Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Supporting information

Efficient and Selective Removal of ReO_4^- from Highly Acid Solutions by SnS Nanoflowers: Implications for TcO_4^- Sequestration

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Figures

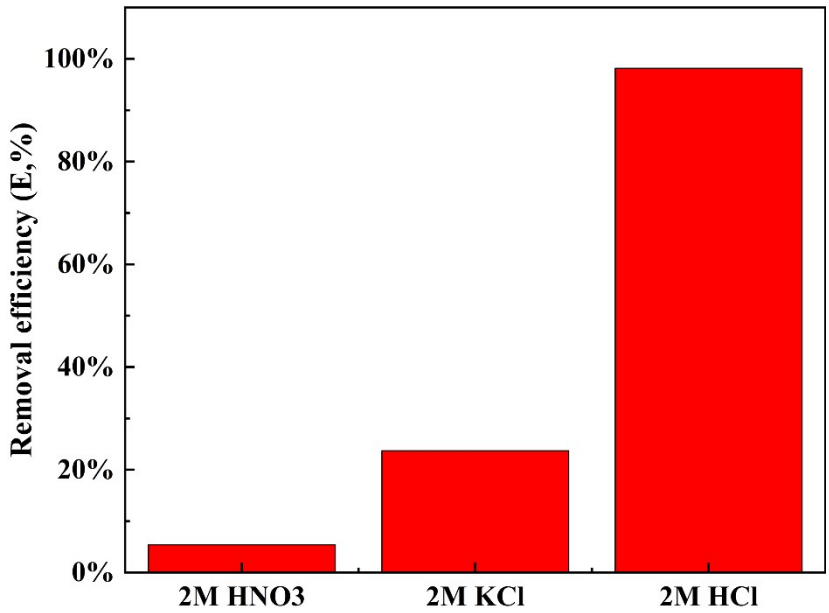

Figure S1. The removal efficiency of ReO_4^- by SSF in HNO_3 solution, KCl solution and HCl solution (SSF dosage of 1 g L^{-1}, t of 1 h, C0 of 10 mg L^{-1}, and T of 298 K)

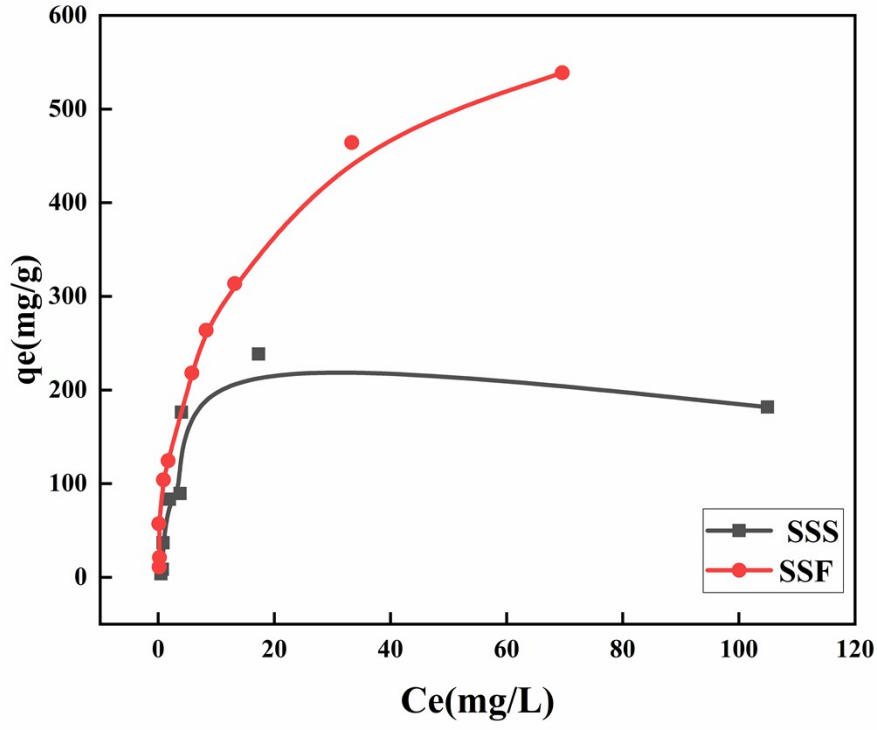

Figure S2. Adsorption isotherm of the SSF (SSF/SSS dosage=1g/L, t=1h, 3M HCl, T=298K)

