Supporting Information

Facile synthesis of graphene oxide for multi-cycle adsorption of aqueous Pb^{2+} in presence of divalent cations and polyatomic anions

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Figure S1. XRD spectra of Graphite.

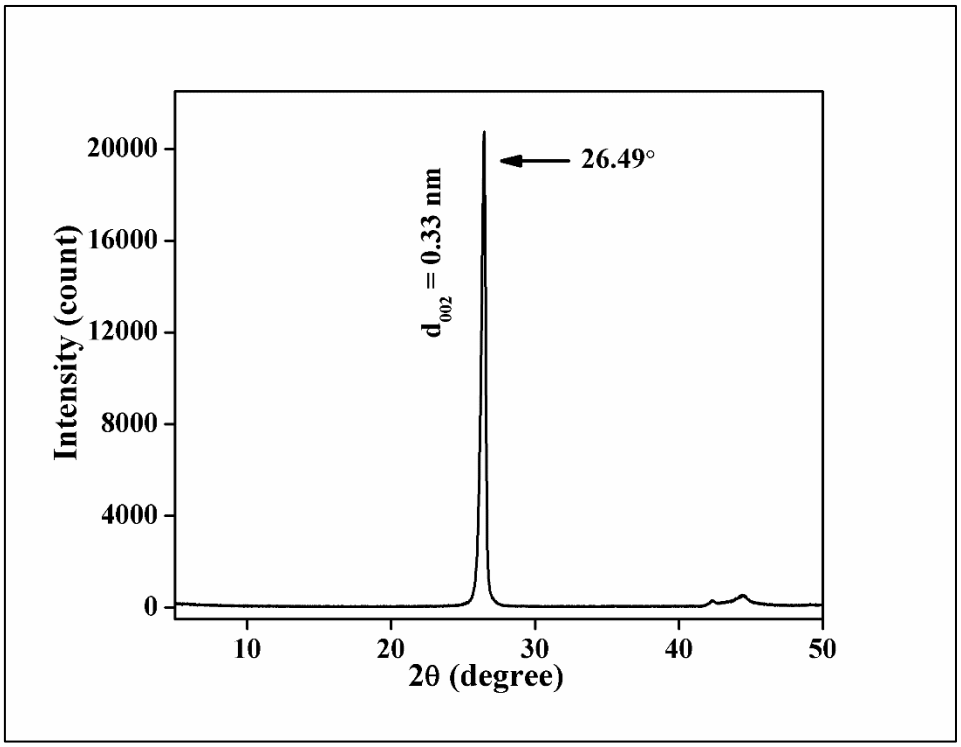

Figure S2. UV-vis spectra of Graphene oxide.

