

# Supplementary Materials

## An integrated approach for the recovery of used tin as water adsorbent

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**Table S1.** Sn and Cr concentration in solids produced at reconstruction process in relation to 1<sup>st</sup> precipitation step pH (reductant: N<sub>2</sub>H<sub>4</sub>·2HCl, pH<sub>2</sub>: 7)

1 <sup>st</sup> precipitation step				2 <sup>nd</sup> precipitation step		
pH	Sn (%)	Cr (mg/g)	m (mg)	Sn (%)	Cr (mg/g)	m (mg)
2.5	65.6%	19.2	121	73.1%	12.5	42
3	67.1%	20.2	138	70.4%	3	26
3.5	67.4%	19.2	148	68.7%	2.2	17
4	67.5%	17.9	161	68.0%	1.2	3

**Table S2.** Parameters of Freundlich fitting on Cr(VI) adsorption isotherms in distilled and natural-like water at 20° C and equilibrium pH 6–8 for the recovered adsorbent.

Water	pH	$K_F$ ( $\mu\text{g}_{\text{Cr(VI)}}/\text{mg}_{\text{ads}})/(\mu\text{g/L})^{1/\eta}$	1/n	R <sup>2</sup>	Q <sub>25</sub> mg/g
Distilled	6	34.0	0.017	0.9646	35.4
	7	28.6	0.022	0.9944	30.7
	8	27.7	0.016	0.9358	29.2
Natural-like (NSF)	6	18.7	0.020	0.9680	20.0
	7	16.5	0.012	0.9618	17.1
	8	15.1	0.018	0.9713	16.0

**Table S3.** Parameters of Langmuir fitting on Cr(VI) adsorption isotherms in distilled and natural-like water at 20° C and equilibrium pH 6–8 for the recovered adsorbent.

Water	pH	$K_L$ L/ $\mu\text{g}$	$Q_{\text{max}}$ $\mu\text{g}_{\text{Cr(VI)}}/\text{mg}_{\text{ads}}$	R <sup>2</sup>
Distilled	6	0.047	39.7	0.9998
	7	0.067	34.4	0.9999
	8	0.323	31.3	0.9999
Natural-like (NSF)	6	0.025	22.4	0.9990
	7	0.033	18.5	0.9995
	8	0.031	17.7	0.9992