Electronic Supplementary Material (ESI) for Analyst

Supporting Information

A highly sensitive and selective aptasensor based on graphene oxide fluorescence resonance energy transfer for the rapid determination of oncoprotein PDGF-BB

Junfei Liang, Ran Wei, Shuai He, Yikan Liu, Lin Guo*, Lidong Li*

Key Laboratory of Bio-Inspired Smart Interfacial Science and Technology of Ministry of Education School of Chemistry & Environment, Beihang University, Beijing, 100191, P. R. China. E-mail: guolin@buaa.edu.cn, lilidong@buaa.edu.cn; fax:010-82338162; Tel.:010-82338162

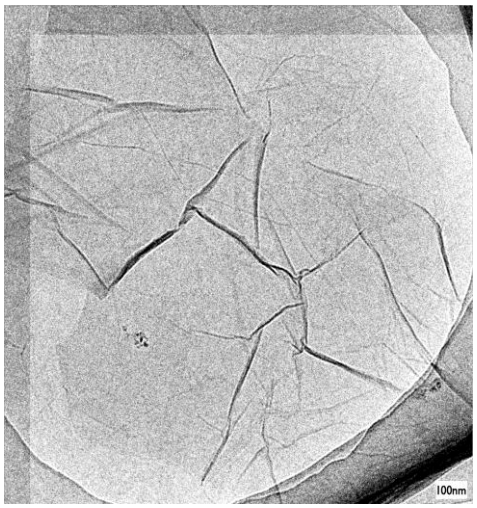

Fig. S1. TEM image of GO, the presence of wrinkles and folds on the sheet is the characteristic feature of a single-layer GO sheet.

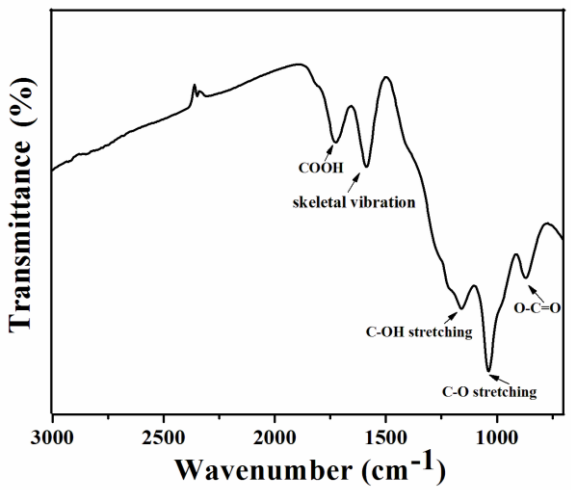

Fig. S2. FT-IR spectrum of the as-prepared GO

The FTIR spectra of GO shows COOH(1735 cm^{-1}), C-OH stretching (1220 cm^{-1}), and C-O stretching vibrations (1052 cm^{-1}) O-C=O(827 cm^{-1}). A peak around 1620 cm^{-1} due to the skeletal vibrations of unoxidized graphite domains.

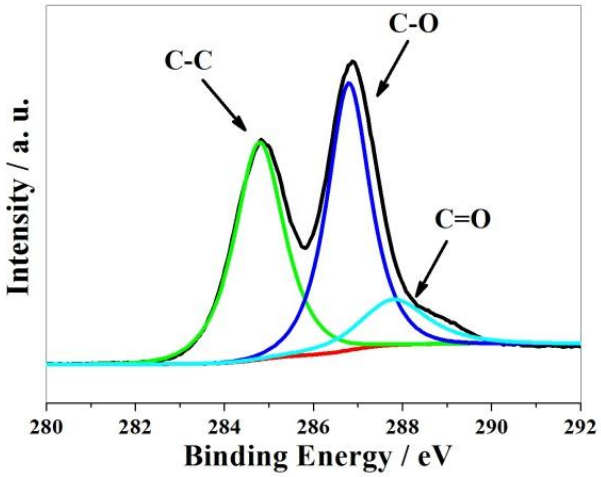

Fig. S3. C 1s XPS spectra of GO

The core-level XPS signals of GO is shown in Figure. S3. The binding energies located at 286.8 eV and 287.9 eV are due to carbon atoms connecting with oxygenate groups, such as C–O and O–C=O, respectively. The binding energies centered at about 284.7 eV originated from the graphitic sp^2 carbon atoms.

