Enhanced Adsorption Removal of Pb(II) and Cr(III) by Using Nickel Ferrite-Reduced Graphene Oxide Nanocomposite

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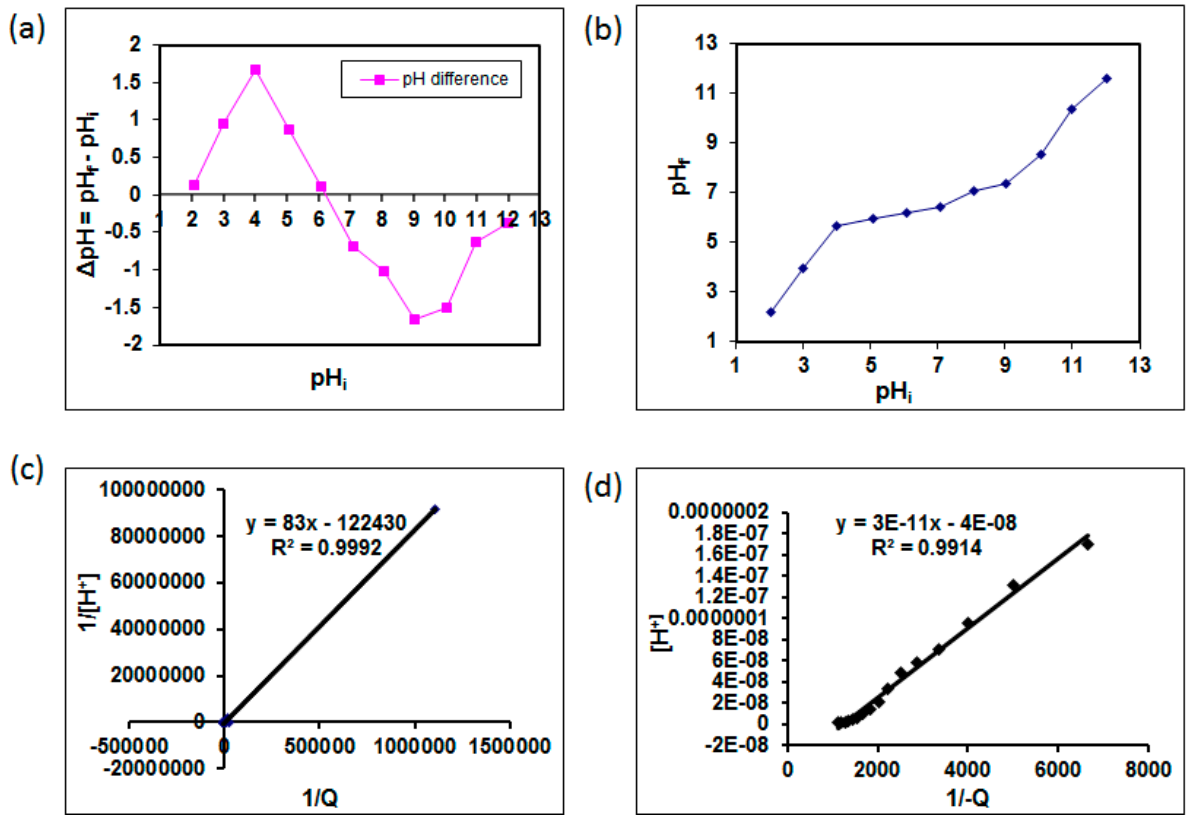

Figure S1. Acid-base properties of rGONF in aqueous suspension. pH changes with rGONF alone in aqueous solutions (**a**,**b**). The acid-base titration curves of rGONF with 0.1 mol L^{-1} HNO_3 (**c**) and 0.1 mol L^{-1} NaOH (**d**) for measuring pKa_1 and pKa_2 to calculate pHzpc of rGONF. (Note: pH_i: initial pH; pH_f: final pH, ΔpH: difference in pH_f and pH_i; $[H^+]$: H^+ concentration; Q = Coulomb charge density). The pKa_1 and pKa_2 were measured from the intercepts of the curves (**c**) and (**d**), respectively. Where Ka_1 = 1/Intercept of curve (**c**), Ka_2 = Intercept of curve (**d**). Hence, pKa_1 = −Log(1/Intercept); pKa_2 = −Log(Intercept).

