Supplementary Information

In Situ Oxygenous Functionalization of Graphite Electrode for Enhanced Affinity Towards Charged Species and Reduced Graphene Oxide Mediator

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Synthesis of Graphene oxide: Graphite powder (1g, 300µm, Wako Ltd), $NaNO_3$ (1.0g, fine mesh) and H_2SO_4 (48ml, 97%) was cooled by stirring in an ice bath for 15 min. $KMnO_4$ (3.0g, fine mesh) was added slowly with vigorous stirring maintaining the temperature below 20^oC. After 20 minutes, the mixture was warmed and kept at 35±3^oC for 30 min. Then 180 ml water was added slowly, the temperature rose gradually and was kept in 95±3^oC for another 30 min. It was further diluted by adding 400 ml water. Finally H_2O_2 (30%, 12 mL) was added to convert the unreacted permanganate and manganese dioxide into soluble salts. The mixture was centrifuged (3000 rpm, 10 min) and the precipitate was washed with 5% HCl solution (1 time) and water (3 times). The final precipitate was dried at 70 ^oC for 24 hours.

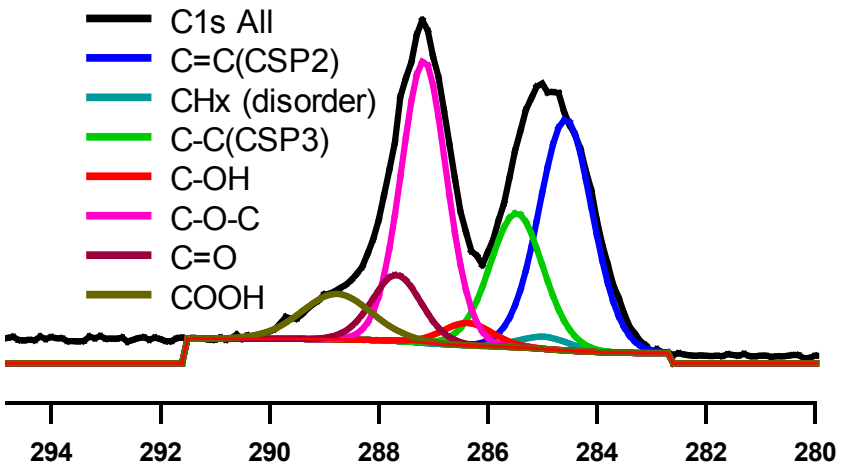

Figure S1: XPS spectra of GO.

