

Supplementary Materials

For article

Strippable polymer nanocomposite comprising “green” chelates, for the removal of heavy metals and radionuclides

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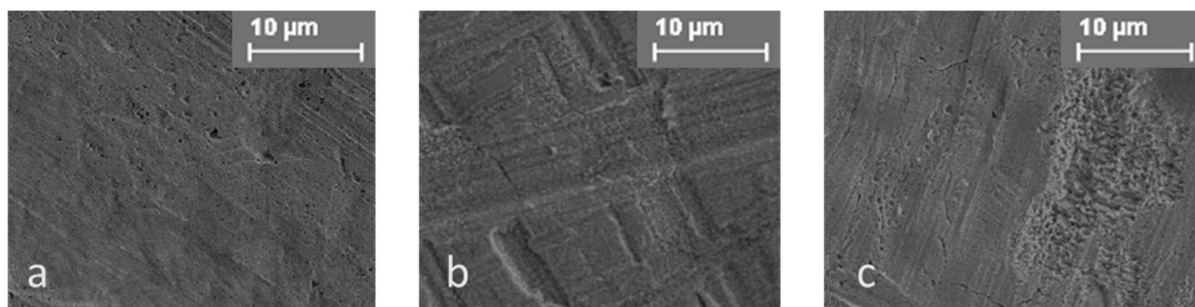
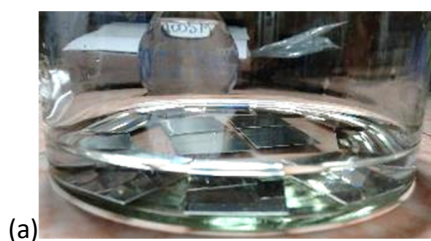


Figure S.1 – Different types of “polishing” for the stainless-steel coupons employed for decontamination tests prior to contamination step: (a) mirror – finish (SSMF); (b) grinded-finish (SSGF); (c) etched-finish (SSEF)



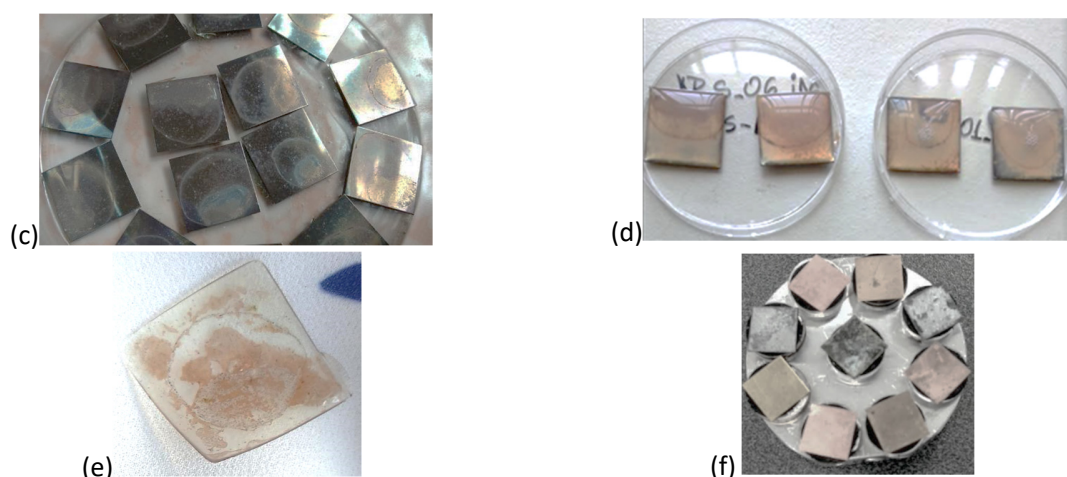


Figure S.2 – Contamination (a) immersion in Cs_2SO_4 aqueous solution ($C_1 = 0.005\text{M}$); (b) “in-depth” contamination at 700°C ; (c) metallic coupons after in-depth decontamination; and Decontamination processes (d) applying one of the decontamination solutions; (e) peeled film; (f) different types of metallic samples prepared for SEM-EDS analysis after decontamination.

