

Supporting Information

A Study on the Degree of Amidoximation of Polyacrylonitrile Fibers and Its Effect on Their Capacity to Adsorb Uranyl Ions

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Table S1. Ions concentration of typical and simulated seawater

Element	U	V	Fe	Co	Ni	Cu	Zn	Pb	Mg	Ca
Typical Seawater	3.3	1.5-2.5	1.0-2.0	0.05	1.0	0.6	4.0	0.03	1.3×10^6	0.4×10^6
Conc. ($\mu\text{g/L}$)										
Ions	$\text{UO}_2(\text{CO}_3)_3^{4-}$ $\text{UO}_2(\text{CO}_3)_2^{2-}$	$\text{VO}_2(\text{OH})_3^{2-}$ VO_3^- HVO_4^{2-} H_2VO_4^-	Fe^{3+}	Co^{2+}	Ni^{2+}	Cu^{2+}	Zn^{2+}	Pb^{2+}	Mg^{2+}	Ca^{2+}
Simulated Seawater										
Conc. in Test system ($\mu\text{g/L}$)	330	152	141	5.3	101	65	408	34.6	1.2×10^5	0.6×10^5

[1] H. Sodaye et al. Extraction of uranium from the concentrated brine rejected by integrated nuclear desalination plants. *Desalination*, 235 (2009) 9–32.

[2] Riley J.P, Skirrow G. *Chemical oceanography*. 2nd Ed, 1975: 417.

[3] Wang D, Sañudo-Wilhelmy S.A., Development of an analytical protocol for the determination of V (IV) and V (V) in seawater: Application to coastal environments. *Marine Chemistry*, 112 (2008) 72–80.

[4] Ladd, K. V. The distribution and assimilation of vanadium with respect to the tunicate *Ciona intestinalis*. Ph.D. thesis, Brandeis University, 1974: 108.

[5] K.K. Turekian, *Handbook of Geochemistry*, K.H. Wedepohl, Springer-Verlag, Berlin, 1969: 309.