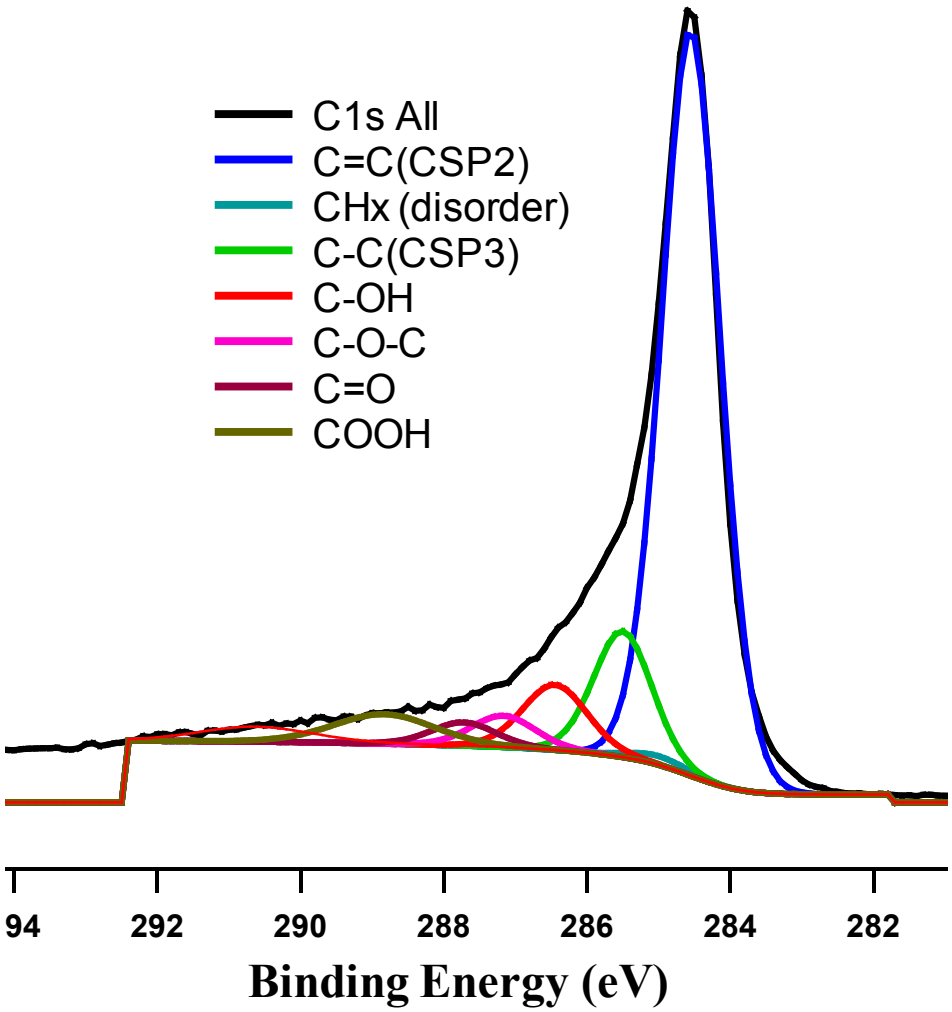

Figure S2. XPS spectra of rGO.

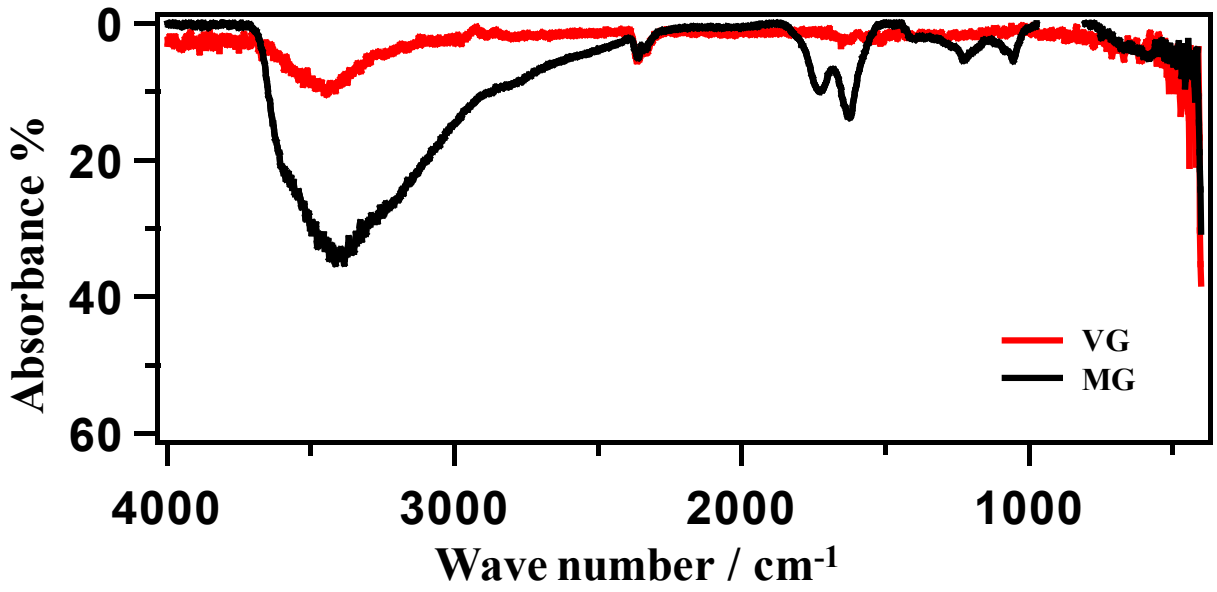

Figure S3. IR spectra of VG(virgin graphite rod) and MG (modified graphite rod).

