Electronic Supplementary Material (ESI) for RSC Advances.

Assessment of ampicillin removal efficiency from aqueous solution by polydopamine/zirconium (IV) iodate: Optimization by response surface methodology.

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Supporting information

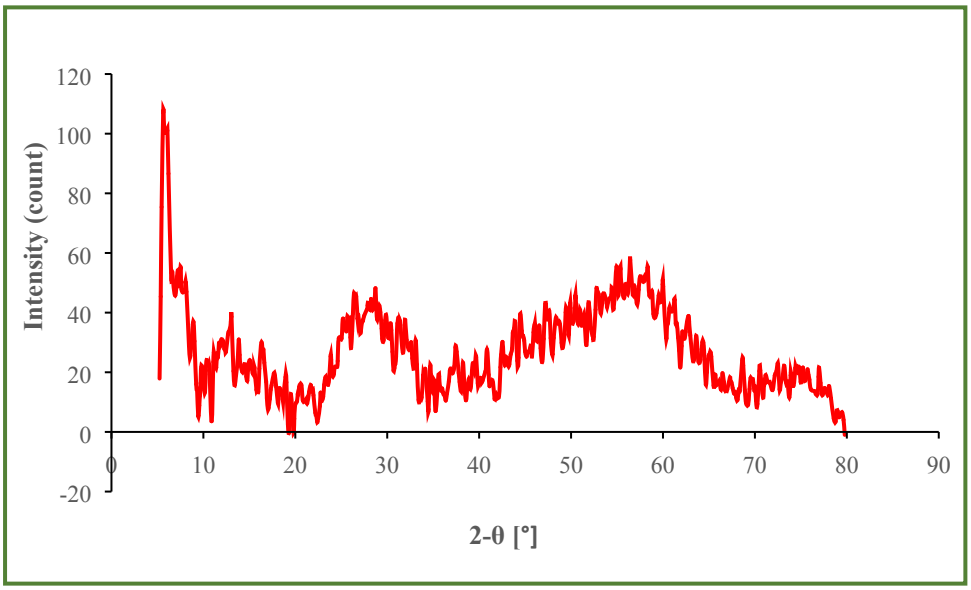

Fig. S1: XRD diffractogram for PDA/ZI composite.

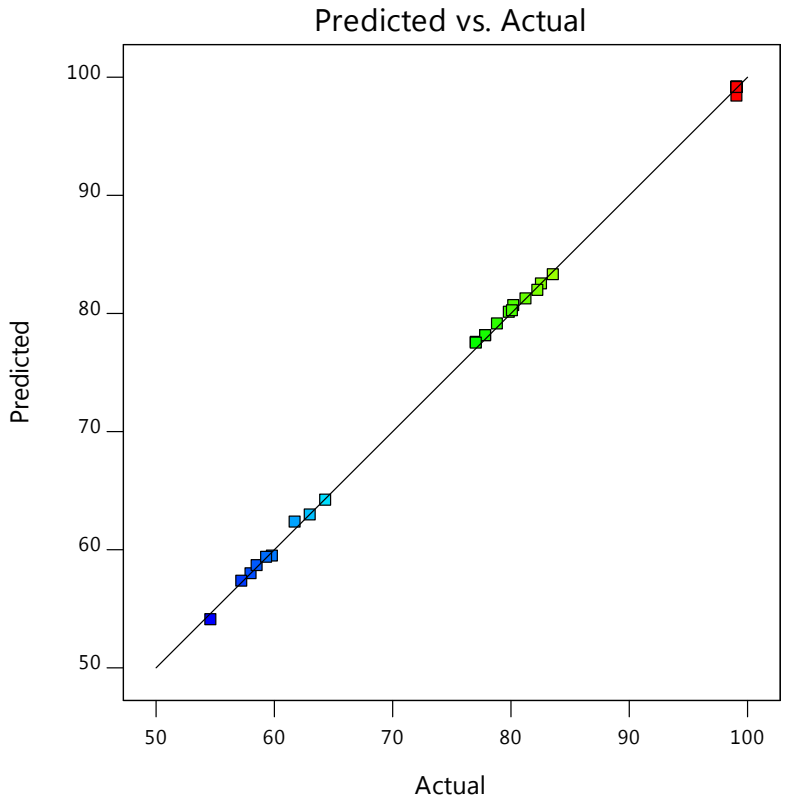

Fig. S2: Plot of actual vs. predicted responses for removal of ampicillin.