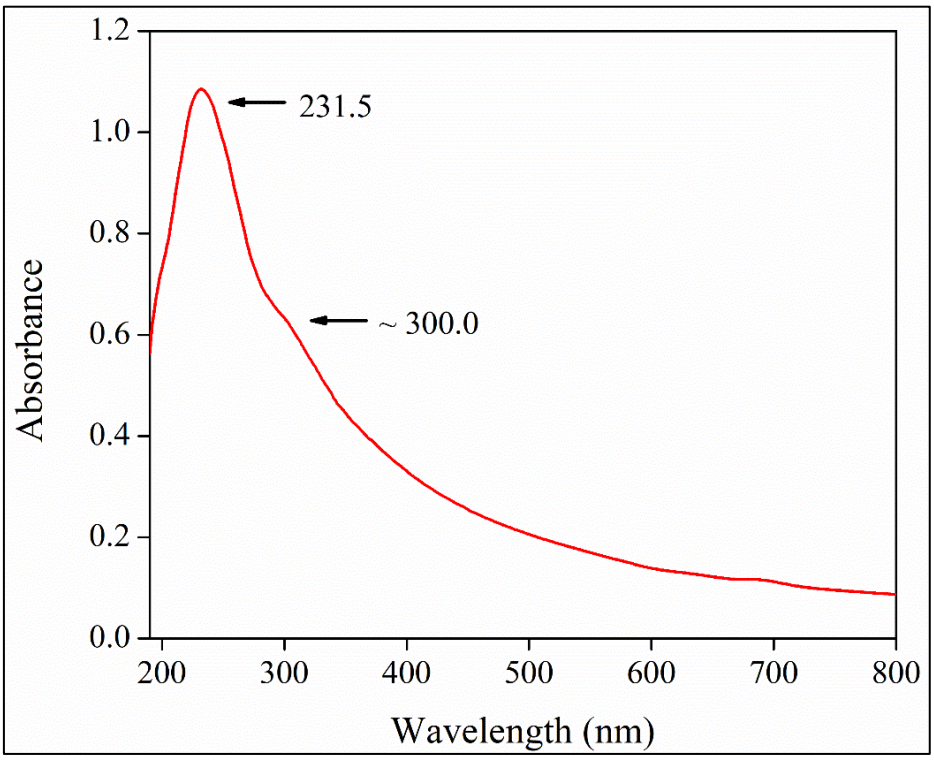

Figure S3. TEM image of Pb^{2+} adsorbed GO.

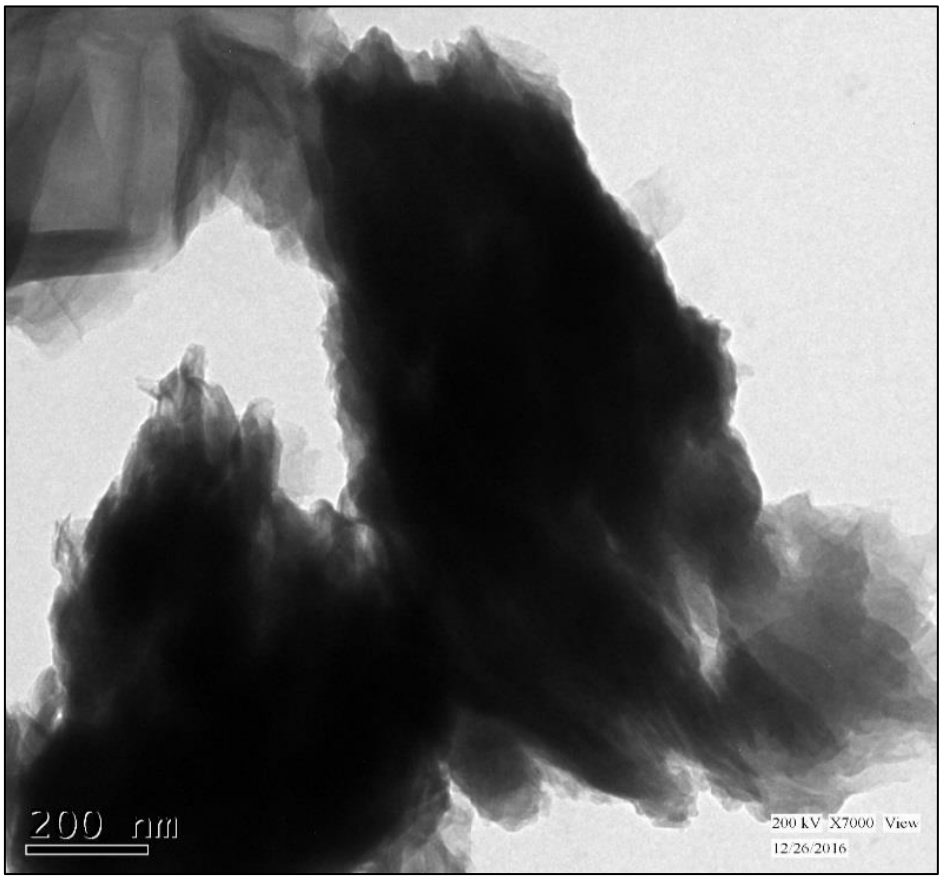

Figure S4. Thermogravimetric analysis (TGA) of GO.