Table S.1 - AAS instrumental parameters

Element	Pb	Co	Sr
Wavelength(nm)	283.3	242.5	460.7
Lamp	Hollow catode		
Slit Width	0.7L	0.2L	0.7L
READ TIME	5 sec		
Graphite tube	Pyrolytic graphite		
Calibration			
Standards	Conc. (μg/L)	Conc. (μg/L)	Conc. (μg/L)
Std.1	5	5	3
Std.2	10	10	6
Std.3	15	15	9
Std.4	20	20	12
Std.5	25	25	15
Calibration Method	zero intercept. linear		
Technique	AA-BG	AA-BG	AA
Signal processing	Peak Area		
Sample volume	20 μL		
Replicate	3		
Modifier /volume	Pd/Mg(NO3)2/ 5 μL	Mg(NO3)2 / 5 μL	Pd/Mg(NO3)2 5 μL

Furnace program for Pb, Co, Sr

Step	Temp (°C)	Ramp time (s)	Hold time (s)	Internal flow (ml/min)	Gas type
1	110	1	30	250	Argon
2	130	15	30	250	Argon
3	850	10	20	250	Argon
4	1800	0	5	0	Argon
5	2450	1	3	250	Argon

Injection temperature - 20 (°C). Read step - 4

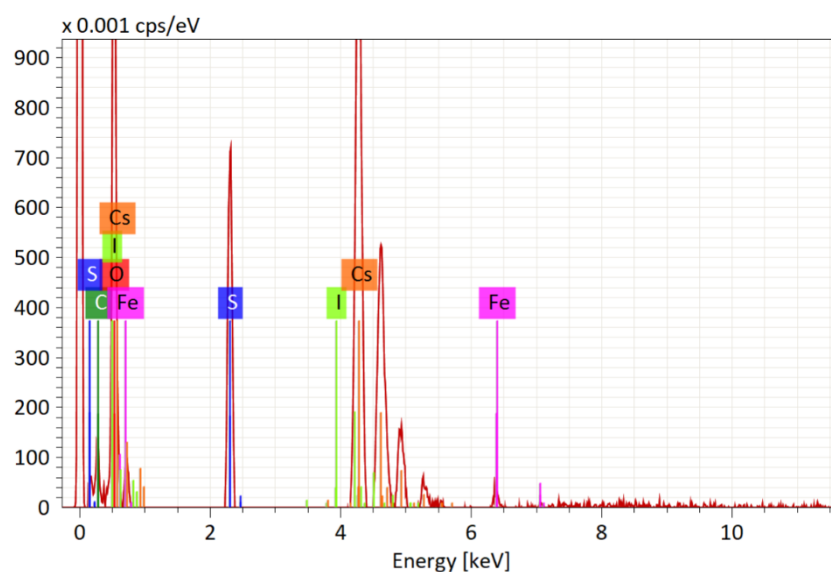


Figure S.3 – EDS spectrum for SSMF contaminated with Cs

Table S.2 – Values obtained from EDS analysis for SSMF contaminated with Cs

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (3 sigma)	rel. error [%] (3 sigma)
C	6	717	2.14	4.60	13.27	1.20	55.92
O	8	8652	13.88	29.87	64.63	5.14	36.99
S	16	6116	2.53	5.45	5.88	0.34	13.53
Fe	26	318	0.74	1.59	0.99	0.14	18.87
Cs	55	23149	27.18	58.48	15.23	2.42	8.90
		Sum	46.47	100.00	100.00		

