

Valorization of coconut water-derived bacterial cellulose in the water treatment: Environmentally benign modification to enhance the adsorption capacity for multiple heavy metal ions

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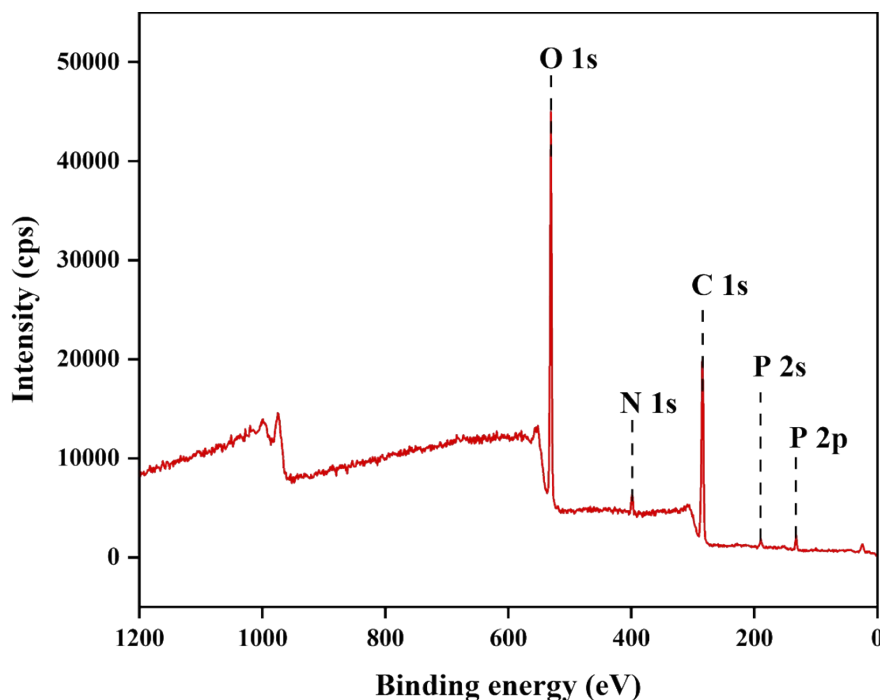


Figure S1. Overall XPS result of PBC 150/1.0/12.

