

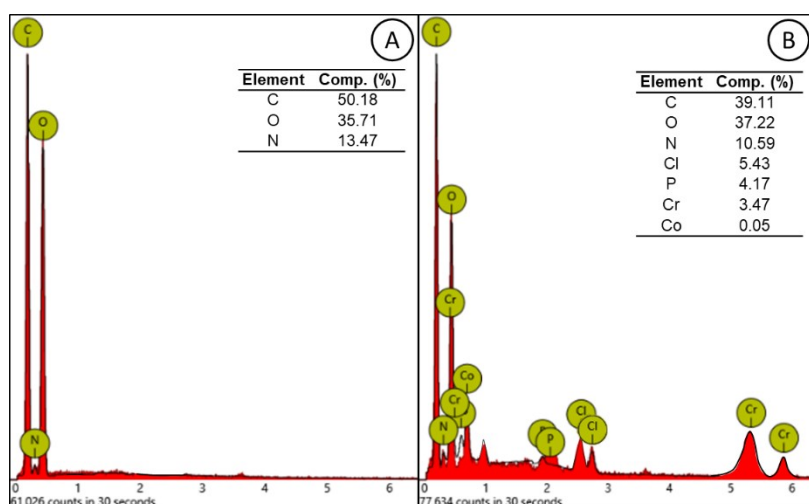
## SUPPLEMENTARY INFORMATION

### Facile fabrication of phosphonium-based ionic liquid impregnated chitosan adsorbent for the recovery of hexavalent chromium

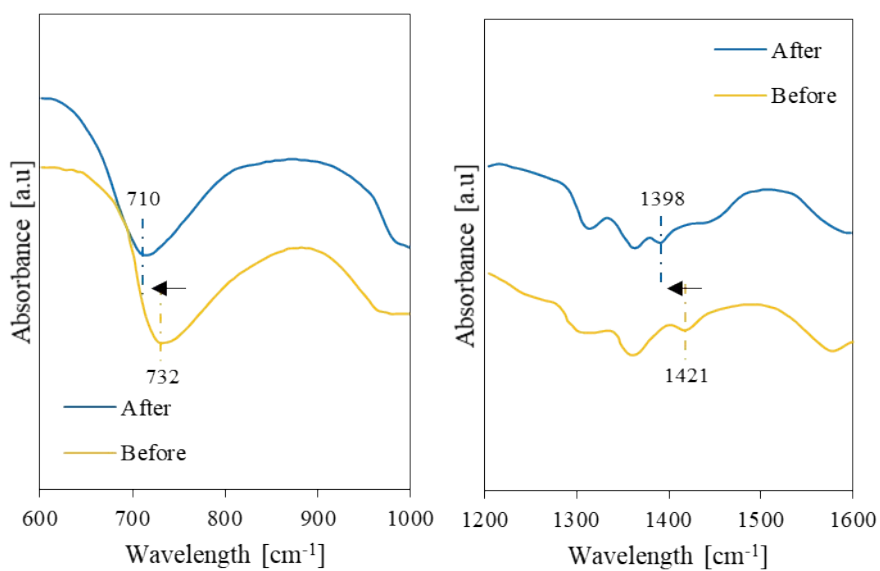
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Table S1. Breakthrough curve models parameter of Pd(II) adsorption

