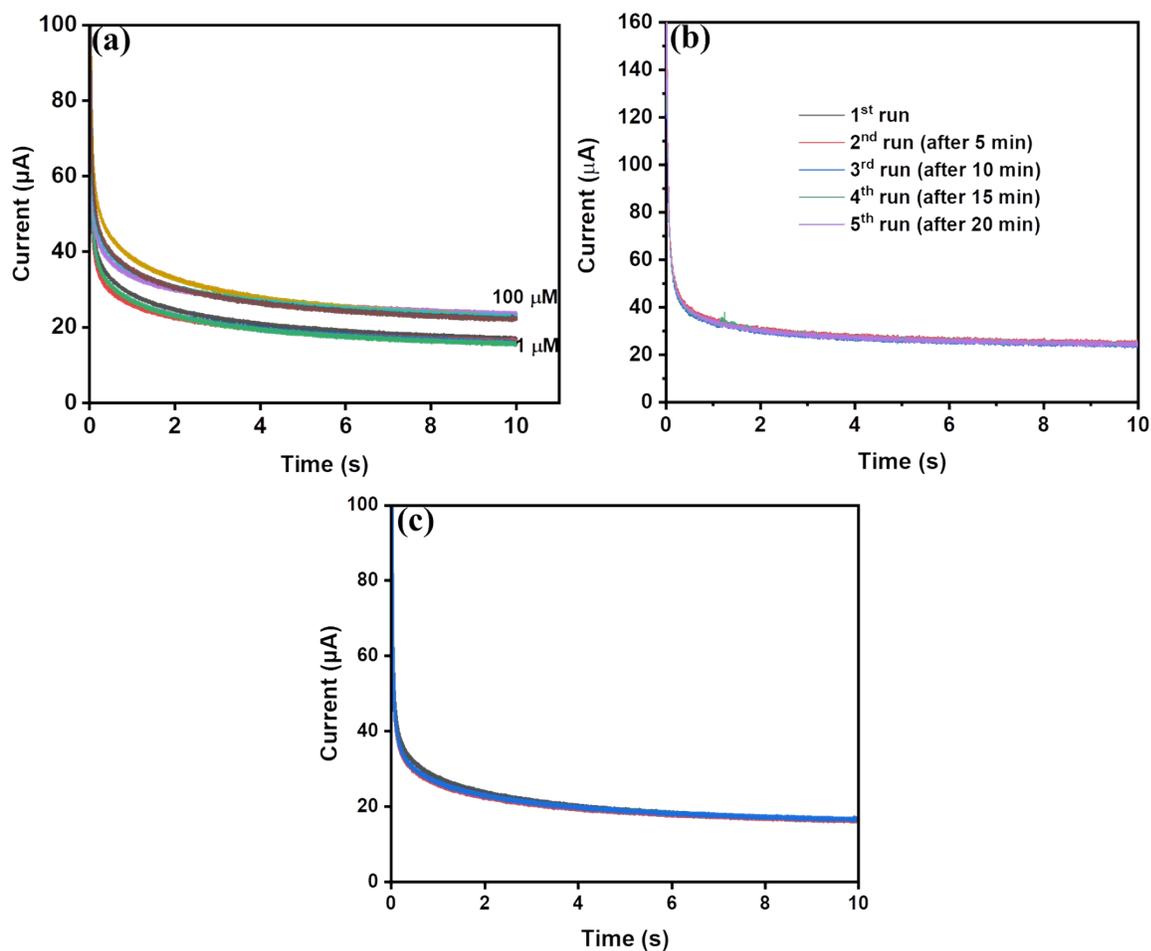


Fig. S7(a) CA curves showing the stability of different NiCo₂O₄-APTES/CC electrodes from 0 to 21 days in 1 μ M and 100 μ M of MpM in 0.1 M PBS solution. (b) CA plot showing repeatability of sensor which is carried out using same electrode consecutively for 5 times. (c) CA plot showing reproducibility of the sensor in 1 μ M of MpM carried out using different electrodes.