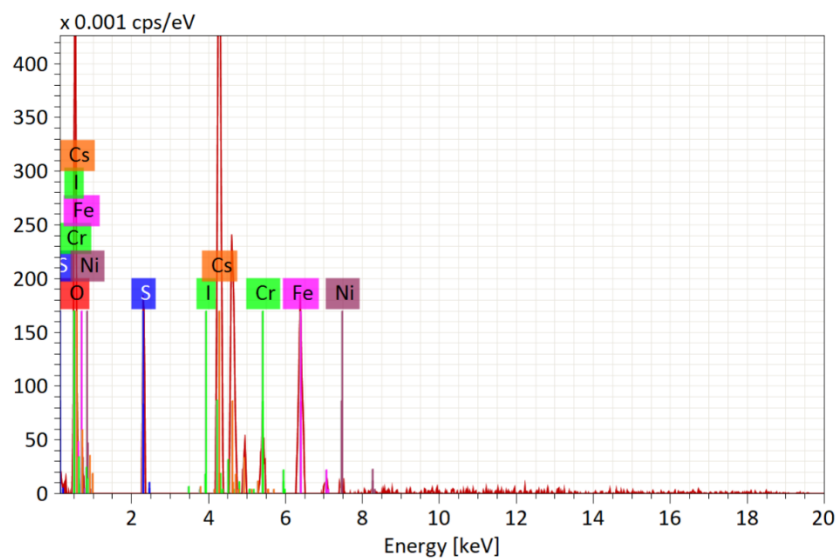


Figure S.4 – EDS spectrum for SSGF contaminated with Cs

Table S.3 – Values obtained from EDS analysis for SSGF contaminated with Cs

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (3 sigma)	rel. error [%] (3 sigma)
O	8	2867	8.05	35.45	74.05	3.39	42.14
S	16	1281	0.59	2.62	2.73	0.14	23.33
Cr	24	681	0.71	3.15	2.02	0.13	18.53
Fe	26	2223	4.03	17.72	10.60	0.39	9.79
Ni	28	58	0.19	0.85	0.48	0.09	46.98
Cs	55	9430	9.14	40.22	10.12	0.83	9.09
		Sum	22.72	100.00	100.00		

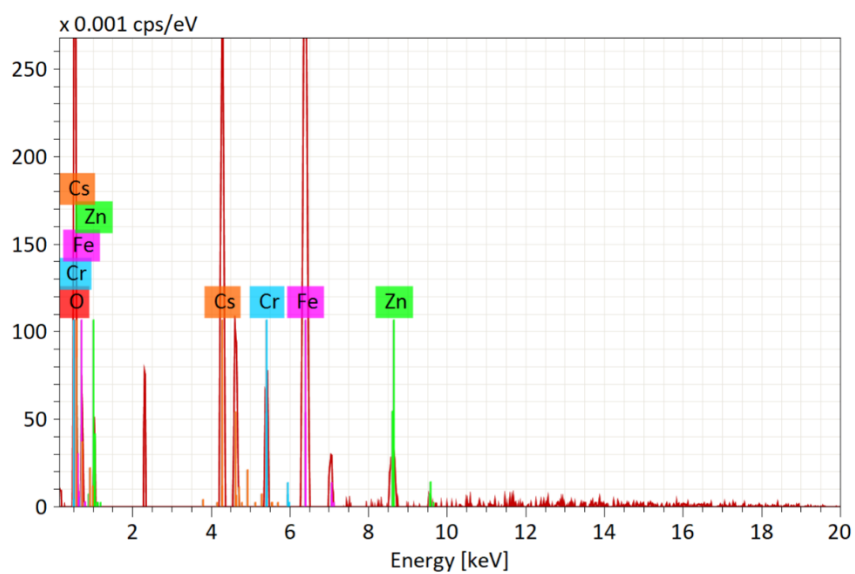


Figure S.5 – EDS spectrum for SSEF contaminated with Cs

Table S.4 – Values obtained from EDS analysis for SSEF contaminated with Cs

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (3 sigma)	rel. error [%] (3 sigma)
O	8	2968	6.09	35.24	69.54	2.57	42.24
Cr	24	737	0.48	2.79	1.70	0.11	23.57
Fe	26	4764	5.64	32.65	18.46	0.52	9.26
Zn	30	490	2.35	13.58	6.56	0.26	11.27
Cs	55	4069	2.72	15.74	3.74	0.30	11.02
		Sum	17.28	100.00	100.00		