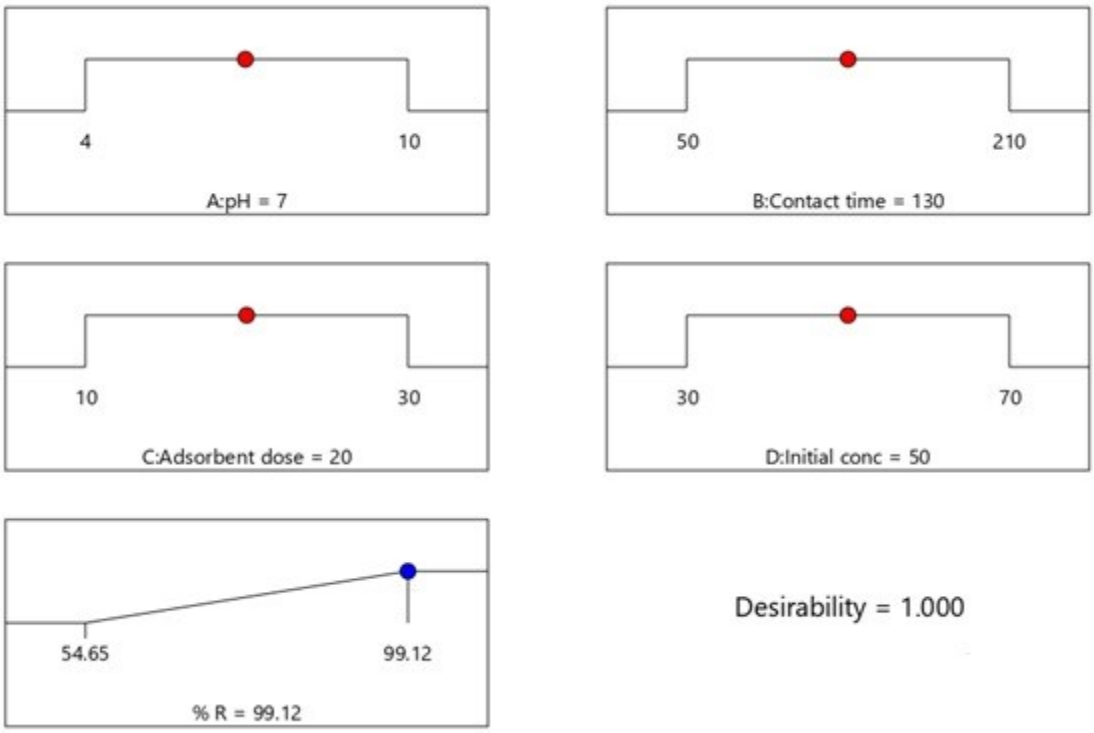

Fig. S3: Desirability ramp for numerical optimization of four independent variables, pH, contact time, adsorbent dose and initial concentration for adsorption of ampicillin onto PDA/ZI composite.

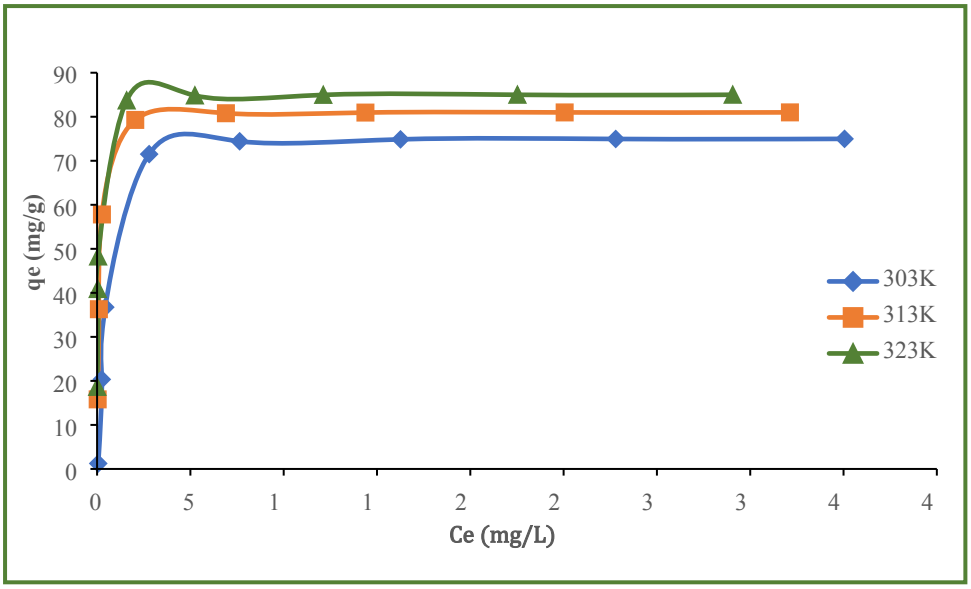

Fig. S4: Nonlinear plots of Dubinin- Radushkevich adsorption isotherm model for adsorption of ampicillin onto PDA/ZI at different temperatures (pH: 7; contact time: 130 min; adsorbent dose: 1.0 g/L).