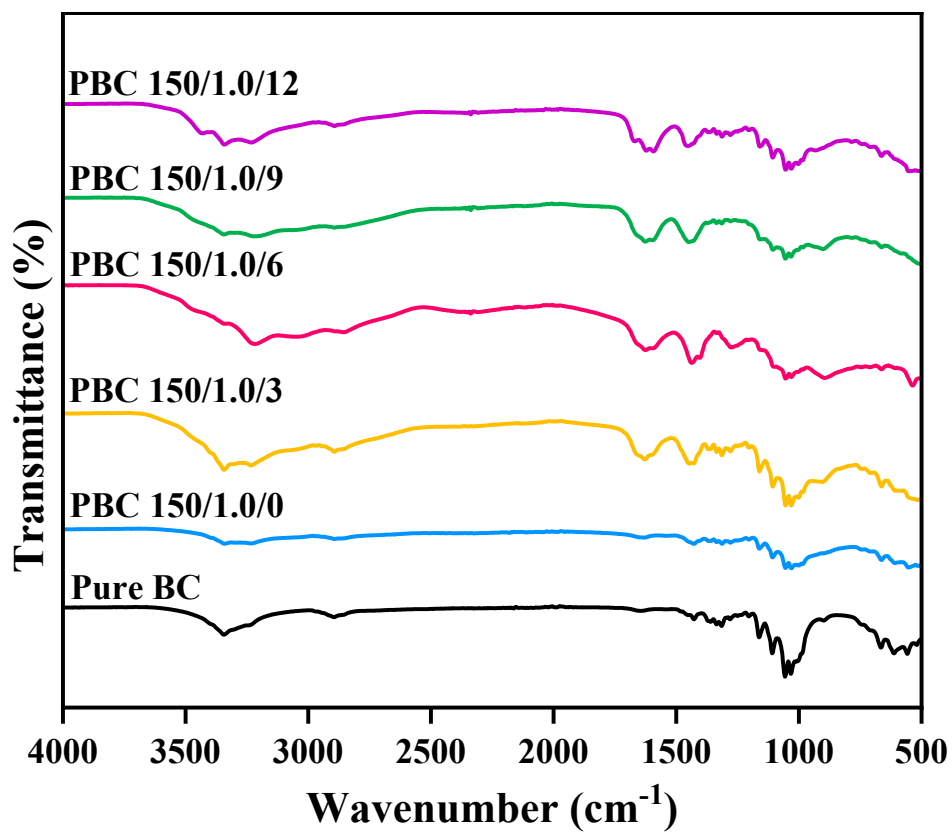


Figure S2. FTIR spectra of pure BC and PBC synthesized with different urea amounts.

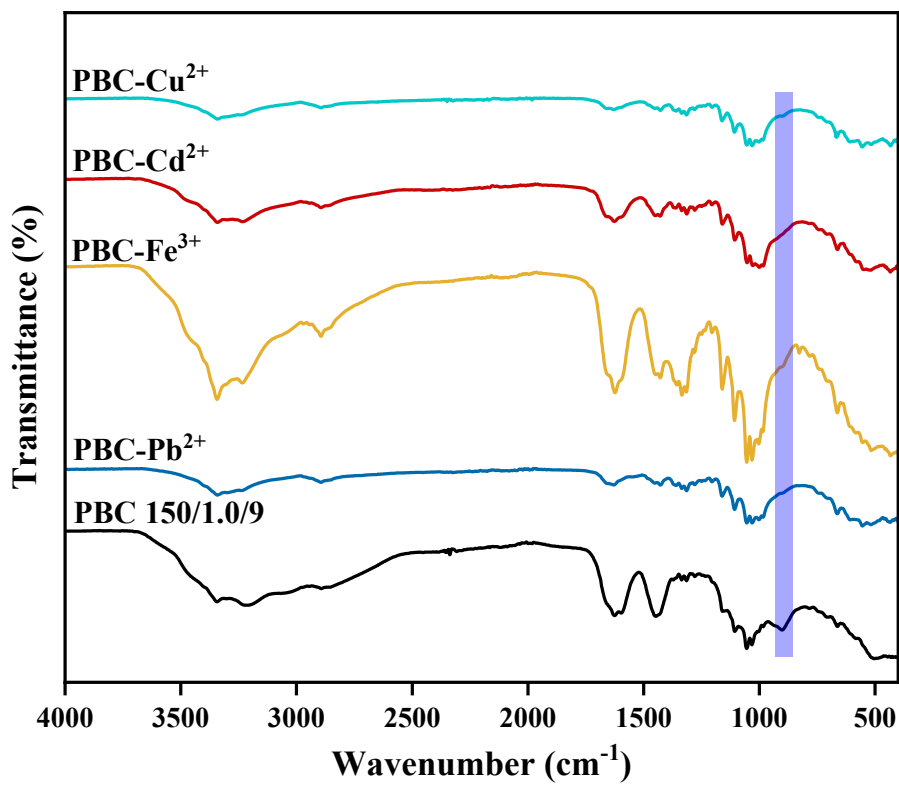


Figure S3. FTIR spectra of PBC 150/1.0/9 before and after the adsorption of the metal ions.

Table S1. Kinetic parameters for metal ion adsorption study using pseudo-first-order and pseudo-second-order models.

Adsorbates	Pseudo-first-order				Pseudo-second-order			
	R^2	k_1 (min^{-1})	$q_{\text{eq,exp}}$ (mg/g)	$q_{\text{eq,cal}}$ (mg/g)	R^2	k_2 (min^{-1})	$q_{\text{eq,exp}}$ (mg/g)	$q_{\text{eq,cal}}$ (mg/g)
Cu^{2+}	0.778	0.013	52.000	21.655	0.993	0.004	52.000	49.136
Cd^{2+}	0.748	0.005	46.000	13.709	0.999	0.015	46.000	45.613
Fe^{3+}	0.591	0.014	51.000	11.956	0.999	0.013	51.000	49.507
Pb^{2+}	0.718	0.012	48.000	14.469	0.999	0.011	48.000	45.252

Table S2. Isotherms parameters for metal ion adsorption study using Langmuir and Freundlich models.

