Supporting information:

From lamellar to hierarchical: Overcoming the diffusion barriers of sulfide intercalated layered double hydroxide for highly efficient water treatment

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S 1. EDX mapping of h-NFL-S@nf and l-NFL-S@nf

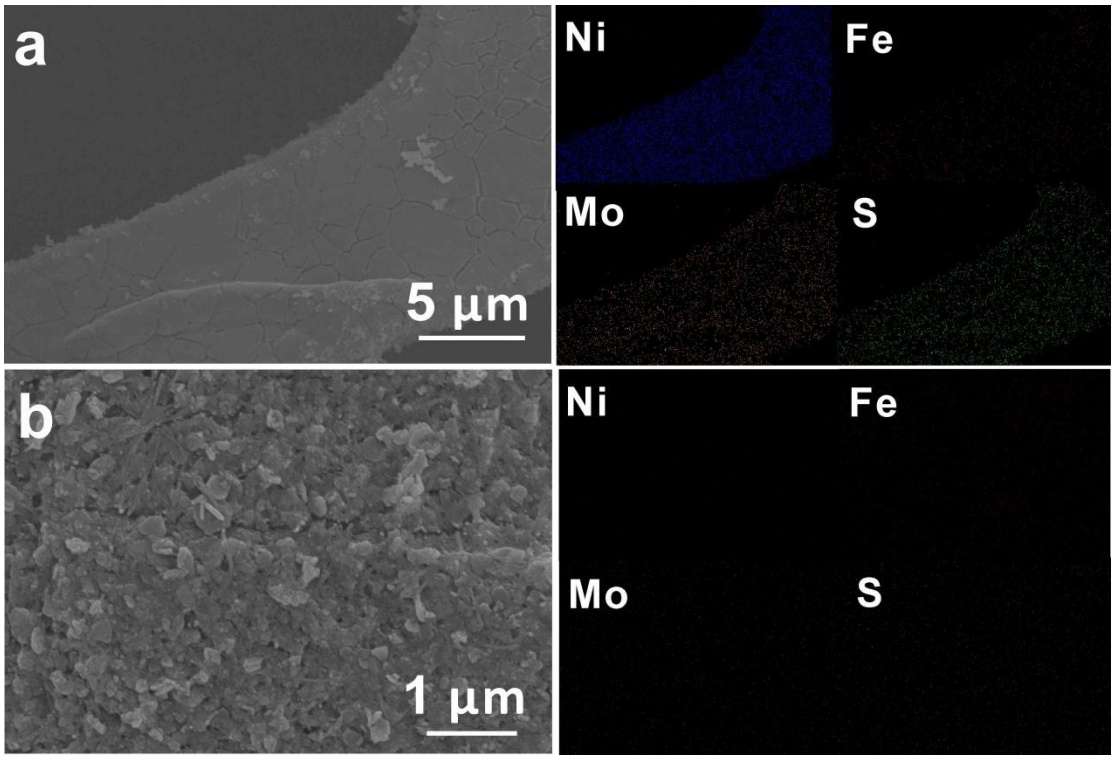

Figure S1. EDX mapping of a) hierarchical NFL-S and b) lamellar NFL-S, and the homogeneously distribution of Ni, Fe, Mo and S on the substrate of Ni foam.

