Abstract Submitted
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Nanocoax-based molecular imprint polymer for electrochemical biosensor[1] BINOD RIZAL, MICHELLE ARCHIBALD, LAURA SIMKO, TIMOTHY CONNOLLY, STEPHEN SHEPARD, MICHAEL J. BURNS, THOMAS C. CHILES, MICHAEL J. NAUGHTON, Boston College — We have used molecular imprint polymerization (MIP) on planar, nanopillar, and nanocoax structures to fabricate label-free, all-electronic electrochemical biosensors with high selectivity and sensitivity. MIP-based films of ~ 7 nm thickness are formed on gold-coated surfaces by electropolymerization of a solution containing phenol and a target protein (streptavidin, at 100 μg/ml, or 1 nanomole concentration) and subsequent removal of exposed target protein, leaving behind its molecular imprint. With its molecular memory, MIP subsequently specifically recognizes and binds target protein with attomolar sensitivity, detected via differential pulse voltammetry. We will discuss and compare the results of MIP for different proteins on planar, nanopillar, and nanocoax structures, along with their respective ultimate sensitivities.

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