**Supporting Information on**

**Facile preparation of novel DOPO functionalized cellulose microshphere as adsorbent for uranium adsorption with ultrahigh selectivity**

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**Fig. S1** pHpzc of the t-DOPOR

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**Fig. S2** Relative proportion of U(VI) as a function of solution pH.(C0(U(VI)) = 20 mg/L)

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**Fig. S3** high-resolution XPS spectra of U 4f for the t-DOPOR-U



**Fig. S4** FTIR image for DOPO-R before and after adsorption with adsorption U(VI)

**Table S1** Kinetic parameter of U (VI) individual adsorption onto t-DOPOR

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resin | Experimental data  qe(mg g-1) | | Pseudo first-order equation  qe(mg g-1) k1(h-1) R2 | | | Pseudo-Second-order equation  qe(mg g-1) k2(g mg-1min-1) R2 | | |
| t-DOPOR | | 20.85 | 20.20 | 0.6565 | 0.9615 | 21.21 | 0.05621 | 0.9997 |

**Table S2** Isotherm parameter of U (VI) individual adsorption onto t-DOPOR

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resin | Experimental data  qe(mg g-1) | | Langmuir model  qe(mg g-1) k1(h-1) R2 | | | Freundlich model  qe(mg g-1) k2(g mg-1min-1) R2 | | |
| t-DOPOR | | 67.08 | 69.49 | 0.12 | 0.9921 | 20.07 | 3.891 | 0.9850 |

**Table S3** Thermodynamic parameters for the adsorption of U(VI) on t-DOPOR

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | △H(KJ/mol) | △S(J/mol K) |  | △G(KJ/monl) | | | |
| T=293 K | T=298 K | T=303 K | T=313 K T=323 K |  |
| t-DOPOR | 2.87 | 85.22 | -1.15 | -1.57 | -2.00 | -2.85 -3.70 |  |

**Table S4** t-DOPOR for removing trace amount of U(VI) in practical application

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | pH | C0 | Ce | E(%) |
| contaminated pure water |  | 3 | 6.37 | 0.096 | 98.49 |
| simulated groundwater | | 7.6 | 24.3 | <0.04 | >99.8 |