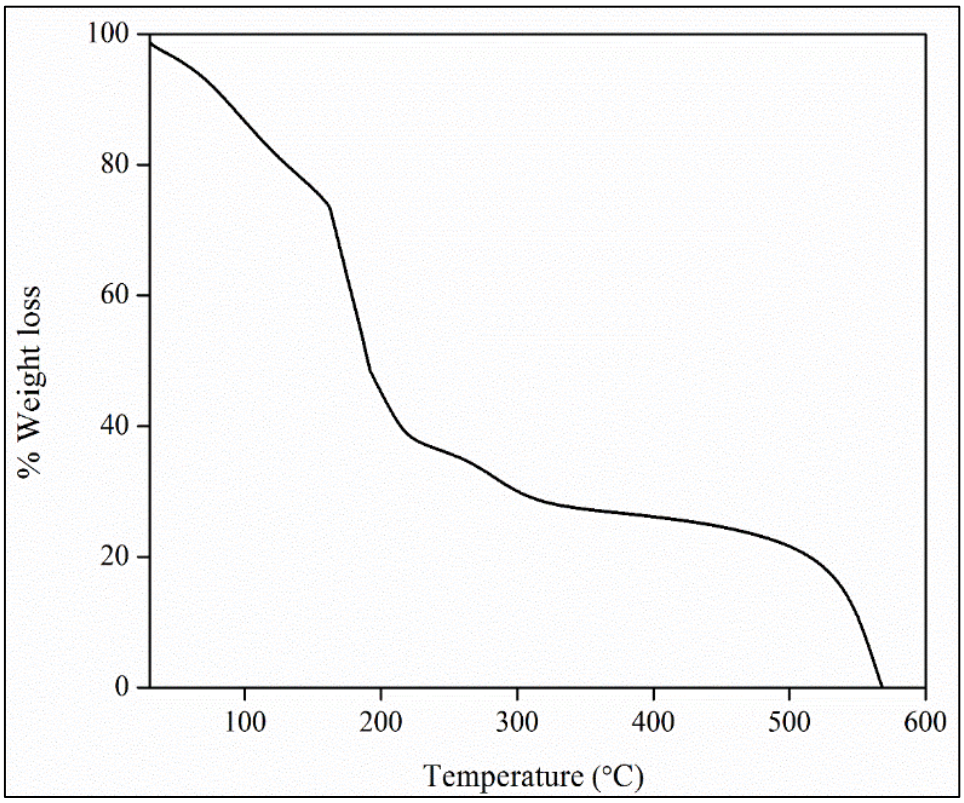

Figure S5. Effect of SO_4^{2-} and NO_3^- presence in binary system on the adsorption of Pb^{2+} by GO.