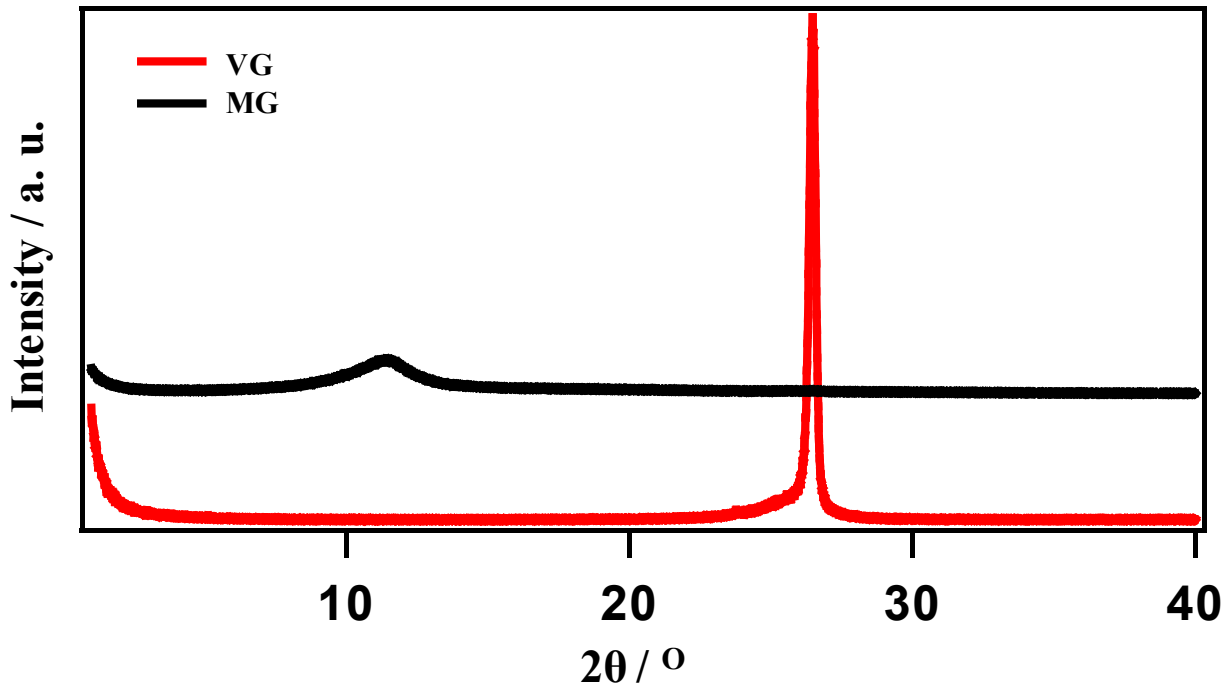

Figure S4. PXRD spectra of VG (virgin graphite rod) and MG (modified graphite rod).

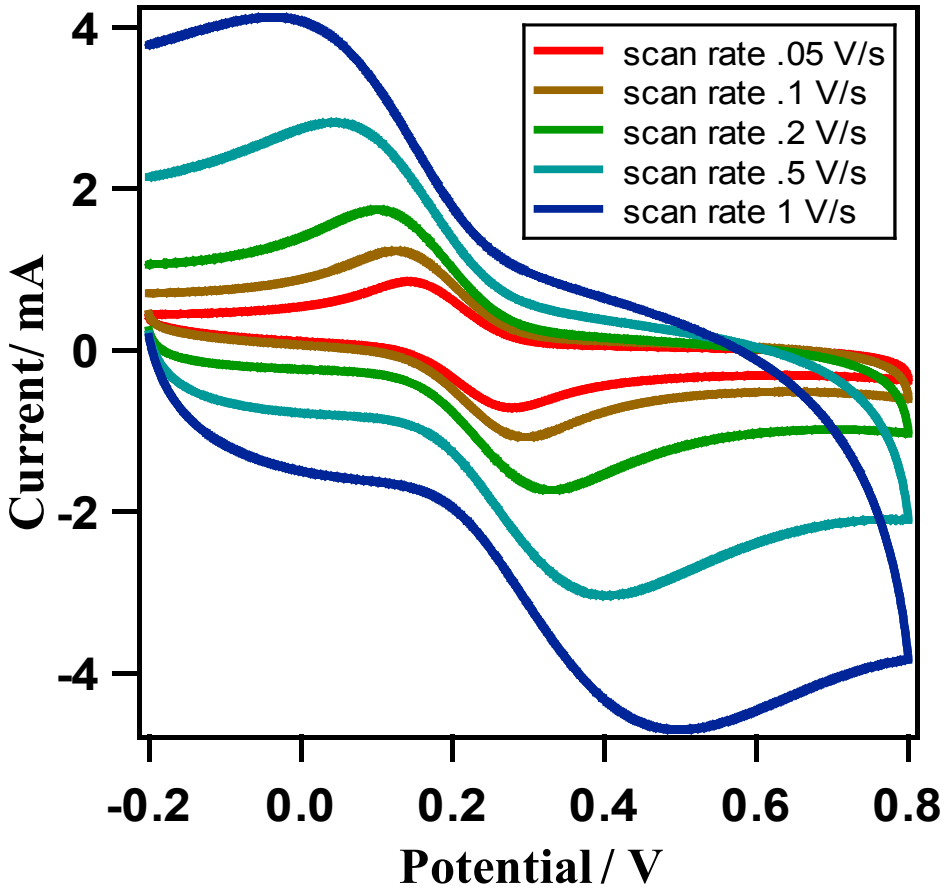

Figure S5. CV of electrode MG in 1 mM $K_3Fe(CN)_6$ supported by 0.1 M KNO_3 with respect to various scan rate.

