Supporting Information

Recyclable Sodium Titanate/ Graphite Oxide/ Polyurethane Polymer for Efficient Removal of Radioactive Strontium(II) from Contaminated Water

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Table S1 Synthesis optimization parameters

Reactant ratio (sodium titanate: GO: NB-9000B)	Product characteristics (sodium titanate/GO/PUP)
1:2:100	The material was 3D foam shape with low adsorption capacity.
1: 1: 100	Foam texture was harder and denser, and tended to sink water.
2: 1: 100	Good adsorption capacity, but sodium titanate particles was easy to fall off.
1 :1: 50	The structure remained 3D foam shape with good adsorption performance, and no obvious leakage of sodium titanate particles.
1: 1: 25	Loose structure with sodium titanate leakage.

Table S2 Isotherm model parameters for the adsorption of strontium by sodium titanate/GO/PUP.

Sample	Langmuir			Freundlich		
	Q_{max}(mg/g)	K(L/mg)	R_1^2	K_f(L/g)	1/n	R_2^2
sodium titanate/GO/PUP	104.71	0.34	0.9991	68.8516	0.2063	0.94202

Supplementary phytotoxicity assay

Table S3 Sample groups and their test conditions

Group	Processing condition
A	Deionized water control
B	200mg/L sodium titanate/GO/PUP
C	600mg/L sodium titanate/GO/PUP
D	1200mg/L sodium titanate/GO/PUP

Table S4 Indicators of wheat seeds in different sample groups

Water samples	Germination percentage(%)	Shoot length(cm)	Fresh weight(g)	Dry weight(g)	Taotal chlorophyll（mg/L）
A	85.0	11.5	1.1	0.15	6.09
B	90.4(p>0.05)	12.5(p>0.05)	1.5(p>0.05)	0.19(p>0.05)	4.2(p>0.05)
C	87.6(p>0.05)	12.3(p>0.05)	1.4(p>0.05)	0.19(p>0.05)	3.1(p>0.05)
D	76.0(p>0.05)	11.7(p>0.05)	1.1(p>0.05)	0.16(p>0.05)	3.4(p>0.05)

Supplemental Figure

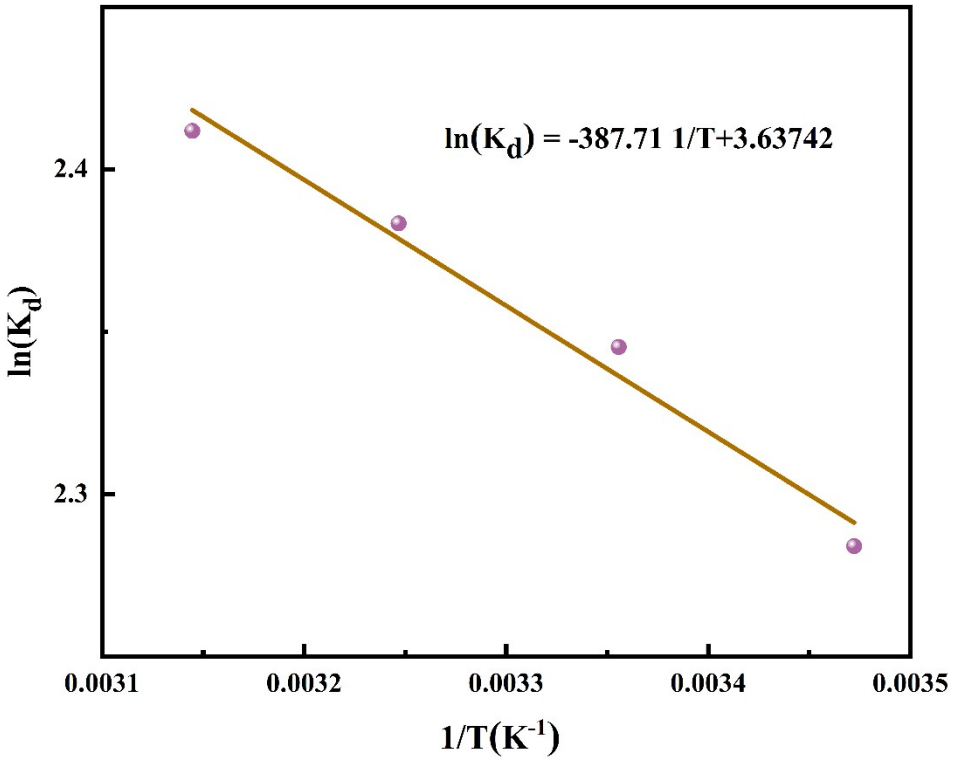

Fig. S1 Thermodynamic diagram of Sr^{2+} adsorption by sodium titanate/GO/PUP

Material desorption assays

For safe disposal of adsorbed radioactive, it is desired that radioactive cations can be permanently trapped in the adsorbents to avoid secondary contamination. Further, the adsorbent component was not leached into the disposed water. Experiments were conducted to search the release situation of Sr^{2+} from the composite adsorbent. The separated sodium titanate/GO/PUP with adsorbed saturated amount of Sr^{2+} was rinsed with water to remove the Sr^{2+} on its surface. Then it was dispersed into certain amount of water and 0.1 M Na^{+} solution, respectively. The suspension was shaken on the vortex shaker for 48 h and the concentration of Sr^{2+} was determined by ICP-OES. The result revealed that there was no release of Sr^{2+} from the adsorbent to water. And about 6% of the saturated Sr^{2+} absorbed by sodium titanate/GO/PUP was released into the Na^{+} solution. Moreover, as well sealed by GO in the pores of PUP, no sodium titanate particles were detected leaching from loaded-PUP into solution. Obviously, the Sr^{2+} had been immobilized in sodium titanate/GO/PUP during adsorption without further treatment.