

Electronic Supplementary Information

Microcrystalline Cellulose-based Nitrogen-Doped Carbon Nanoflakes for Adsorption of Uranium and Thorium

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Table S1: Comparison of U(VI) and Th(IV) ions removal efficiencies of the reported adsorbents

S.N o	Adsorbent	Synthesis method, time and temperature	pH		Contact Time (min)		Removal efficiency		Ref.
			U(VI))	Th(I) V)	U(VI))	Th(I) V)	U(VI))	Th(I) V)	
1.	MnFe ₂ O ₄	Co-precipitation and refluxing	4.0	3.0	180	180	55	77	1
2.	rGONF nanocomposite	Precipitation method	3.5	3.5	180	150	96.5	97.5	2
3.	AC(M-HNAC)	Pyrolysis and precipitation method	5.0	5.0	30	30	97.9 4	87.96	3

4.	Fe ₃ O ₄ @AMC A-MIL 53 (Al)	Solvotherm al, refluxing and precipitation	4.2	4.2	90	90	94	93.34	4
5.	α -GOM ₂	Precipitation and refluxing at 87 °C	3.0-3.8	3.0-3.8	60	60	92.1	98.8	5
6.	N-CNF	Heating, 30 min, 90 °C	6.0	7.0	150	150	91.2 5	97.64	Present work

References:

1. M. Alaqaarbeh, F. I. Khalili and O. Kanoun, *J. Radioanal. Nucl. Chem.* 2020, **323**, 515-537.
2. L. P. Lingamdinne, Y.-L. Choi, I.-S. Kim, J.-K. Yang, J. R. Koduru and Y.-Y. Chang, *J. Hazard. Mater.* 2017, **326**, 145-156.
3. A. Alahabadi, P. Singh, P. Raizada, I. Anastopoulos, S. Sivamani, G. L. Dotto, M. Landarani, A. Ivanets, G. Z. Kyzas and A. Hosseini-Bandegharaei, *Colloids Surf. A* 2020, **607**, 125516.
4. A. A. Alqadami, M. Naushad, Z. A. Alothman and A. A. Ghfar, *ACS Appl. Mater. Interfaces* 2017, **9**, 36026-36037.
5. N. Pan, L. Li, J. Ding, S. Li, R. Wang, Y. Jin, X. Wang and C. Xia, *J. Hazard. Mater.* 2016, **309**, 107-115.