S 2. Adsorption kinetic parameters

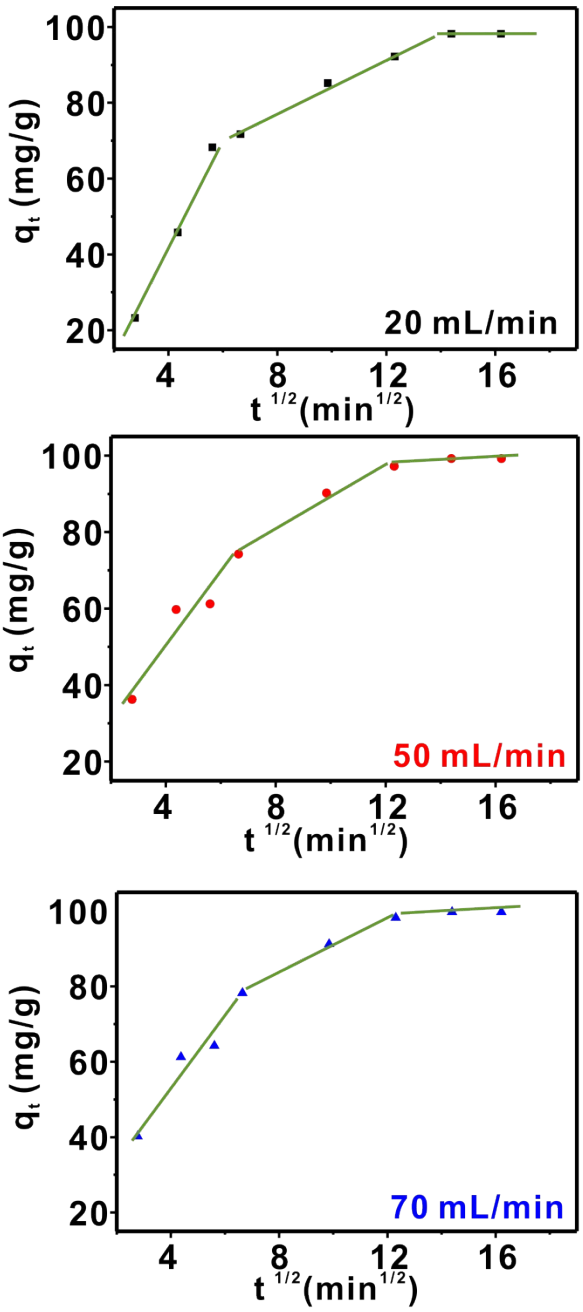

Figure S2. Intra-particle diffusion model (Weber-Morris) of Pb^{2+} under different velocity of fluid flow.

Table S1. Kinetic parameters of Pb(II) adsorption on h-NFL-S@nf under different velocity of fluid flow.

Velocity (mL/min)	pesudo-second-order				pecudo-first-order			intra-particle diffusion		
	q_e,exp	k_2 (g/mg min)	q_e,cal (mg/g)	R^2	k_1 (min^{-1})	q_e (mg/g)	R^2	k_i	c_i	R^2
20	91.83	0.0002	104.94	0.994	0.019	95.10	0.993	12.412	0.441	0.995
50	97.46	0.0003	107.52	0.997	0.027	95.17	0.978	9.660	30.3595	0.951
70	97.48	0.0004	106.38	0.999	0.030	95.50	0.979	9.793	39.129	0.976

S3. XPS S 2p and O 1s spectra of the NFL-S before and after heavy metal adsorption