Adsorbates	Langmuir isotherm model			Freundlich isotherm model		
	R^2	K_L (L/g)	q_{max} (mg/g)	R^2	K_F (L/g)	n
Cu^{2+}	0.986	0.106	120.035	0.719	17.840	2.697
Cd^{2+}	0.996	0.113	113.389	0.705	17.822	2.909
Fe^{3+}	0.996	0.021	168.385	0.853	6.299	1.541
Pb^{2+}	0.998	0.031	141.753	0.817	8.550	1.861

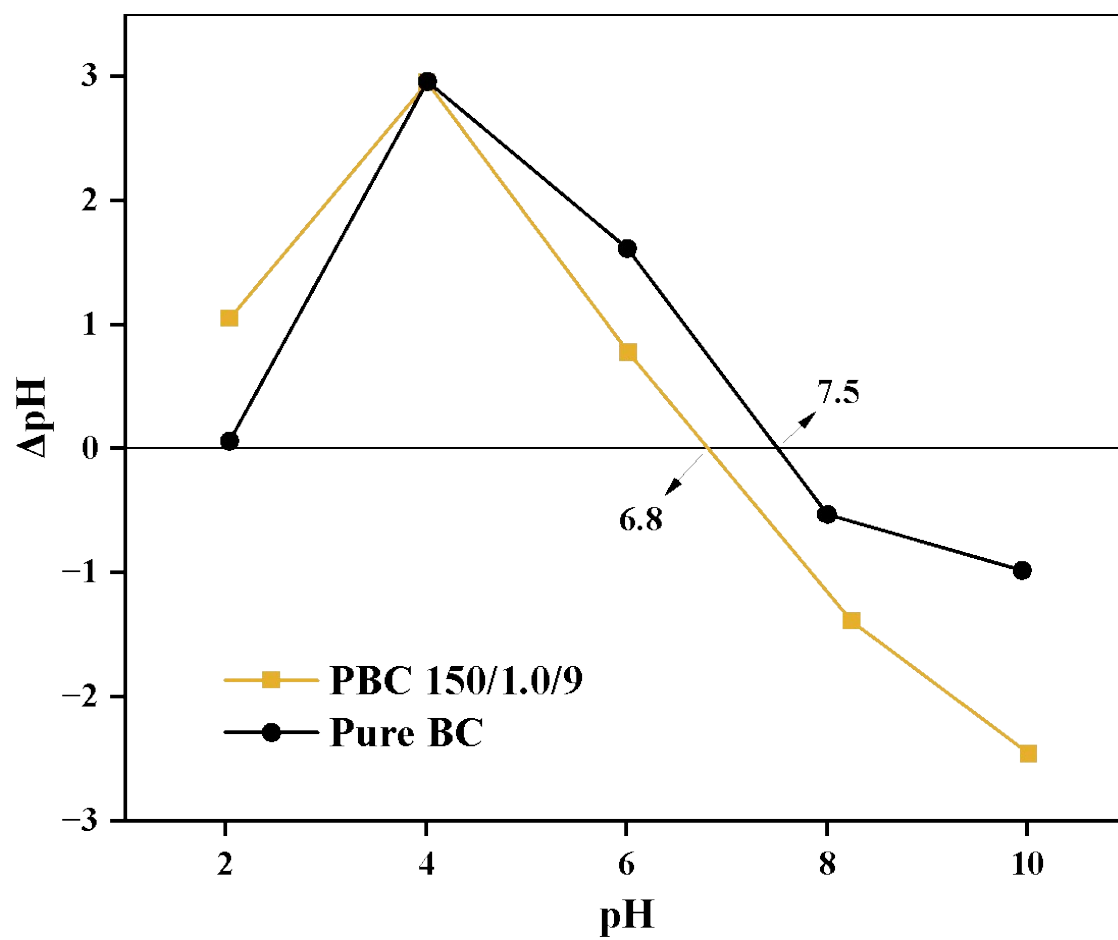


Figure S4. Determination of PZC for pure BC and PBC 150/1.0/9.