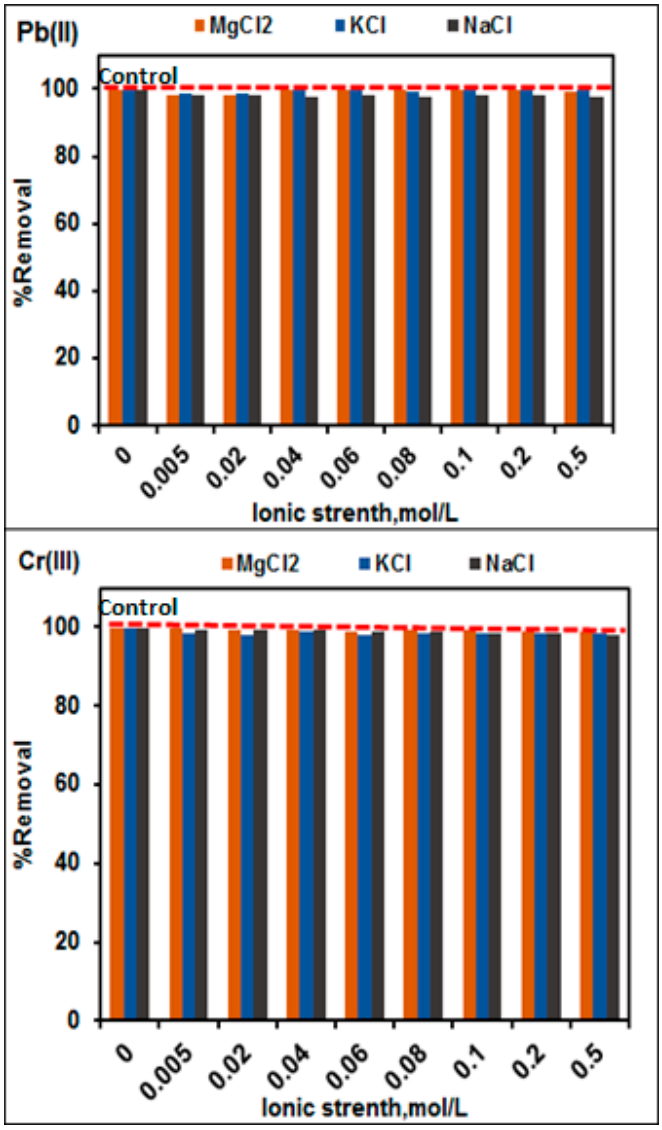

Figure S2. Ionic strength effect on adsorptive removal of Pb(II) and Cr(III) by using rGONF at pH 5.0 for Pb(II) (10 mg L−1) and pH 4.0 for Cr(III) (10 mg L−1), and 30 min equilibrium time for the range of reaction temperature, 298–328 ± 2.0 K.

