Electronic Supplementary Material (ESI) for Analyst
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Supporting information of **“Sensitive and selective electrochemical detection of dopamine using an electrode modified with carboxylated carbonaceous spheres”**

Preparation of thiol-functionalized carbonaceous spheres (thiol-CSs)

As-prepared carboxylated carbonaceous spheres (10 mg) were uniformly dispersed into 5 ml DI water. Then, N-(3-dimethylamino propyl-N'-ethylcarbodiimide) hydrochloride (EDC, 30 mg) and N-hydroxysuccinimide (NHS, 18 mg) were added into the above solution at pH 5.6 and the mixture was sonicated for 15 min. Subsequently, 5 ml of the solution containing cysteamine (40 mg) was added into the above mixture and continuously stirred for 24 h at room temperature. Finally, the product of thiol-functionalized carbonaceous spheres (thiol-CSs) was obtained by centrifugation and washing several times with DI water to remove the excess reactant.

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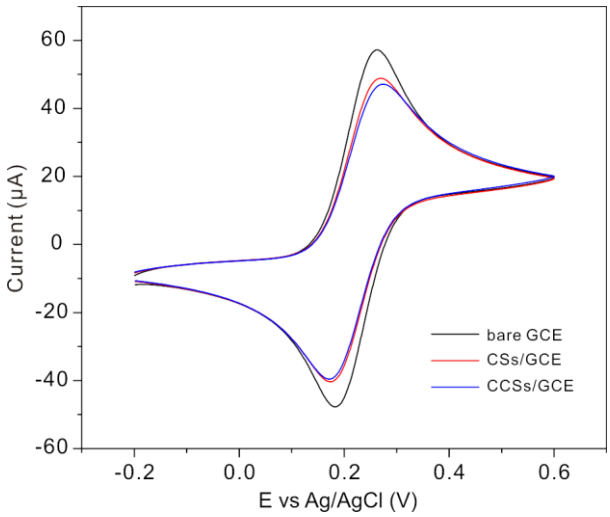

Fig. S1. Cyclic voltammograms of bare GCE, CSs/GCE and CCSs/GCE in 0.1 M KCl solution containing 5 mM $[Fe(CN)_6]^{3-/4-}$. Scan rate: 50 mV s^{-1}.

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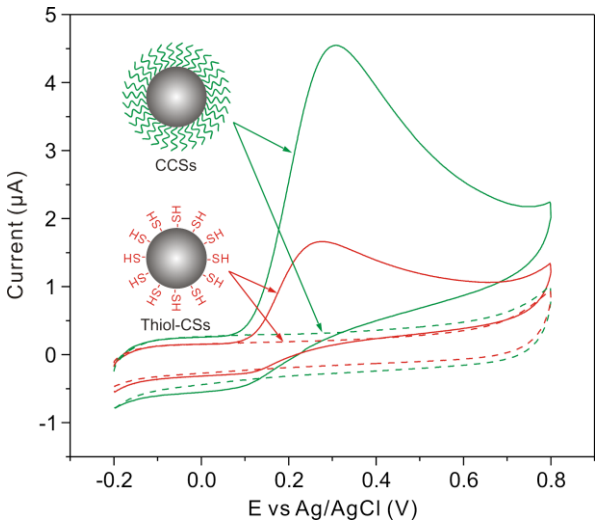

Fig. S2. Cyclic voltammograms of CCSs/GCE (green lines) and thiol-CSs/GCE (red lines) in 0.01 M PBS (pH = 7.4) with (solid lines) and without (dash lines) 10 μM DA. Scan rate: 50 mV s^{-1}.

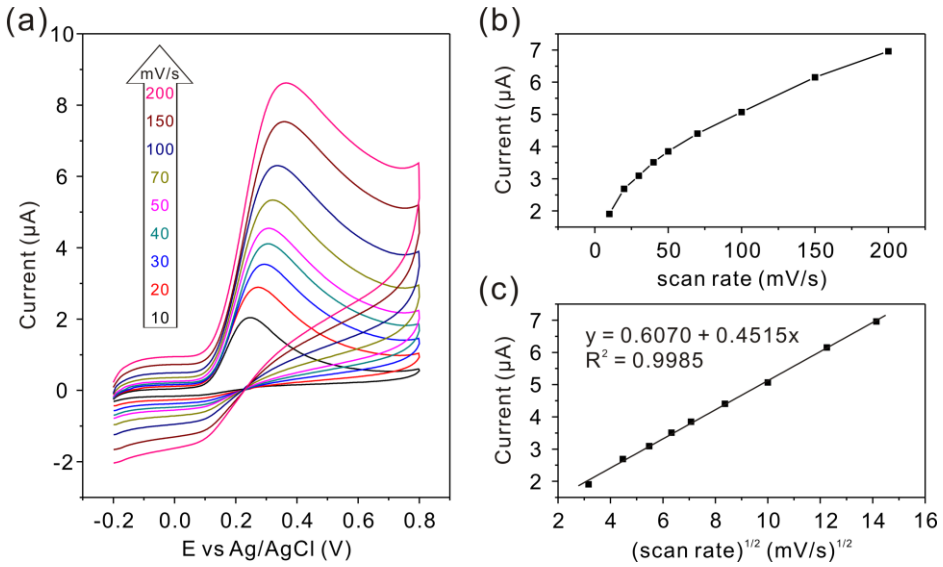

Fig. S3. (a) Cyclic voltammograms of CCSs/GCE toward 10 μM DA in 0.01 M PBS (pH = 7.4) at different scan rates (10, 20, 30, 40, 50, 70, 100, 150, and 200 mV s^{-1}). (b) and (c) plots of anodic peak currents against the scan rate and the square root of scan rate, respectively.