

# Supporting Information: High Surface-Area Amidoxime-Based Polymer Fibers Co-Grafted With Various Acid Monomers Yielding Increased Adsorption Capacity For The Extraction Of Uranium From Seawater

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**Table S1.** Irradiation conditions for the PE fibers using the RDI Dynamitron electron beam.

Irradiation Conditions for PE Fibers	
Beam Energy	4.90 MeV
Beam Current	1.00 mA
LMS3 Table Speed	0.54 in/s
Approximate Total Dose	200 kGy
Estimated Dose per Pass	12 – 13 kGy/pass
Total number of passes	16
Total Irradiation Time	~ 22 minutes

**Table S2.** List of all grafting solution compositions and the quantities to prepare the adsorbents derived from acrylic acid (AA), methacrylic acid (MAA) or vinyl sulphonic acid (VSA).

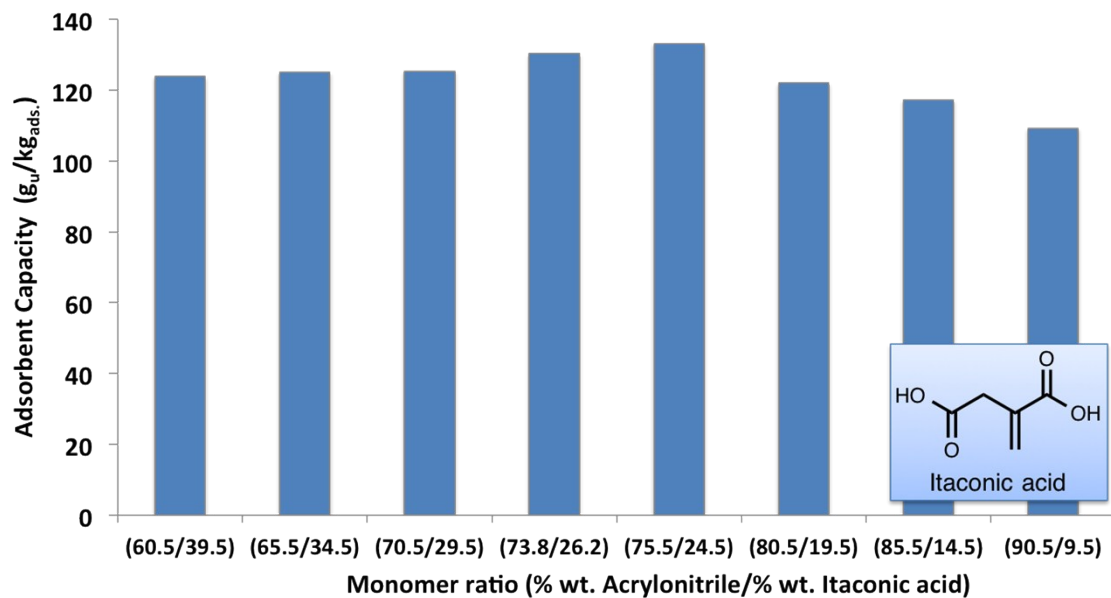
Composition of grafting solution	DMSO (mL)	AN (mL)	Acid (mL)	DMSO (mmol)	AN (mmol)	Acid (mmol)	wt. % DMSO	wt. % AN	wt. % Acid
26.7% DMSO 73.3% (75/25 AN/AA)	56.7	162	42	700	2473	608	26.7	55	18
25% DMSO 75% (70/30 AN/MAA)	49.7	142	49	700	2165	572	25	53	22
24.4% DMSO 75.6% (67/33AN/VSA)	56.7	162	55.5	799	2473	125	24.4	51	25

**Table S3.** List of all grafting solution compositions and the quantities to prepare each Itaconic acid containing sample.

<b>Composition of grafting solution</b>	<b>DMSO (mL)</b>	<b>AN (mL)</b>	<b>ITA (g)</b>	<b>DMSO (mmol)</b>	<b>AN (mmol)</b>	<b>ITA (mmol)</b>	<b>wt. % DMSO</b>	<b>wt. % AN</b>	<b>wt. % ITA</b>
26% DMSO 74% (75.5/24.5 AN/ITA)	56.7	162	42.5	799	2471	327	26.4	56	18
26% DMSO 74% (73.8/26.2 AN/ITA)	51.7	147.7	42.5	728	2253	327	26.0	55	19
26% DMSO 74% (75.5/24.5 AN/ITA)	56.75	162	42.5	799	2471	327	26.4	56	18
26% DMSO 74% (60.5/39.5 AN/ITA)	56.7	129.7	68.6	799	1979	527	26.4	45	29
26% DMSO 74% (65.5/34.5 AN/ITA)	56.7	140.5	59.9	799	2144	460	26.4	48	26
26% DMSO 74% (70.5/29.5 AN/ITA)	56.7	151.25	51.2	799	2307	393	26.4	52	22
26% DMSO 74% (80.5/19.5 AN/ITA)	56.7	172.7	33.8	799	2634	260	26.4	60	14
26% DMSO 74% (85.5/14.5 AN/ITA)	56.7	183.4	25.1	799	2798	193	26.4	63	11
26% DMSO 74% (90.5/9.5 AN/ITA)	56.7	194.1	16.5	799	2960	127	26.4	67	7

**Table S4.** List of all grafting solution compositions and the quantities to prepare each vinyl phosphonic acid (VPA) containing sample.

<b>Composition of grafting solution</b>	<b>DMSO (mL)</b>	<b>AN (mL)</b>	<b>VPA (mL)</b>	<b>DMSO (mmol)</b>	<b>AN (mmol)</b>	<b>VPA (mmol)</b>	<b>wt. % DMSO</b>	<b>wt. % AN</b>	<b>wt. % VPA</b>
23% DMSO 77% (63.4/36.6 AN/VPA)	56.7	162.0	55.4	799	2471	703	23	49	25
29% DMSO 71% (61.2/38.8 AN/VPA)	51.7	147.7	55.4	728	2253	703	29	43	28
30% DMSO 70% (63.4/36.6 AN/VPA)	56.8	162.0	55.4	799	2471	703	30	44	26
23% DMSO 77% (48.8/51.6 AN/VPA)	56.7	123.7	78.0	799	1888	989	23	38	39
23% DMSO 77% (53.4/46.6 AN/VPA)	56.7	136.5	70.4	799	2083	893	23	41	36
23% DMSO 77% (58.4/41.6 AN/VPA)	56.7	149.3	62.9	799	2278	797	23	45	32
23% DMSO 77% (68.4/31.6 AN/VPA)	56.7	174.9	47.8	799	2668	606	23	53	24
23% DMSO 77% (73.4/26.6 AN/VPA)	56.7	187.7	40.2	799	2863	510	23	57	20
23% DMSO 77% (78.4/21.6 AN/VPA)	56.7	200.5	32.7	799	3058	414	23	60	17



**Figure S1.** Comparison of the adsorption capacity using the laboratory screening protocol testing of fiber prepared with formulations of acrylonitrile/Itaconic acid with different ratios in DMSO.