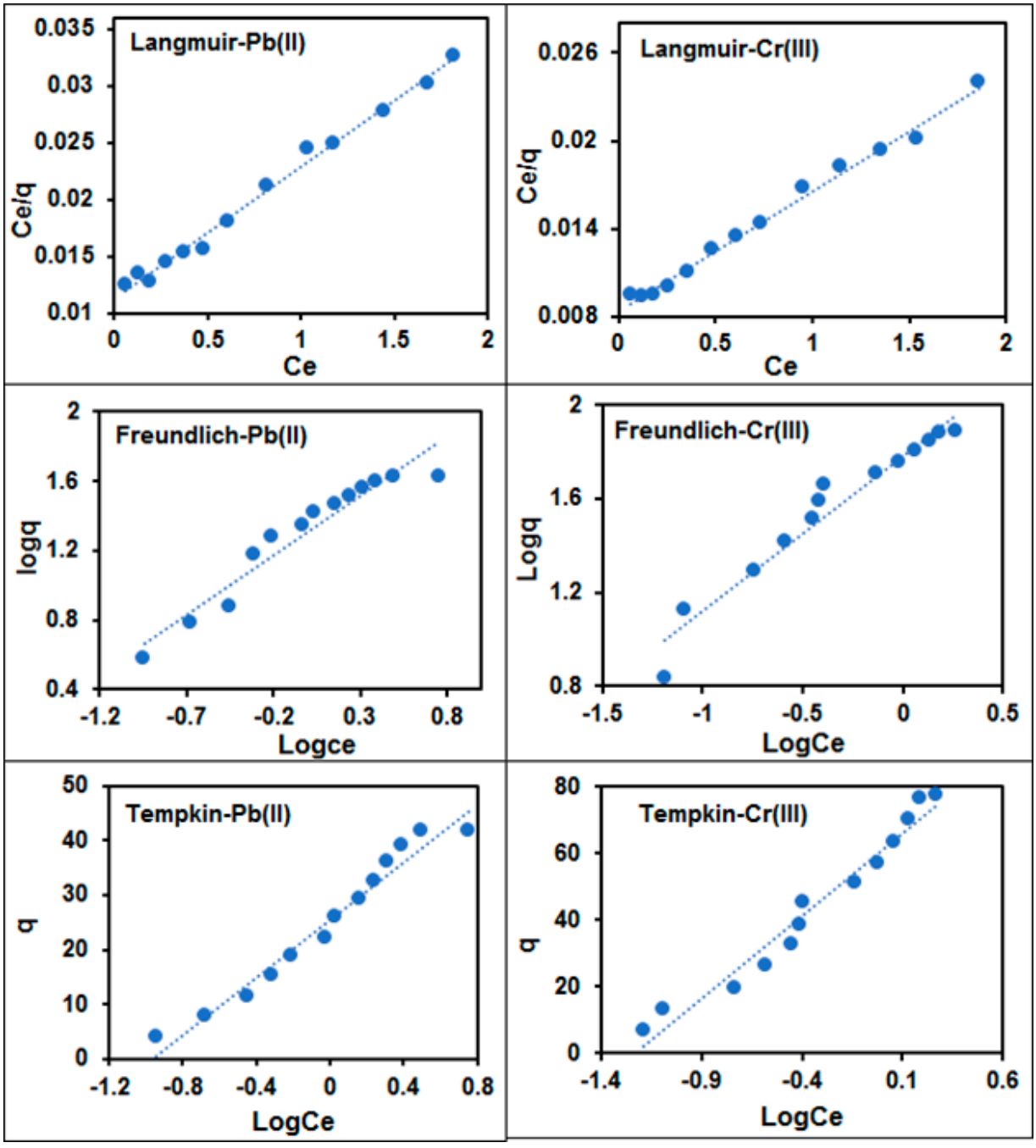

Figure S3. Linear fitting of adsorption isotherm models to the adsorption isotherm data of Pb(II) and Cr(III) (Co = 2.0 to 25 mg L−1) onto rGONF at pH 5.0 for Pb(II) and pH 4.0 for Cr(III), and 30 min equilibrium time for the range of reaction temperature, 298–328 ± 2.0 K.

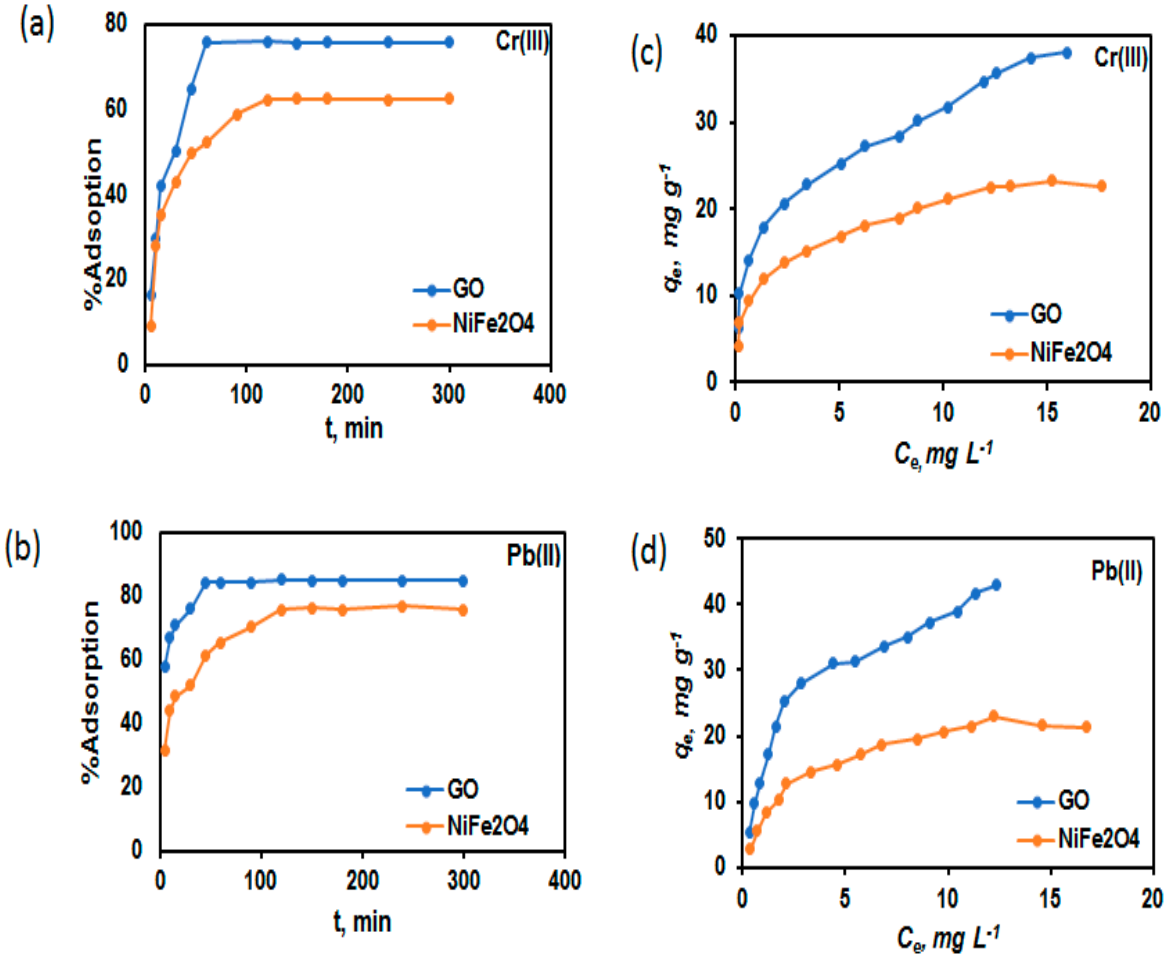

Figure S4. Adsorptive kinetics (**a**,**b**) and isotherms (**c**,**d**) of Pb(II) and Cr(III) (Co = 2.0 to 25 mg L−1) onto GO and NiF2O4 at pH 5.0 for Pb(II) and pH 4.0 for Cr(III), and 30 min equilibrium time for the range of reaction temperature, 298–328 ± 2.0 K.