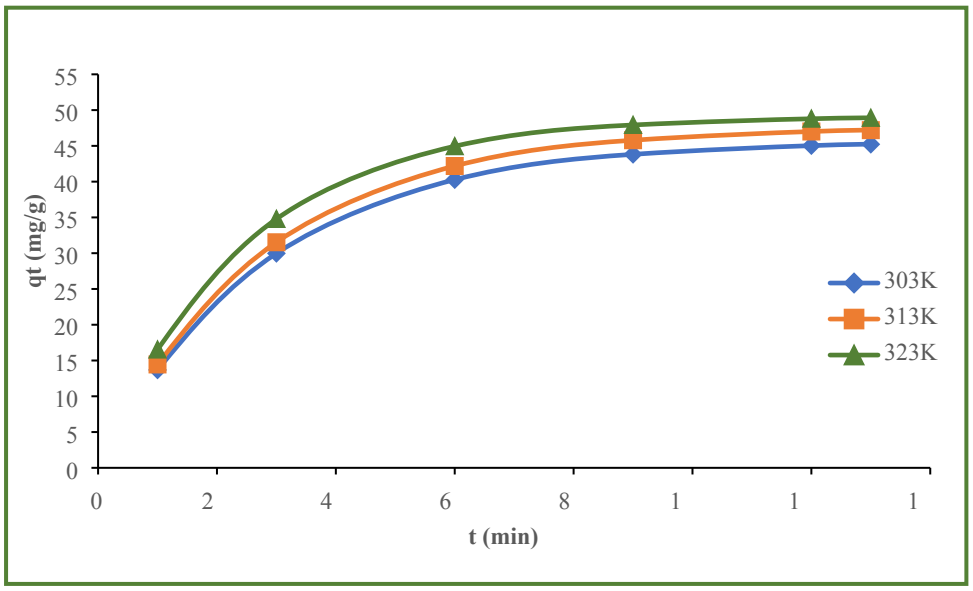

Fig. S 5: Nonlinear plot of Pseudo-first-order kinetic model for the adsorption of ampicillin onto PDA/ZI composite at different temperatures (contact time: 130 min; adsorbent dose: 1.0 g/L).

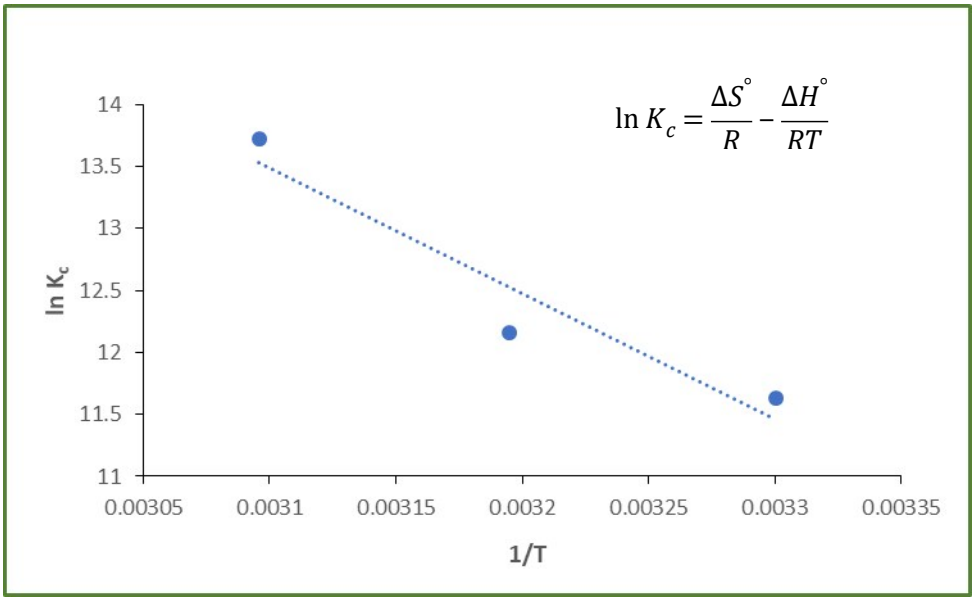

Fig. S6: Van't Hoff plot for adsorption of ampicillin onto PDA/ZI composite.

Table S1: Experimental variables and their levels in Box-Behnken design.

Factors	Variables	Unit	Range and coded levels		
			Low factorial (-1)	Center point (0)	High factorial (+1)
A	pH	-	4.00	7.00	10.00
B	Contact time	min	50.00	130.00	210.00
C	Adsorbent dose	mg/20mL	10.00	20.00	30.00
D	Initial concentration	mg/L	30.00	50.00	70.00

Table S2: Model statistics for removal of ampicillin using PDA/ZI composite.

Model	Std. Dev.	F- value	p- value	R^2	Adjusted R^2	Predicted R^2	PRESS	Remark
Linear	11.45	6.85	0.0008	0.5330	0.4552	0.4178	3925.27	
2-factor interaction	13.19	0.0139	1.0000	0.5352	0.2769	0.1367	5820.21	
Quadratic	**0.4137**	**4574.71**	**<0.0001**	**0.9996**	**0.9993**	**0.9980**	**13.80**	**Suggested**