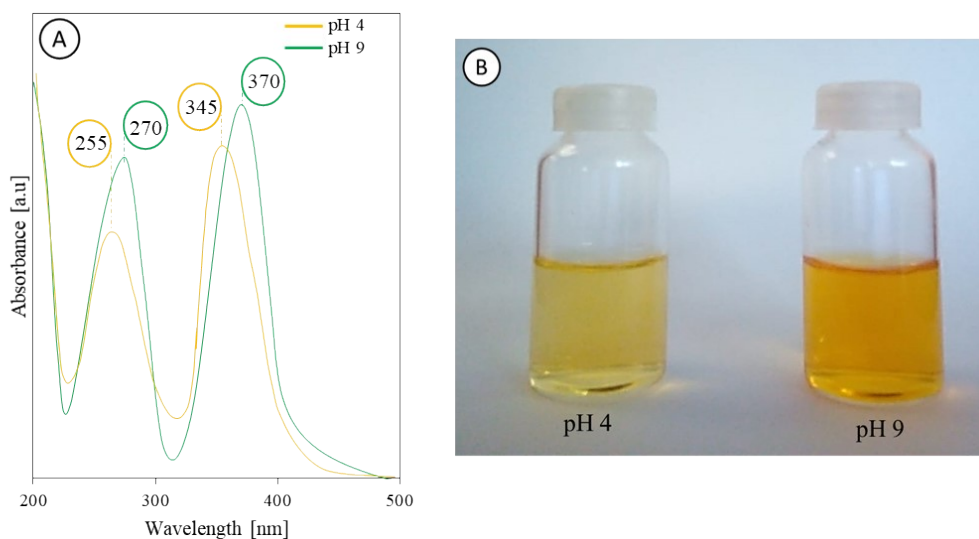
$C_i$ [mg L <sup>-1</sup> ]	$Q$ [mL min <sup>-1</sup> ]	$Z$ cm	Chitosan				Chi_IL			
			Thomas		Yoon-Nelson		Thomas		Yoon-Nelson	
			$q_{e,exp}$	$q_{e,cal}$	$t_{0.5}$	$\tau$	$q_{e,exp}$	$q_{e,cal}$	$t_{0.5}$	$\tau$
50	5	4	114	115	900	890	206	201	1060	1080
50	5	5	67	64	800	810	114	118	1180	1160
50	5	6	45	44	710	720	74	71	1240	1250
50	5	6	45	44	710	720	74	71	1240	1250
50	10	6	51	54	660	670	104	105	1010	1000
50	15	6	54	58	450	460	109	106	660	670
50	5	6	45	44	710	720	74	71	1240	1250
100	5	6	46	47	620	600	75	75	800	800
200	5	6	47	56	420	400	86	87	490	500



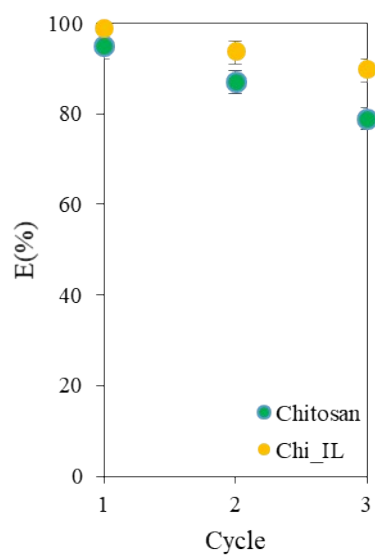
**Figure S1.** EDX spectra of (A) Unmodified chitosan and (B) post-adsorption Chi\_IL



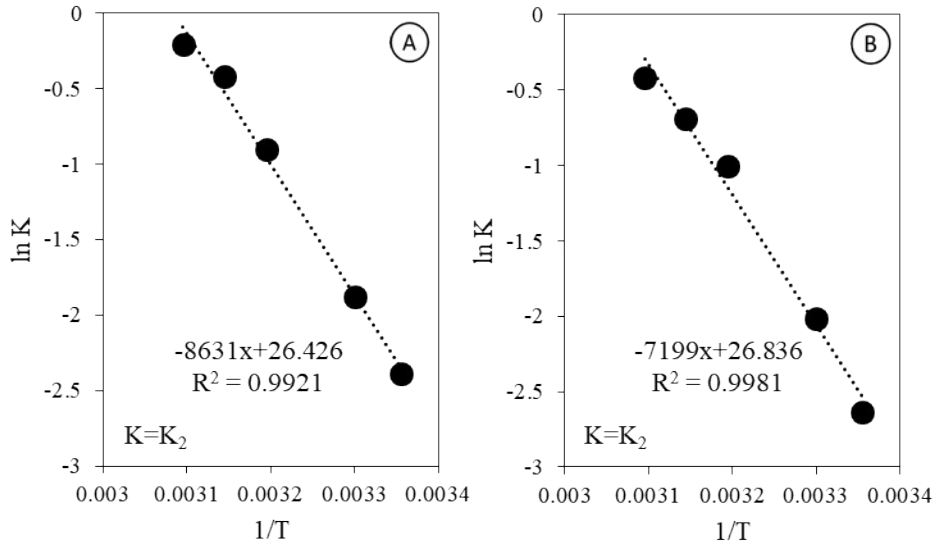
**Figure S2.** FTIR spectrum of Chi\_IL pre and post adsorption of Cr(VI)



