

## Supporting Information

### **Predicting the speciation of ionizable antibiotic ciprofloxacin by biochars with varying carbonization degrees**

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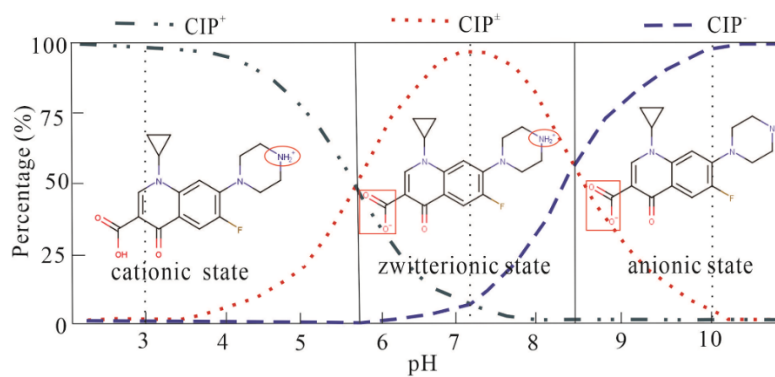
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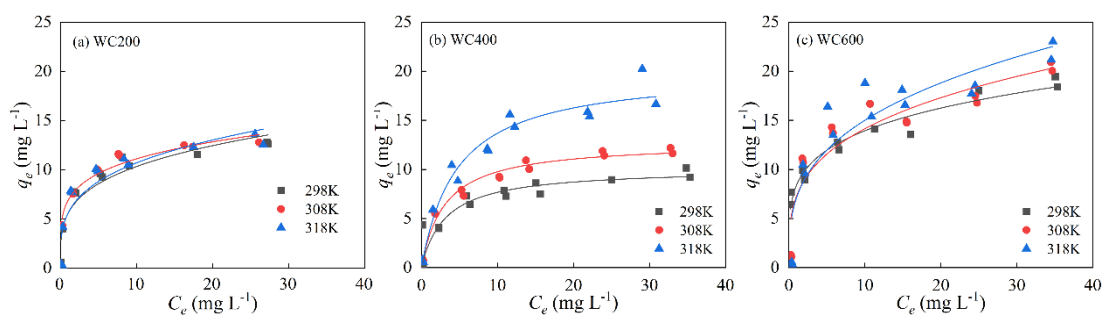
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**Fig. S1** The proportion of different CIP species at various pH calculated from the MarvinSketch Software.



**Fig. S2** Sorption isotherms of woodchip-derived biochars at 200 °C (WC200), 400 °C (WC400) and 600 °C (WC600) for CIP at different temperatures (298-318 K).

**Table S1** Sorption isothermal parameters of woodchip-derived biochars at 200 °C (WC200), 400 °C (WC400) and 600 °C (WC600) for CIP at different temperatures (298-318 K)

Sample	Langmuir				Freundlich		
	Temperature (K)	$q_m$ (mg·g <sup>-1</sup> )	$K_L$ (L·mg <sup>-1</sup> )	$R^2$	$K_F$ (mg <sup>(1-N)</sup> ·L <sup>N</sup> ·g <sup>-1</sup> )	$N$	$R^2$
WC200	298	12.2	1.03	0.958	5.55	0.270	0.911
	308	12.6	1.23	0.917	6.88	0.208	0.949
	318	12.9	0.896	0.935	5.58	0.283	0.850
WC400	298	10.1	0.316	0.813	3.74	0.275	0.835
	308	12.7	0.327	0.977	4.20	0.319	0.945
	318	20.0	0.215	0.952	5.12	0.383	0.934
WC600	298	19.6	0.093	0.950	3.40	0.455	0.957
	308	20.0	0.528	0.923	7.24	0.288	0.852
	318	21.9	0.350	0.920	7.08	0.326	0.832

**Table S2** Thermodynamic parameters of CIP sorption by woodchip-derived biochars at 200 °C (WC200), 400 °C (WC400) and 600 °C (WC600) at different temperatures (298-318 K)

Sample	Temperature (K)	$\Delta G$ (kJ·mol <sup>-1</sup> )	$\Delta H$ (kJ·mol <sup>-1</sup> )	$\Delta S$ (kJ·mol <sup>-1</sup> ·K <sup>-1</sup> )
WC200	298	-1.34	4.54	0.0190
	308	-1.53		
	318	-1.73		
WC400	298	-0.377	19.1	0.0650
	308	-0.870		
	318	-1.69		
WC600	298	-0.86	20.9	0.0740
	308	-2.13		
	318	-2.31		