# Supporting Information

## Facile Fabrication of Controlled Polymer Brushes-Type Functional Nanoprobe for Highly Sensitive Determination of Alpha Fetoprotein

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**Table S1**. Contributions of individual chemical moieties in the high-resolution C 1s spectra of GO and GO composites.

| Samples | XPS (atom%) | | | | |
|---|---|---|---|---|---|
| | C | O | N | Br | Cu |
| GO | 62.08 | 29.71 | 1.76 | 0 | 0 |
| GO@$NH_2$ | 64.92 | 23.72 | 4.24 | 0 | 0 |
| GO@Br | 66.07 | 22.33 | 4.39 | 0.36 | 0 |
| GO@PAN | 72.55 | 7.48 | 20.01 | 0.19 | 0 |
| GO@PHPY | 72.94 | 4.34 | 16.80 | 0.14 | 0 |
| GO@PHPY-Cu(II) | 72.31 | 4.1 | 16.22 | 0.11 | 1.2 |

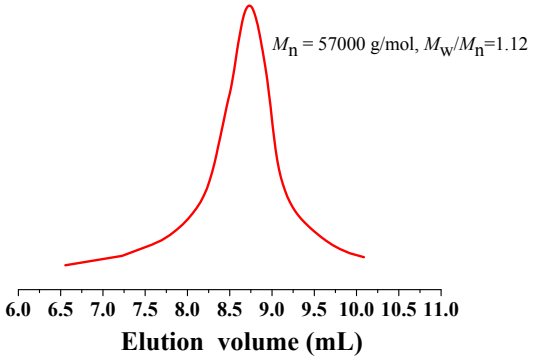


**Fig. S1.** GPC traces of PAN (derived from the homopolymer produced by the sacrificial initiator, polymerization time is 24 h).

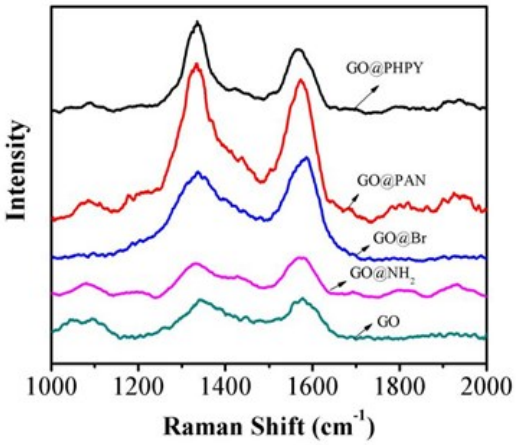


**Fig. S2.** Raman spectra of pristine GO and GO nanocomposites by a laser confocal micro raman spectrometer with a focal length of 700 mm.

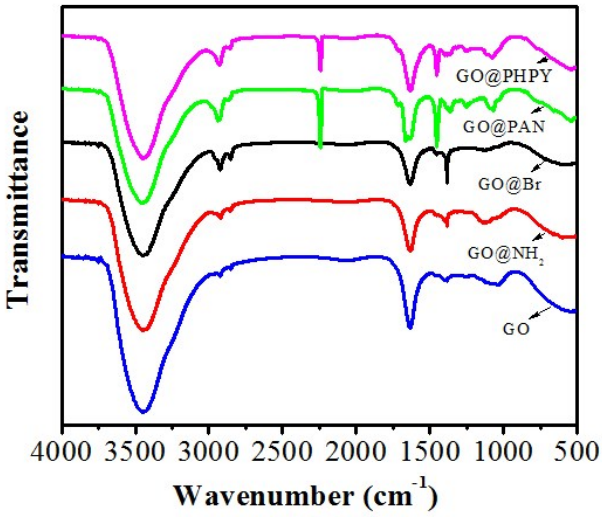


**Fig. S3.** FT-IR spectroscopic analysis GO and GO nanocomposites.

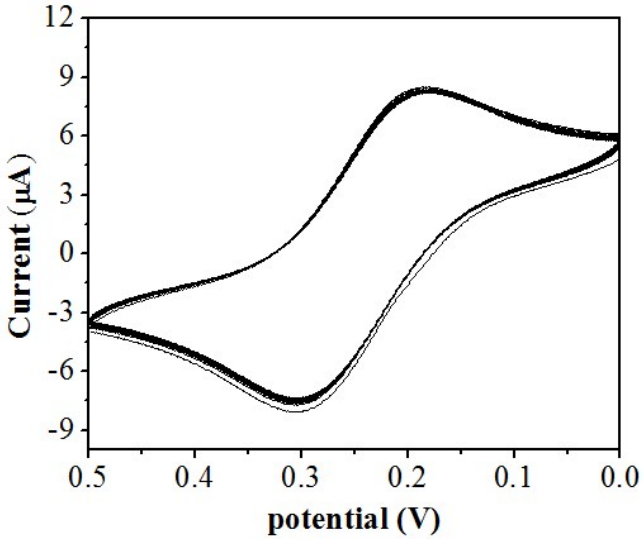


**Fig. S4.** The stability of same electrode cycled 50 times.