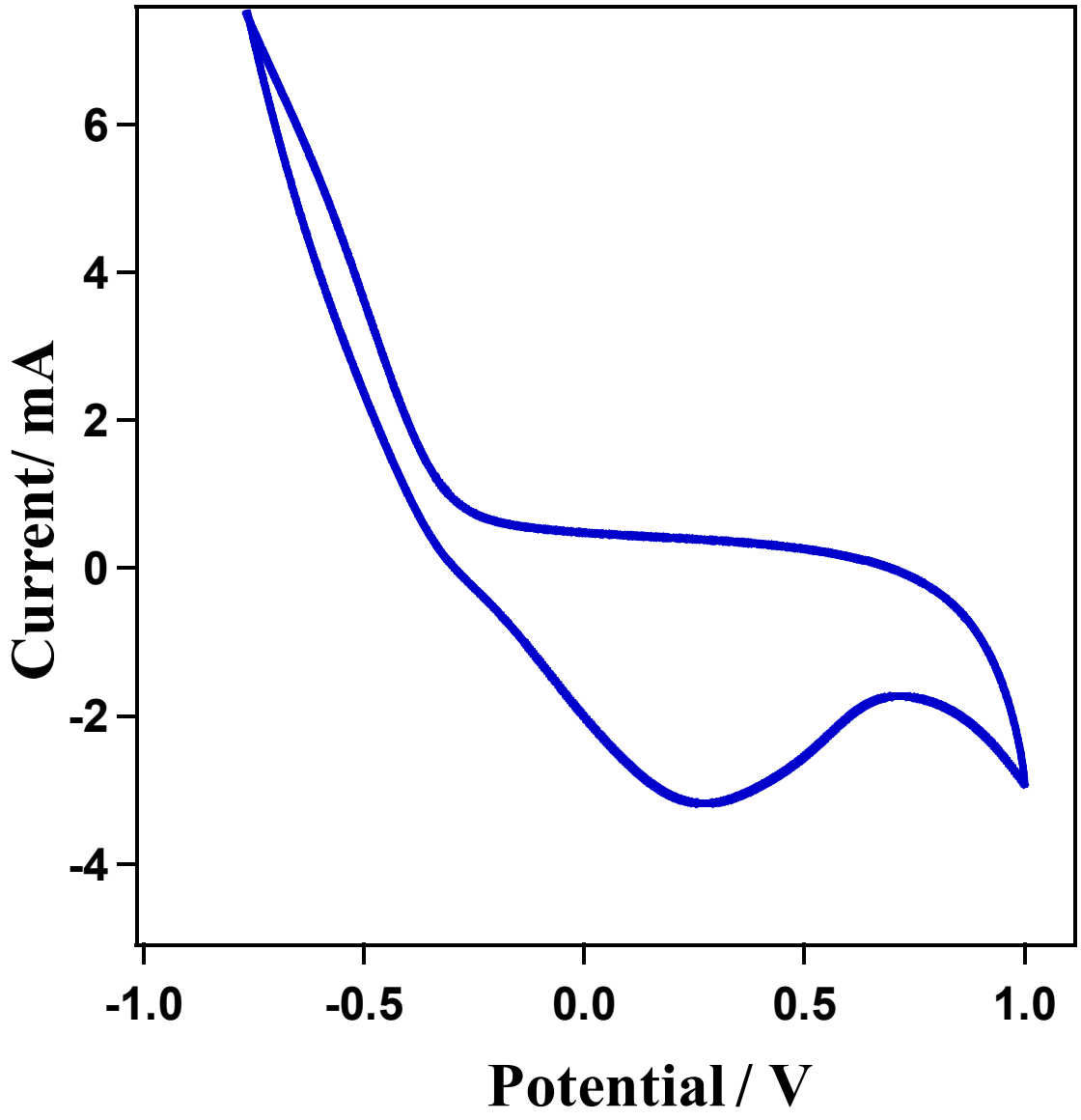

Figure S6. CV in a wide potential window for measurement of 0.02 M glucose solution using electrode MG at scan rate 100 mV/sec.