Abstract Submitted
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A polymeric nanocoating on carbon nanotube arrays for developing imprinted protein sensor[1] L. REN, H.Z. ZHAO, C.J. XU, Y. YU, H.Z. WANG, Y.C. LAN, Boston College, D. WAGNER, Dept of Navy, M.J. NAUGHTON, Z.F. REN, T.C. CHILES, D. CAI, Boston College — Polyphenol (PPn) was electrodeposited on carbon nanotubes (CNT) arrays at nanoscale thickness. PPn is a non-conductive polymer, so increase of sensor impedance was observed with high density CNT array, low density CNT array, and tip-polished CNT array (tCNTA), while tCNTA was determined to be the best nanosensor platform to incorporate the imprinted PPn coating due to the highest impedance increase. The PPn was characterized by transmission electron microscopy, electrochemical impedance spectroscopy and cyclic voltammetry for its thickness, uniformity, stability, resistivity and permittivity etc., as well as the protein entrapment and removal process. The density of the imprint was also evaluated by a PPn refilling experiment. Finally, ferritin was used as the template to develop a highly sensitive and selective protein nanosensor. Therefore, a novel strategy was demonstrated here to deposit and characterize polymeric nanocoating, also to evaluate imprints and detect proteins.

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