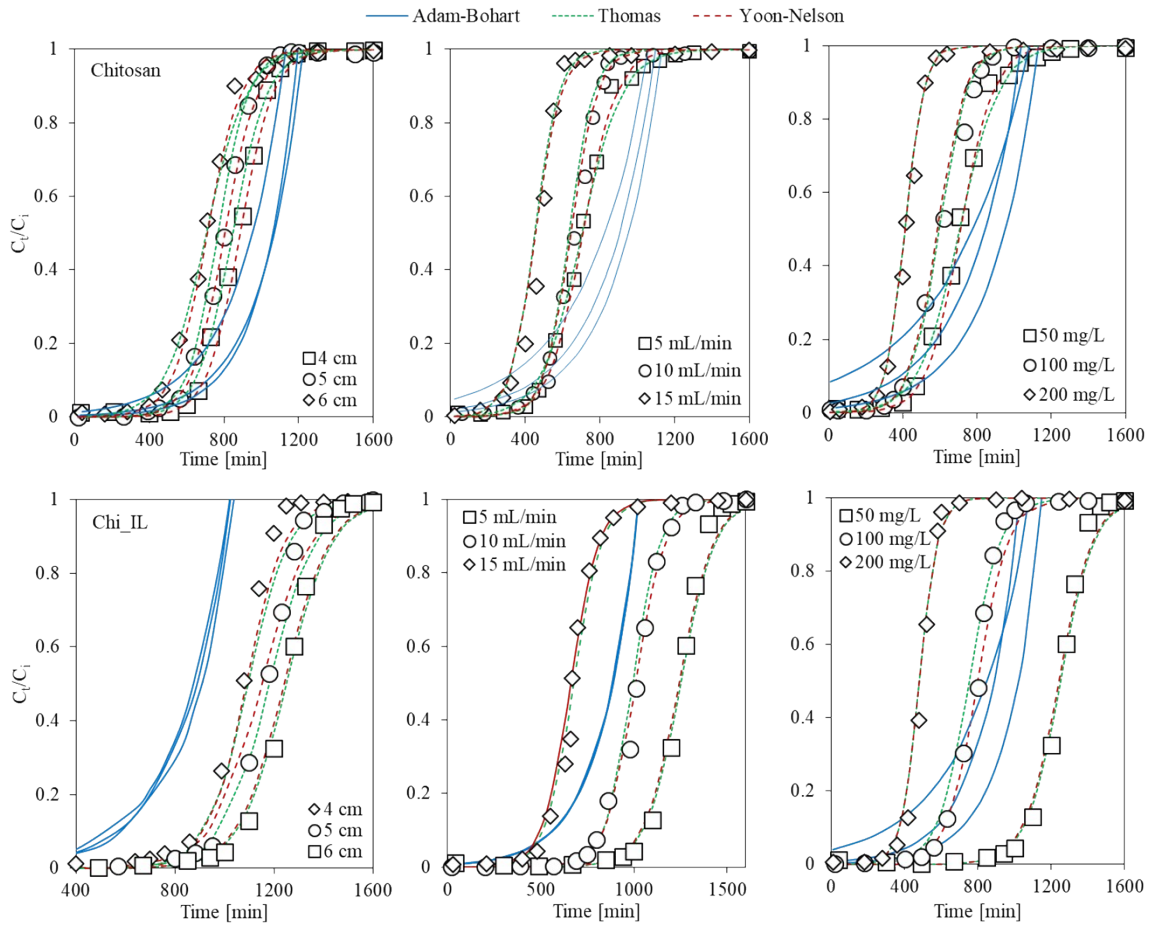
**Figure S3.** (A) UV-vis spectra and (B) visual observation of Cr(VI)-containing solution in different pH



**Figure S4.** Regeneration performance of Chitosan and Chi-IL over Cr(VI) adsorption



**Figure S5.** Arrhenius plot between  $\ln K$  ( $K_2$ ) vs  $1/T$  for (A) Chi\_IL and (B) Chitosan.



**Figure S6.** Column adsorption fitting between model and experimental for Chitosan and Chi\_IL.