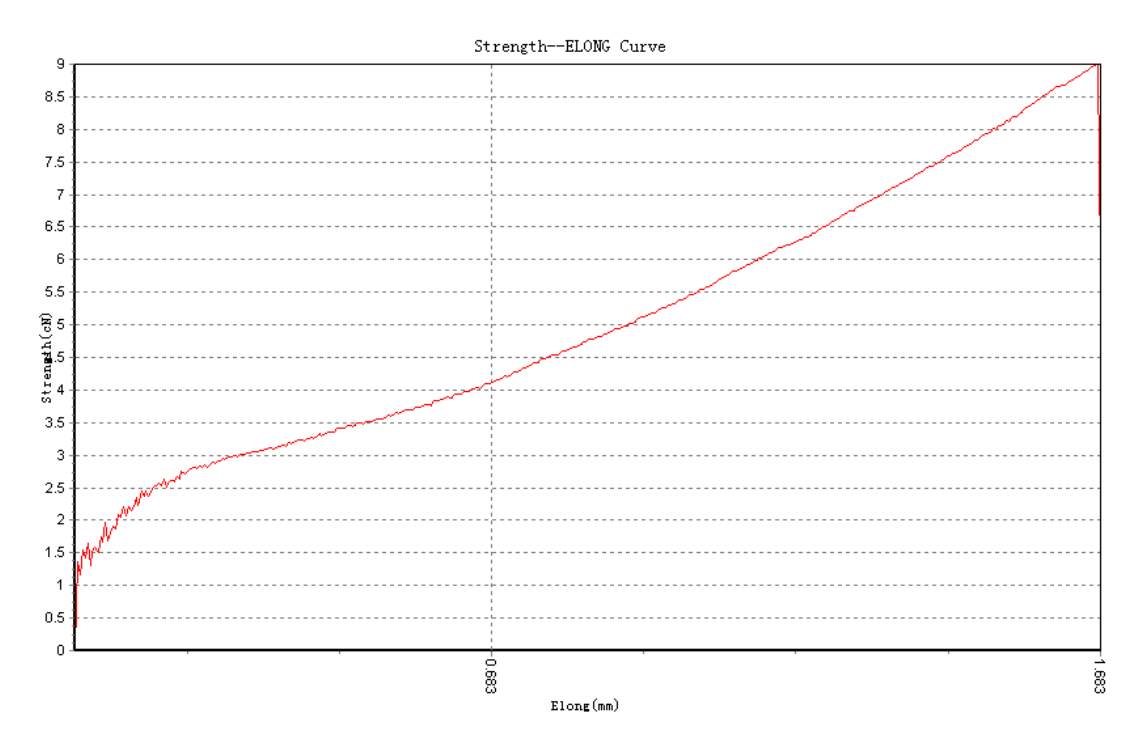


Figure S2. Tensile curve of PAN fiber.

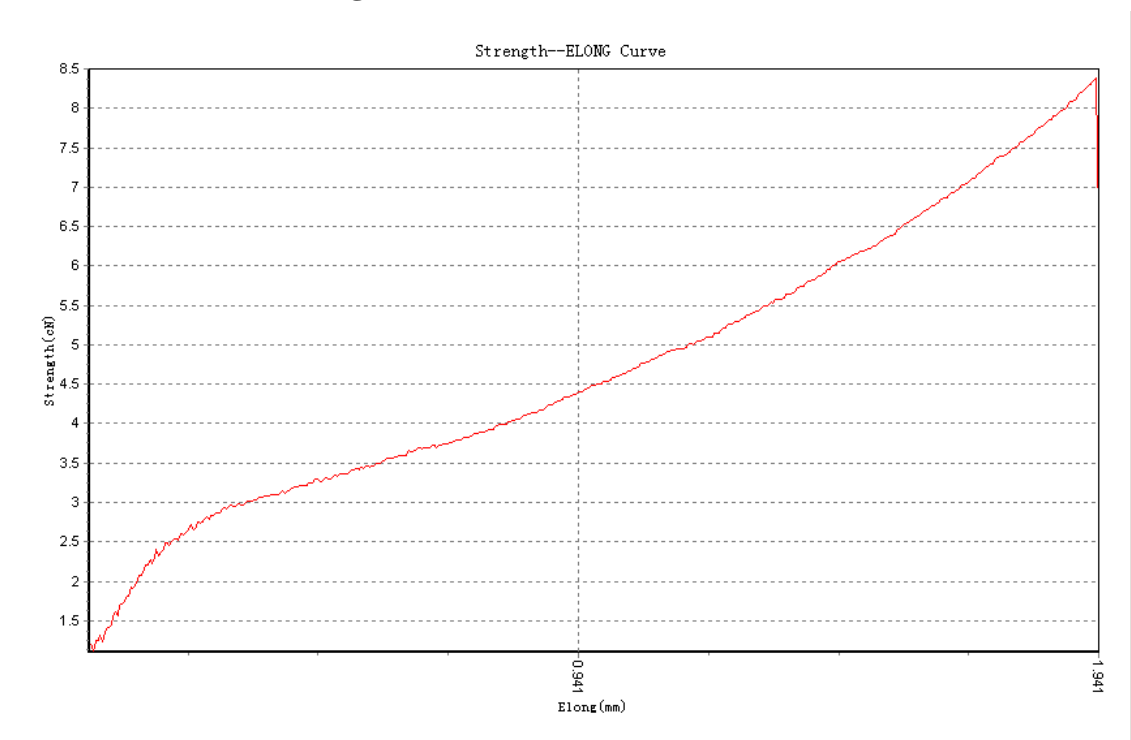


Figure S3. Tensile curve of AO-PAN fiber with CR of 1.2%.

