Supplemental Information

Magnetic iron oxide and manganese-doped iron oxide nanoparticles for the collection of alpha-emitting radionuclides from aqueous solutions

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Table SI 1. Fe_3O_4 and Mn-doped Fe_3O_4 NP distribution coefficient and percent sorption summary for several α-emitting radionuclides in a range of aqueous matrices. S/L ratio was 0.1 mg/mL.

Radio-tracer	**Aqueous matrix**	**Approx. solution pH**	**Fe_3O_4**		**Mn-doped Fe_3O_4**	
			Log K_d, mL·g^{-1}	***S%***	**Log K_d, mL·g^{-1}**	***S%***
^{210}Po	CRW	8	5.4	95.7	6.8	99.8
		2	6.2	99.4	6.1	99.1
	HGW	8	5.7	98.0	5.8	98.4
		2	6.1	99.2	6.4	99.6
	SW	8	6.4	99.6	>6.9	>99.9
		2	5.0	91.0	5.6	97.3
	Urine	6	2.8	6.3	2.4	2.3
		2	3.8	38.0	4.9	98.8
^{226}Ra	CRW	8	4.5	76.1	>5.2	>94.3
		2	2.7	4.23	4.1	57.2
	HGW	8	4.2	58.9	5.6	97.7
		2	2.7	5.0	3.8	39.6
	SW	8	3.0	9.3	>5.6	>97.3
		2	<2.8	<5.4	3.1	11.6
	Urine	6	3.9	42.0	3.8	36.1
		2	2.8	6.2	2.5	2.8
^{233}U	CRW	8	2.8	5.7	3.8	39.0
		2	<2.1	<1.3	2.0	1.0
	HGW	8	<1.7	<0.5	3.3	16.6
		2	<2.1	<1.2	<2.1	<1.2
	SW	8	2.3	2.1	3.5	23.3
		2	<1.7	<0.5	<1.7	<0.5
	Urine	6	2.8	6.2	2.7	4.6
		2	2.9	8.0	2.9	7.4
^{241}Am	CRW	8	5.0	91.4	5.4	96.0
		2	2.7	5.1	3.6	28.3
	HGW	8	5.4	96.5	5.7	98.1
		2	<1.9	<0.9	3.6	27.3
	SW	8	4.9	88.5	5.6	97.5
		2	<2.0	<0.9	3.0	8.2
	Urine	6	4.3	68.7	4.0	50.8
		2	2.9	7.3	<2.3	<2.1