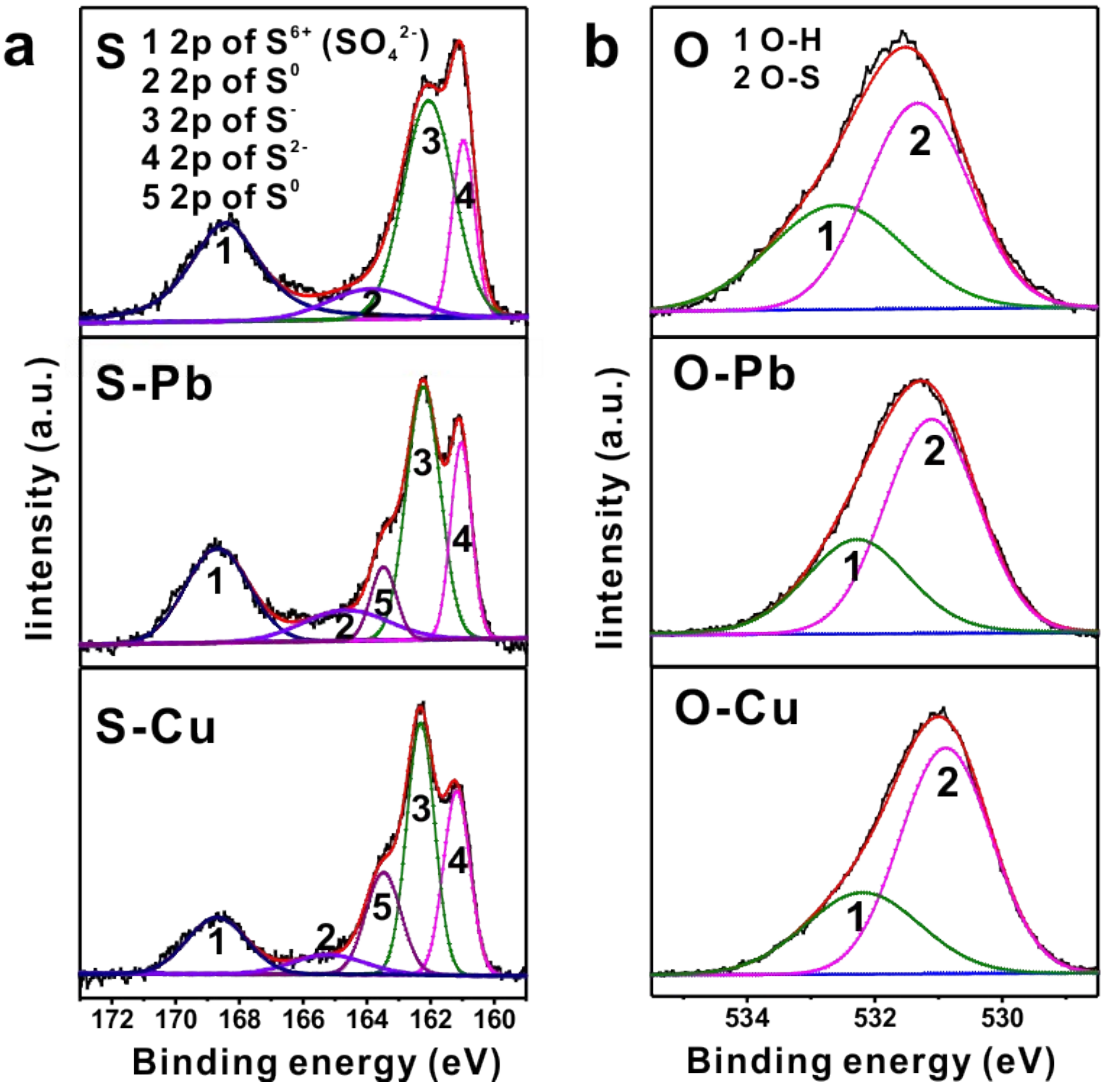

Figure S3. XPS a) S 2p and b) O 1s spectra of the NFL-S before and after heavy metal adsorption (Pb^{2+} and Cu^{2+}).

S4. Reusability study

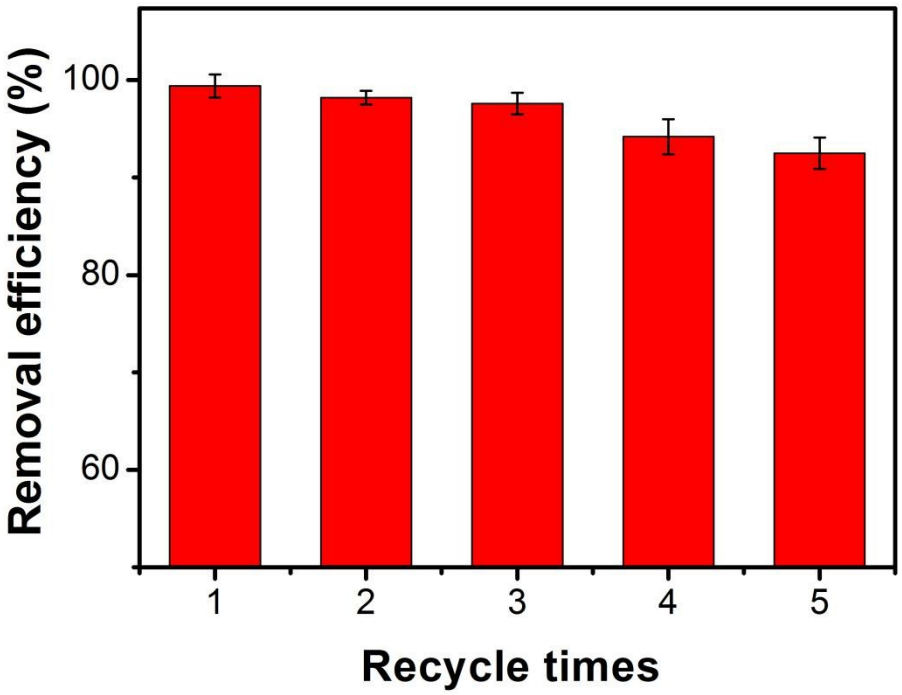

Figure S4. Pb(II) removal efficiency and recycling of h-NFL-S@nf. The initial concentration of Pb(II) is 10 mg L^{-1}.