

Supporting information

# Effects of boric acid and storage temperature on the analysis of microalbumin using aptasensor based fluorescent detection

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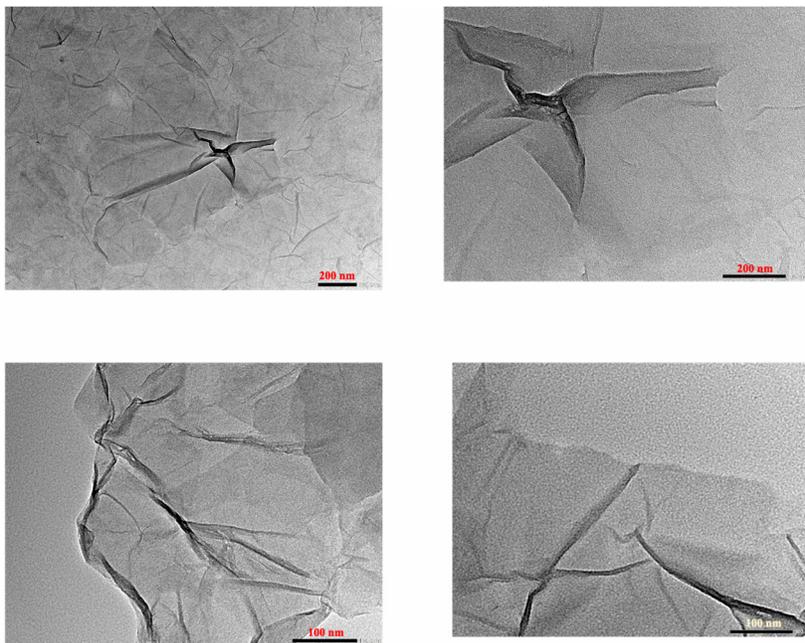
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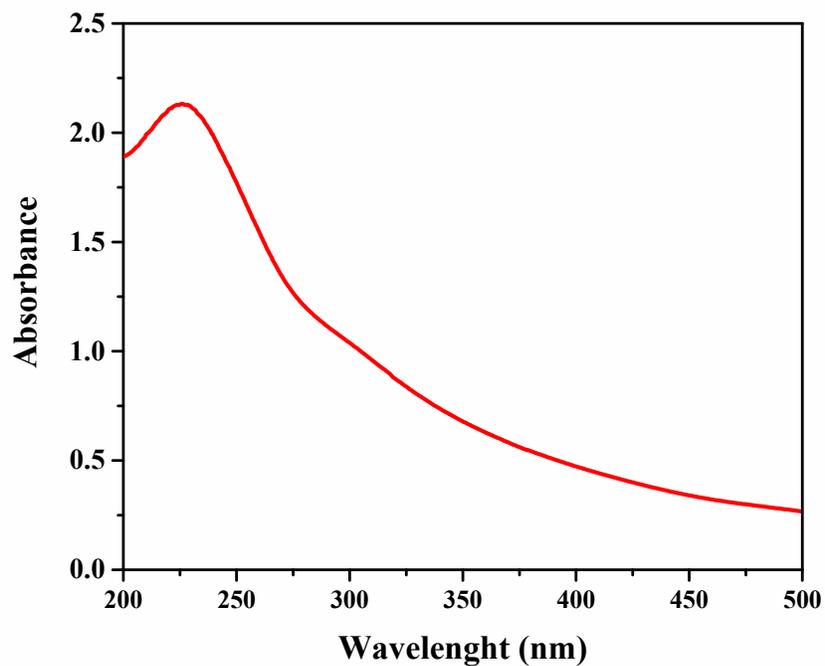
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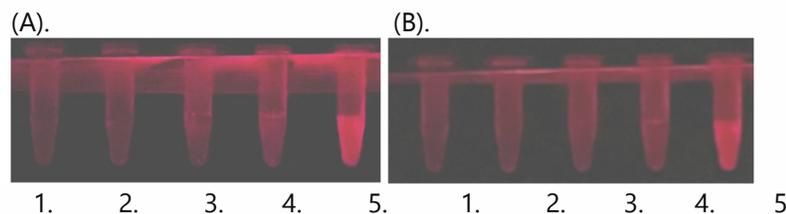
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**Figure S1.** Transmission electron microscopy (JEM-2100Plus, JEOL, USA) image of synthesized GO used in this study.



**Figure S2.** UV spectra of graphene oxide was recorded in the wavelength of 200-500 nm using PowerWave XS2. The spectrum of graphene oxide has an absorption peak at 230 nm which is attributed to  $p-p^*$  transition of remaining  $sp^2$  C=C bonds.



**Figure S3.** Fluorescence images of the vial containing aptasensor solution with HSA concentration of 0 µg/mL (tube 1), 2 µg/mL (tube 2), 80 µg/mL (tube 3), 150 µg/mL (tube 4) and aptamer labeled with Cy5 fluorescence dye (positive control, tube 5) in PBS with boric acid (A) and without boric acid (B).

**Table S1.** LOD and LOQ calculation

Items	Condition with PBS	Condition with PBS and Boric
Equation	$y = 0.197x - 0.4287, R^2=0.9928$	$y = 0.2898x + 0.3267, R^2=0.9918$
Slope	0.197	0.2898
SE of intercept	0.441234	0.68914
LOD (µg/mL)	6.72	7.134
LOQ (µg/mL)	22.40	23.78

**Table S2.** Performance of existing methods use in hospital and the developed aptasensor (this study).

Comparing items	Immunoturbidimetry (Hospital use)	Lateral flow immunoassay (Hospital use)	Aptasensor (This study)
LOD or cut off	6 µg/mL (LOD)	30-50 µg/mL (cut off)	6.72 µg/mL
Assay type	Quantitative	Qualitative	Quantitative
Targeting ligand	Antibody	Antibody	Aptamer
Assay time (min)	5-10	5-10	30
POCT	No	Yes	Yes
Cost (USD)	2	5-10	0.3