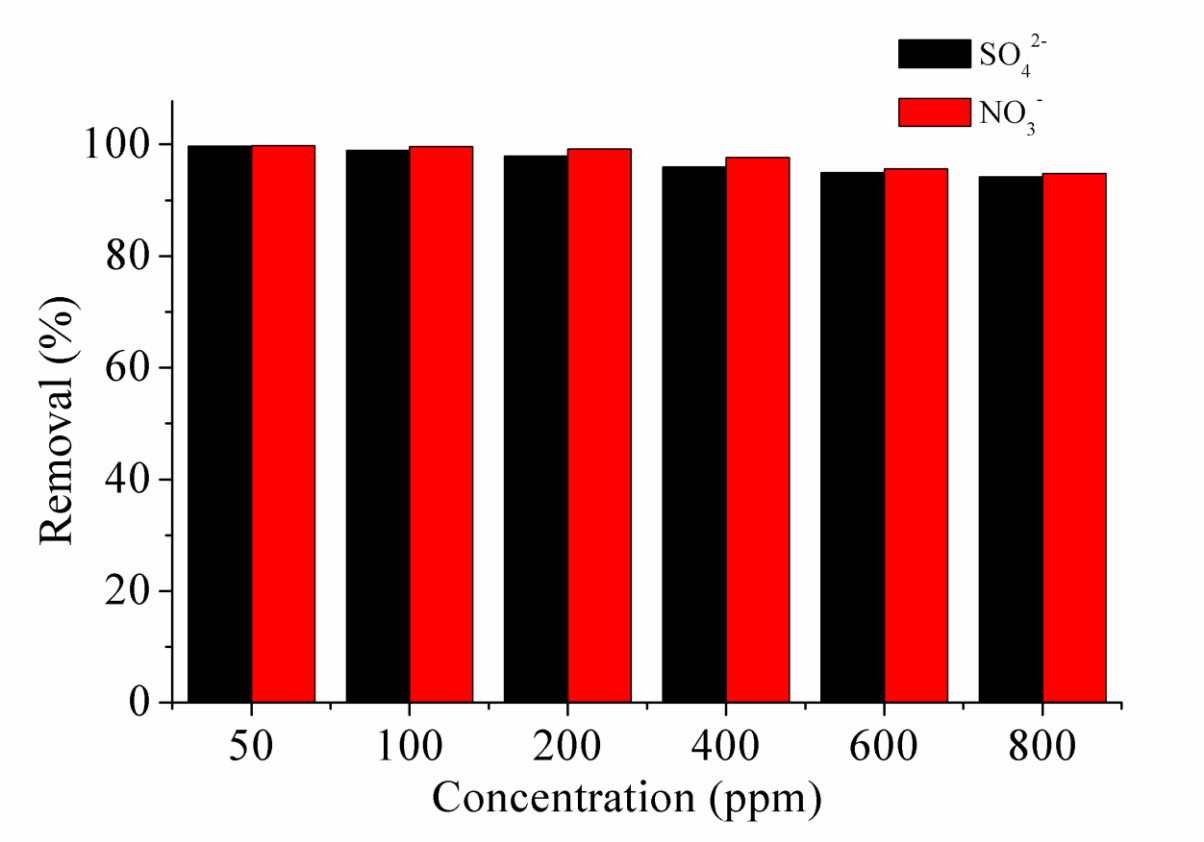

Figure S6. Effect of SO_4^{2-} and NO_3^- presence in ternary system on the adsorption of Pb^{2+} by GO.