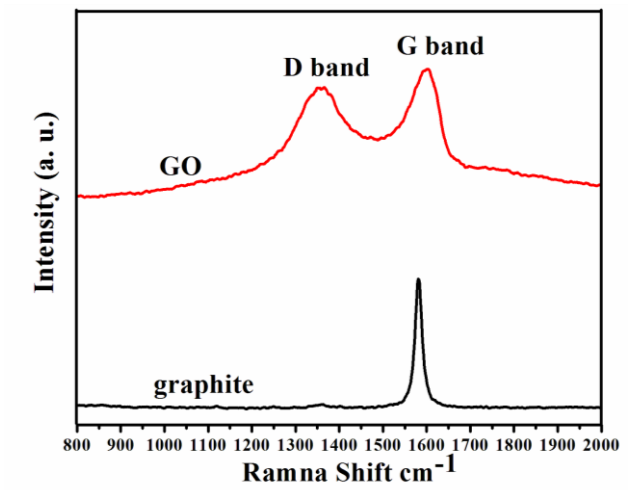

Fig. S4. The Raman spectra of GO and graphite

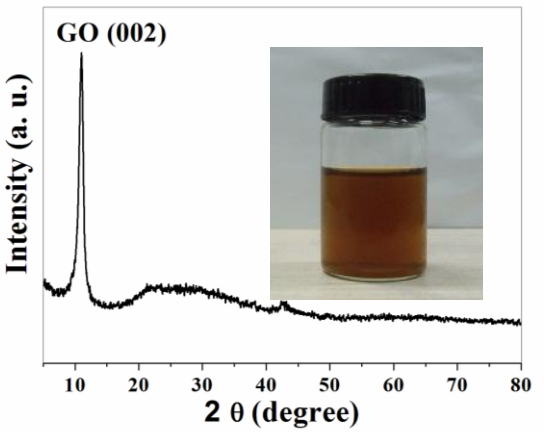

Fig S5. XRD patterns of GO, the inset is the photograph of the GO solution

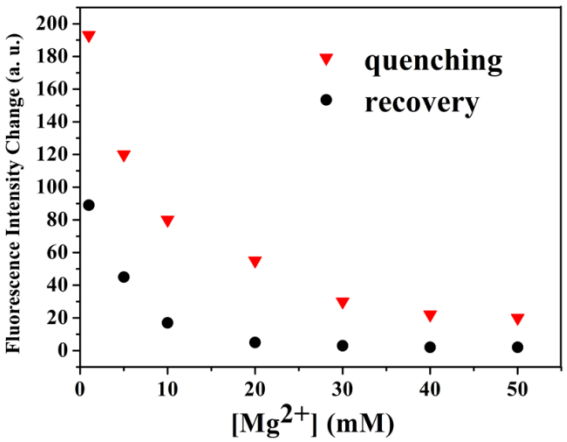

Fig. S6 Effects of Mg2+ contration on fluorescence quenching and recovery. The experiment was conducted in Tris-HCl buffer (20 mM, pH 7.4, 150 mM NaCl, 1 mM CaCl2). FAM-aptamer concentration: 20 nM. GO concentration: 3.23 μg/mL. PDGF-BB concentration: 667 pM. Excitation wavelength:490 nm.

Table S1. Analytical results for PDGF-BB in serum samples.

Serum Sample[a)]	Add (nM)	Found (nM)	Recoveries (%)
1	1	0.973	97.3
2	0.8	0.809	101.1
3	0.6	0. 578	96.3
4	0.4	0. 381	95.2
5	0.2	0.206	103

a The serum sample was diluted 50 times.