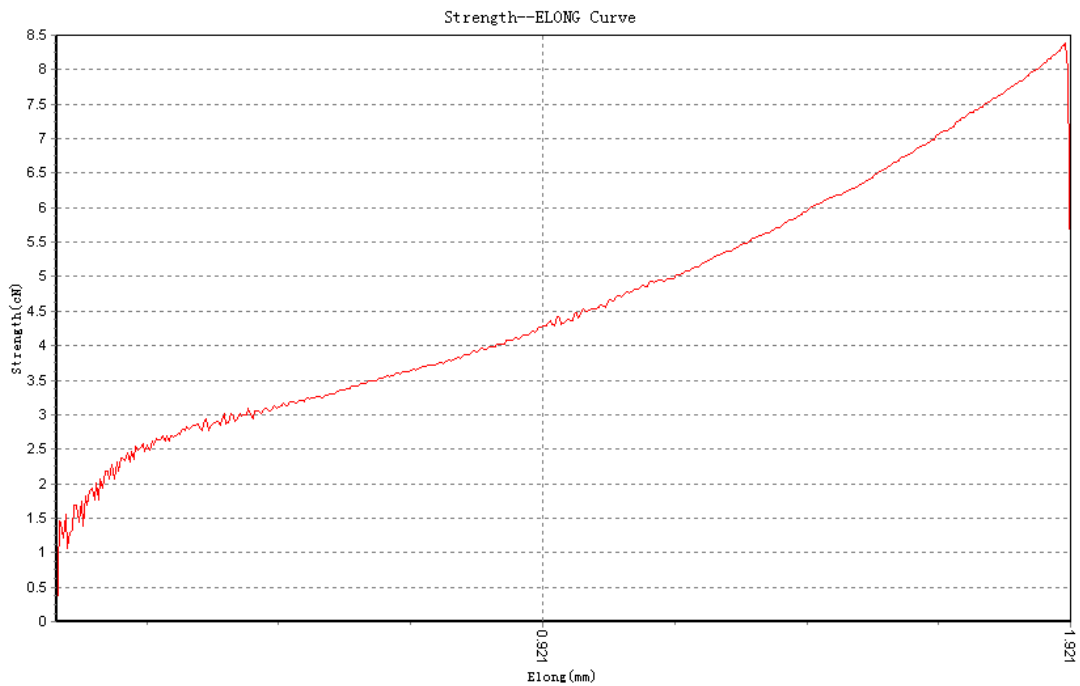


Figure S4. Tensile curve of AO-PAN fiber with CR of 2.8%.

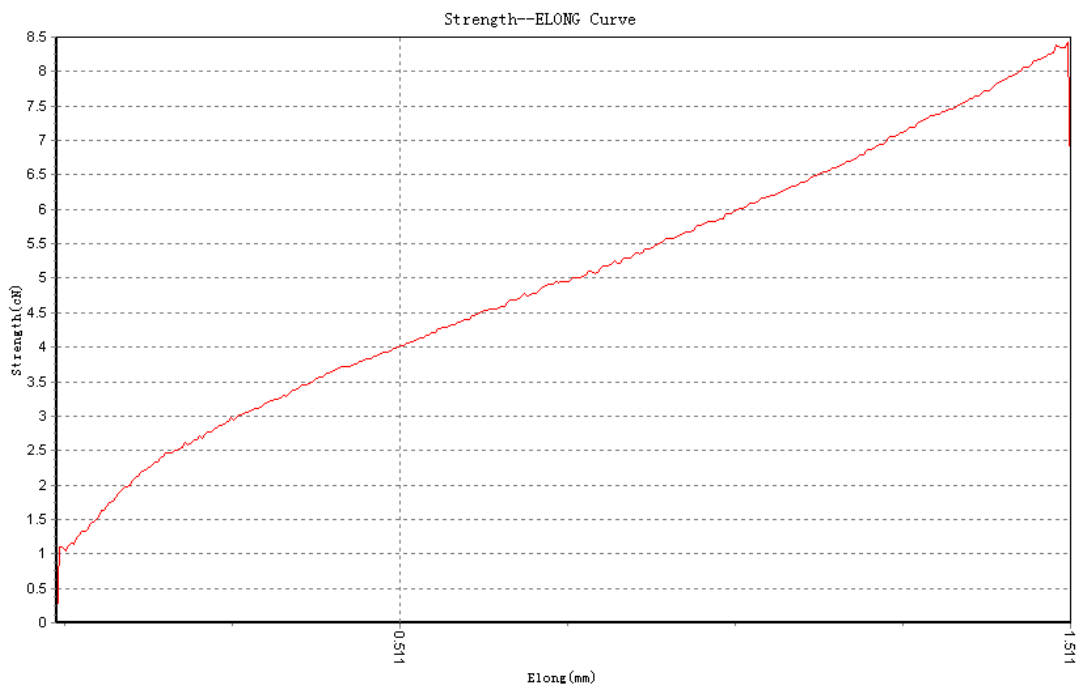


Figure S5. Tensile curve of AO-PAN fiber with CR of 4.7%.

