Nanoparticle Platforms for Controlled Protein Adsorption and Behavior in Protein Monolayer Electrochemistry

Synthetic models of biological interfaces are of interest for many bioanalytical applications, including biosensor development. Here we explore films of nanoparticles called monolayer protected clusters (MPCs) as a functional component of protein monolayer electrochemistry. A major goal of our work is to see if rational design of the MPCs translated into molecular level control at the protein binding site* that affects the adsorbed electrochemistry. Cytochrome c (Cc) was adsorbed to films of MPCs assembled on modified gold substrates. Different types of hydrophilic MPCs (see below) successfully immobilized cyt c and controlled the adsorption environment on a molecular level.