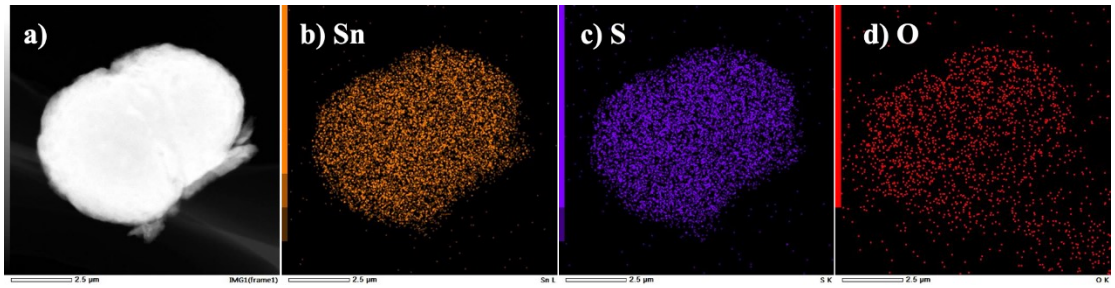

Figure S3 STEM and STEM-EDS images of SSF (a) STEM image (b) Sn components, (c) S components, (d) O components

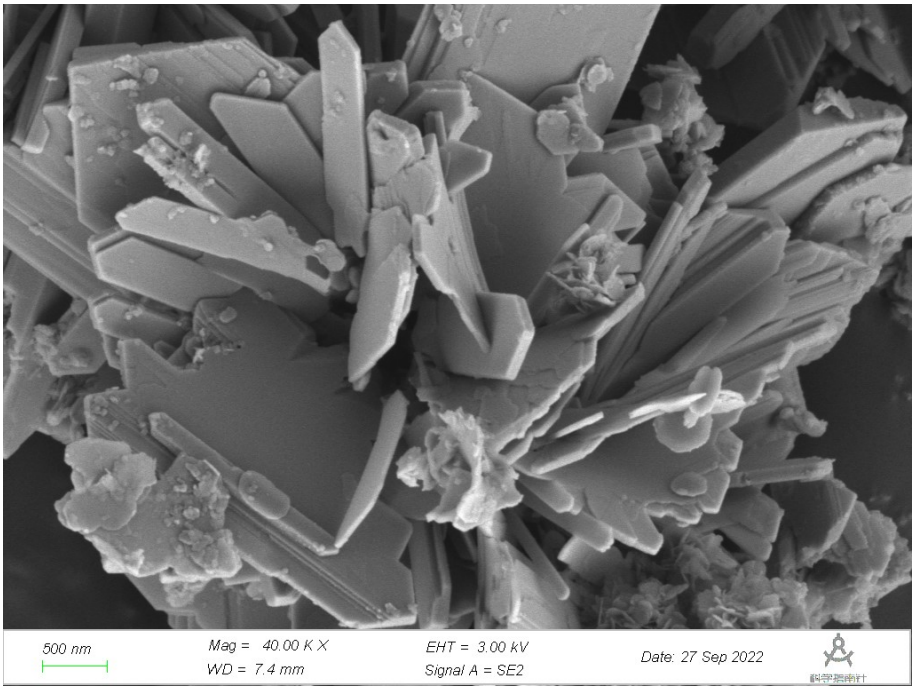

Figure S4 SEM images of the SSS

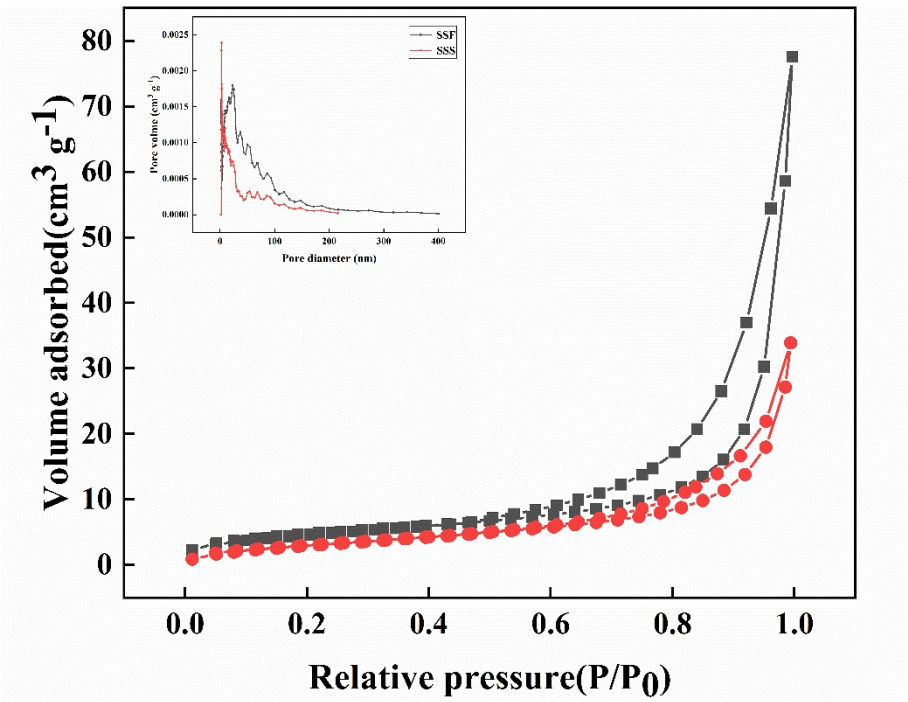

Figure S5 Nitrogen adsorption–desorption isotherms and the corresponding pore-size distribution curves (inset) of SSF and SSS samples.

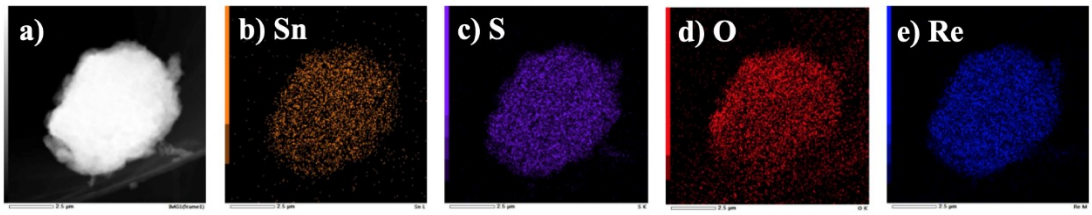

Figure S6 STEM and STEM-EDS images of SSF after adsorbing Re. (a) STEM image (b) Sn components, (c) S components, (d) O components, (e) Re components.

Tables

Table S1. Kinetic parameters for ReO_4^- adsorption by SSF

	Pseudo-first-order			Pseudo-second-order		
Adsorbent	q_e (mg g^{-1})	K_1 (min^{-1})	R^2	q_e (mg g^{-1})	K_2(g mg^{-1} min^{-1})	R^2
SSF	346.69	0.067	0.972	391.67	2.16E-4	0.918

Table S2. Isotherm parameters (Langmuir, Freundlich) of ReO_4^- at 298 K

	Langmuir			Freundich		
metal ions	q_{max} (mg g^{-1})	K_L (L mg^{-1})	R^2	n	K_f ($mg^{1-1/n}$ $L^{-1/n}$ g^{-1})	R^2
ReO_4^-	598.098	0.102	0.974	2.549	108.319	0.978

Table S3. Physical properties of SSF and SSS

Sample	BET surface Area(m^2 g)	Average pore Size(nm)	Total pore Volume(cm^3 g^{-1})
SSF	17.1417	27.98	0.119
SSS	11.6129	18.05	0.052