Fabrication of platinum doped-polydopamine coated silica nanoparticle for electrochemical application.

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Mussel inspired dopamine is a versatile material for polymer coating on any type of surface. Polydopamine (PDA) has reductive potential from catechol groups by transform their chemical structure from catechol to quinone with electron transfer. Their reductive potential is enough to reducing metal ion into metal nanoparticle. And it has shown good performance in immobilizing metals.
We used PDA as reducing agent and carbon-based supporter for catalytic applications. Platinum nanoparticles were finely deposited on PDA coated silica nanoparticle without any reducing agent. Transmission electron microscope (TEM), scanning electron microscope (SEM), X-ray photoelectron spectroscopy (XPS) and X-ray diffractometer (XRD) were used to analyze characteristics of the nanocomposites. Then, catalytic performance of them was compared with it of commercial catalyst by cyclic voltammograms (CVs).