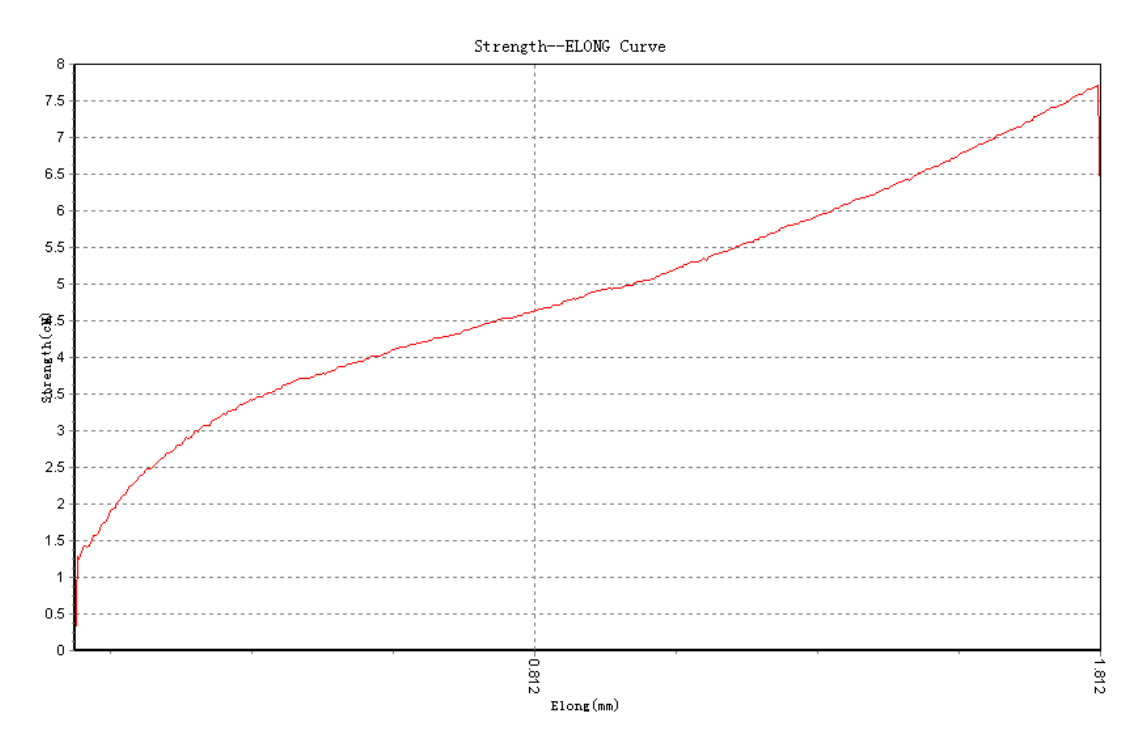


Figure S6. Tensile curve of AO-PAN fiber with CR of 10.8%.

