Sensitive Electrochemical Immunosensor for Matrix Metalloproteinase-3 based on Single-wall Carbon Nanotubes

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Supporting Information

Figure S1. Raman spectra of **(a)** the vertically aligned single-wall carbon nanotubes arrays on pyrolytic graphite compared to **(b)** nafion coated pyrolytic graphite without SWCNT.

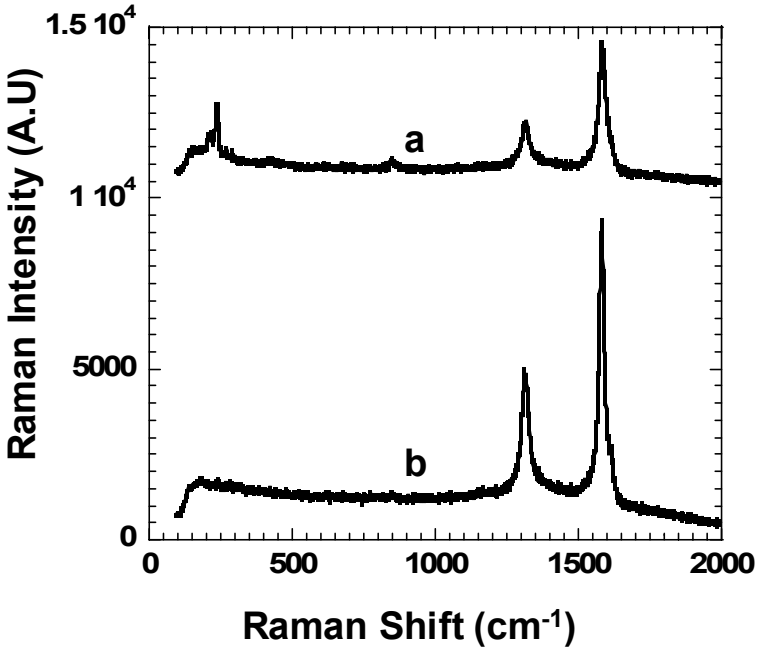

Figure S2. Optimization of Non-specific binding (NSB) events using various concentrations of BSA and Tween 20 and different washing strategies. **(A)** Showing the effect of diluting the secondary antibody using PBS buffer containing 2% BSA + 0.05%Tween-20 and 2% BSA in the blocking step. **(B)** Showing **r**esults obtained using PBS buffer + 0.05% Tween-20 without BSA as diluent for Ab_2 while keeping 2% BSA in the blocking step. This dilution produced lower levels of NSB (represented by the controls) as well as lower standard deviations. **(C)** Shows a combination of new washing strategy involving spinning the electrodes in beakers with magnetic stirrer and spin-bars as well as optimum concentration of BSA in the blocking step and Tween 20 in the wash buffer at 0.5% and 0.1%, respectively. This conditions gave the lowest NSB conditions, hence the greatest difference between controls and the 4 ng mL^{-1} MMP-3 sample in 10 μL calf serum.

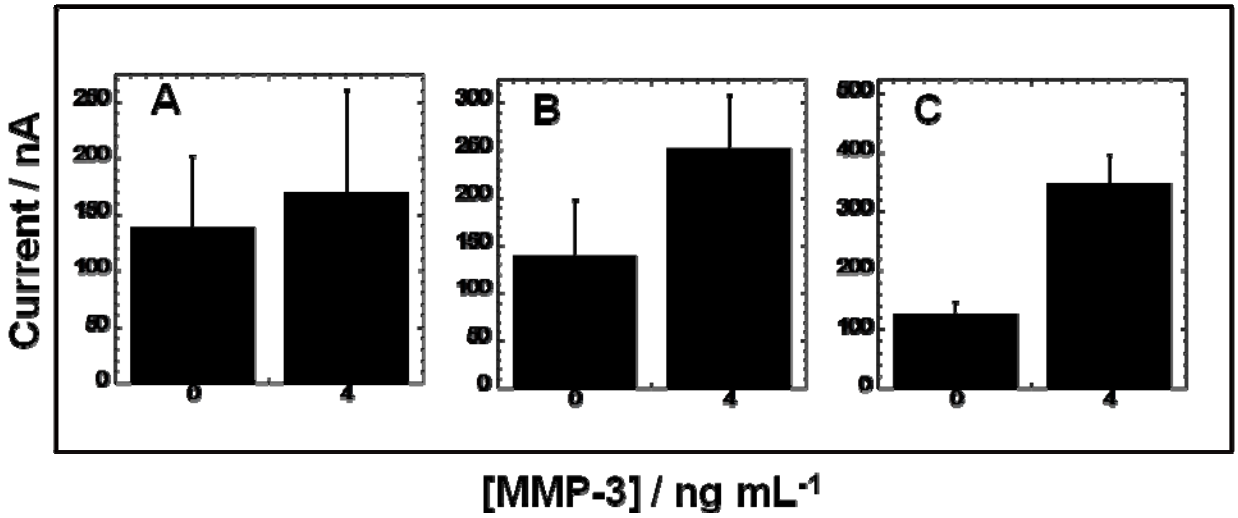

Figure S3. TEM images of homogenous dispersions of polymeric microspheres on copper grids (a) not derivatized with protein; and (b) derivatized as HRP-polybead- Ab_2 bioconjugate.