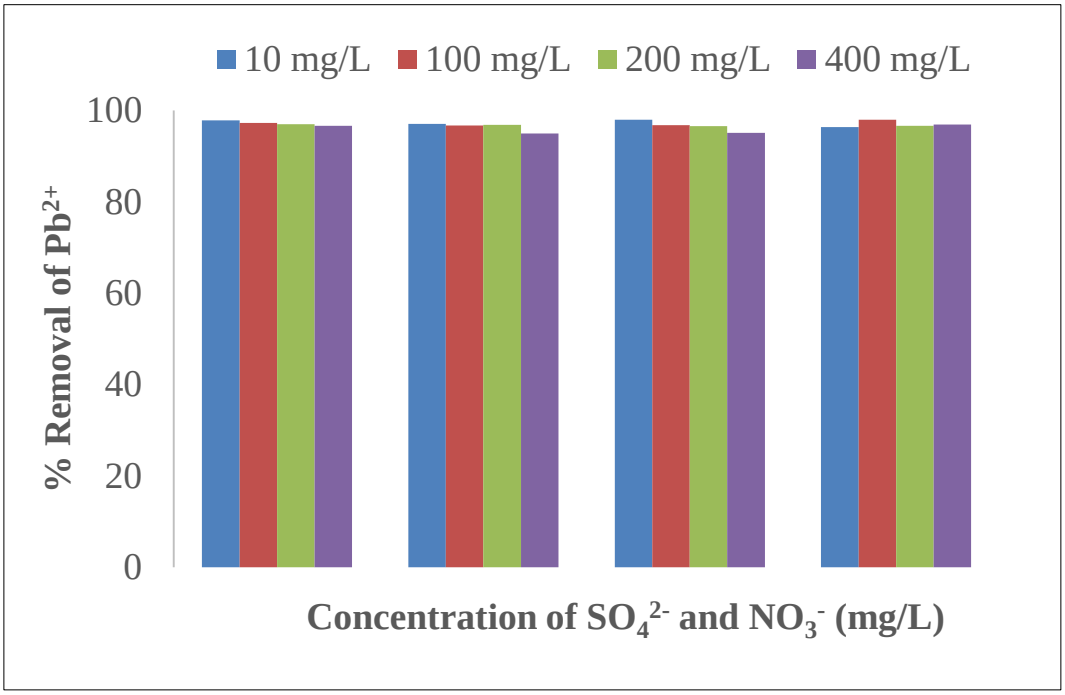

Table S1. Intraparticle diffusion model constants for Pb^{2+} adsorption on GO.

	Parameter	Concertation (mg/L)		
		50	100	200
Intraparticle diffusion	C_i	35.97	39.76	42.695
	K_i	0.5358	0.1866	0.7748
	R^2	0.7241	0.945	0.7628

Table S2: The adsorption of Pb^{2+} in binary solution Pb^{2+}—Cd^{2+} or Pb^{2+}—Ni^{2+}. Condition: initial concentration of Pb^{2+} = 50 mg/L, pH— 5, Temperature– 303 K, Stirring speed– 170 rpm, and dose of GO– 1.00 g/L.

Concentration Ni^{2+} or Cd^{2+} (mg/L)	**% Removal of Pb^{2+} in Pb^{2+}—Ni^{2+}**	**% Removal of Pb^{2+} in Pb^{2+}—Cd^{2+}**
0	99.30	99.30
10	96.37	96.92
30	94.43	89.39
50	89.78	88.42

Table S3: The adsorption of Pb^{2+} in ternary solution of Pb^{2+}—Cd^{2+}—Ni^{2+}. Condition: pH—5, Temperature– 303 K, Stirring speed– 170 rpm, and dose of GO– 1.00 g/L.

Concentration (mg/L)			**% Removal of Pb^{2+}**
Pb^{2+}	**Cd^{2+}**	**Ni^{2+}**	
10	10	10	99.43
10	30	30	94.11

10	50	50	91.66
30	10	10	96.99
30	30	30	89.64
30	50	50	87.72
50	10	10	92.42
50	30	30	84.76
50	50	50	80.12

Table S4: The adsorption of Pb^{2+} in binary solution of Pb^{2+}—SO_4^{2-} and Pb^{2+}—NO_3^-. Condition: initial concentration of Pb^{2+} = 50 mg/L, pH— 5, Temperature– 303 K, Stirring speed– 170 rpm, and dose of GO– 1.00 g/L.

Concentration SO_4^{2-} or NO_3^- (mg/L)	**% Removal of Pb^{2+} in Pb^{2+}—SO_4^{2-}**	**% Removal of Pb^{2+} in Pb^{2+}—NO_3^-**
50	99.71	99.75
100	98.92	99.64
200	97.96	99.18
400	95.97	97.65
600	94.99	95.65
800	94.21	94.78

Table S5: The adsorption of Pb^{2+} in ternary solution of Pb^{2+}—SO_4^{2-}—NO_3^-. Condition: initial concentration of Pb^{2+} = 50 mg/L, pH— 5, Temperature– 303 K, Stirring speed– 170 rpm, and dose of GO– 1.00 g/L.

		Percentage removal of Pb^{2+}			
		Concentration of SO_4 (mg/L)			
		10	**100**	**200**	**400**
Concentration of NO_3^- (mg/L)	**10**	97.818	97.08	97.96	96.37
	100	97.243	96.72	96.80	97.96
	200	96.99	96.81	96.59	96.65
	400	96.66	94.99	95.12	96.92