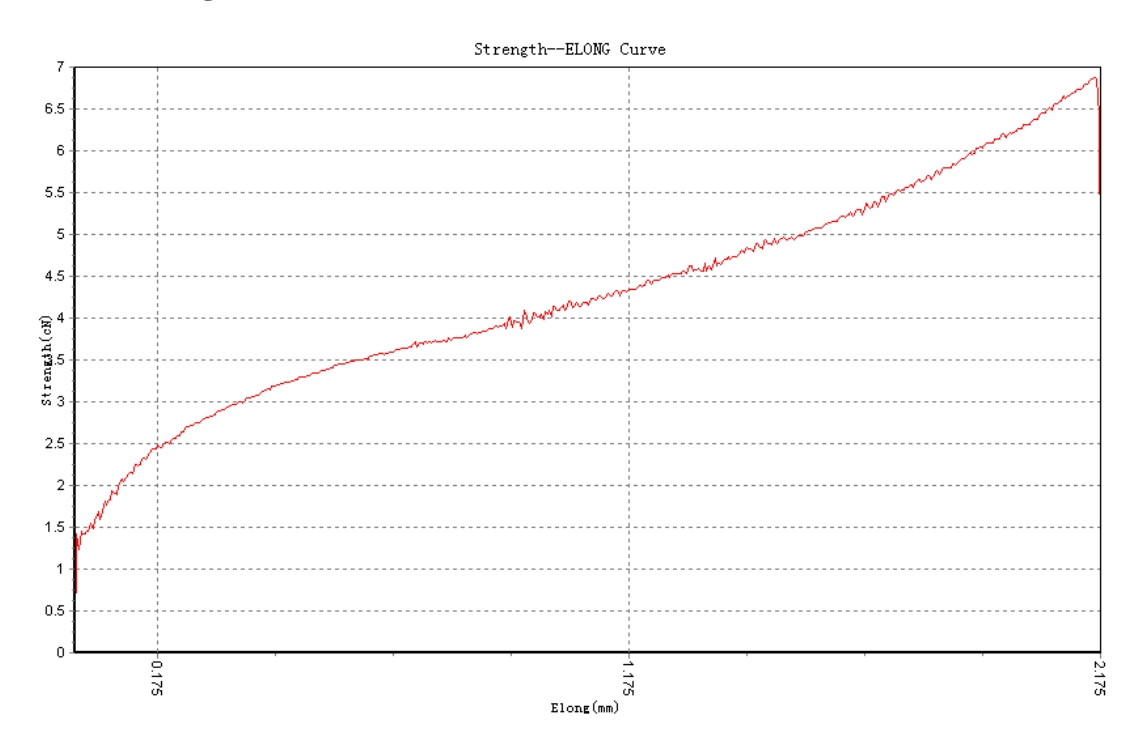


Figure S7. Tensile curve of AO-PAN fiber with CR of 25.4%.

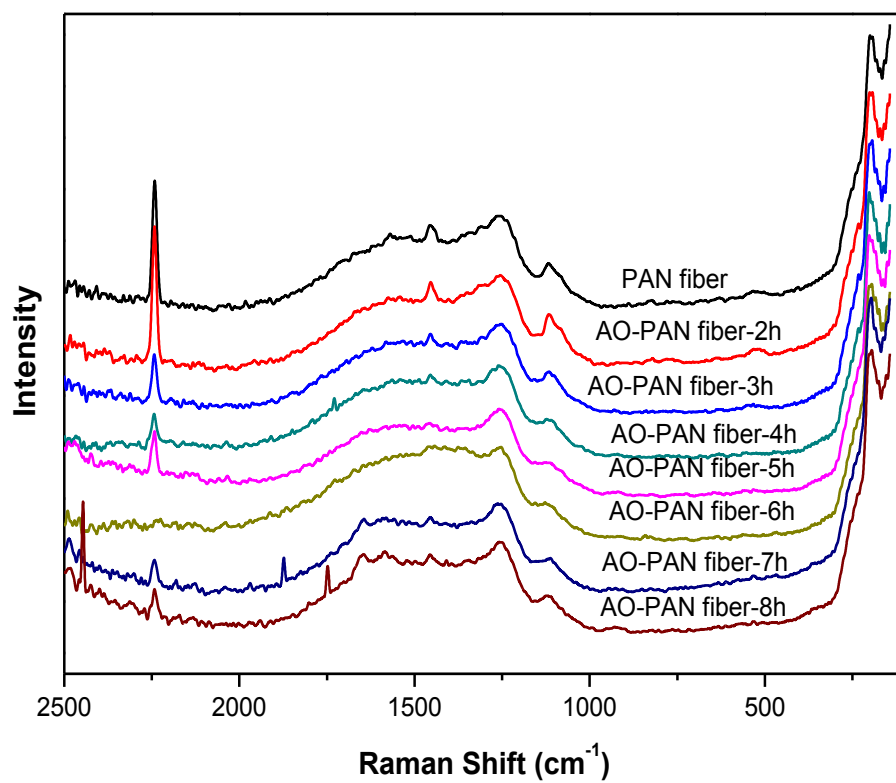


Figure S8. Raman spectra of PAN and AO-PAN fibers with different amidoximation time (2-8 h).