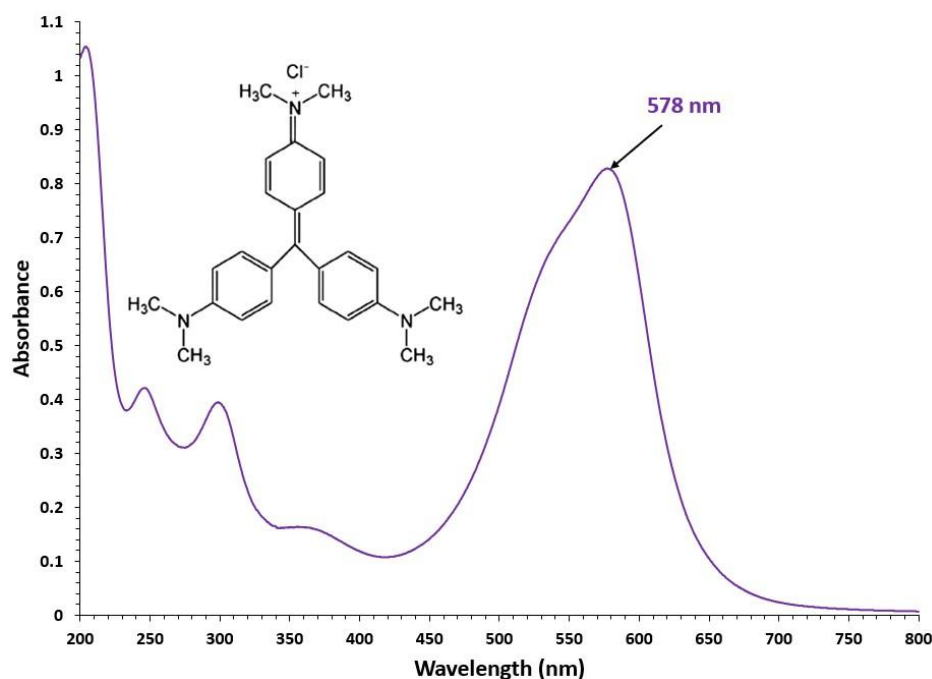
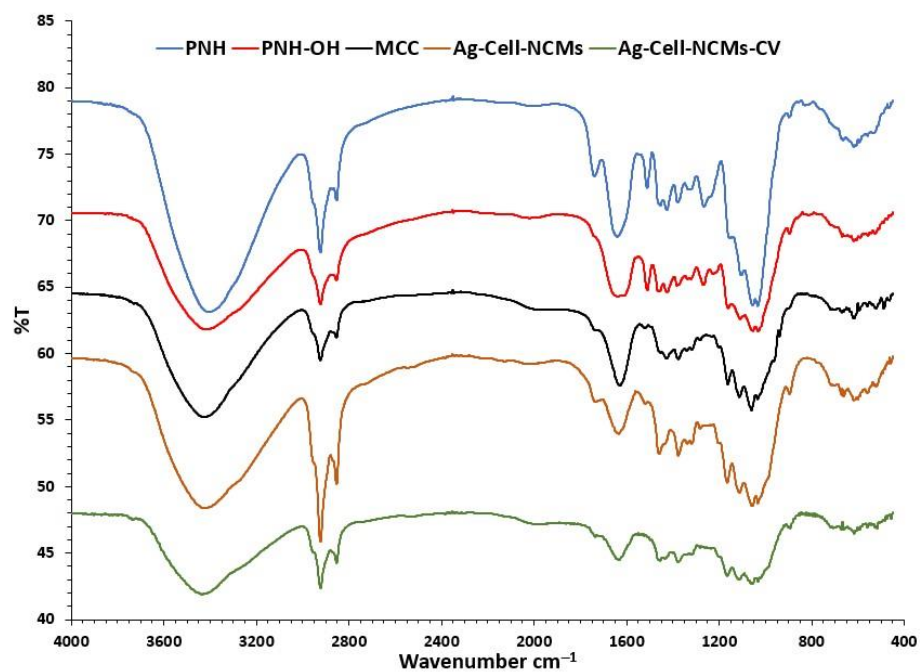


# Study on the Isotherms, Kinetics, and Thermodynamics of Adsorption of Crystal Violet Dye Using Ag-NPs-Loaded Cellulose Derived from Peanut-Husk Agro-Waste

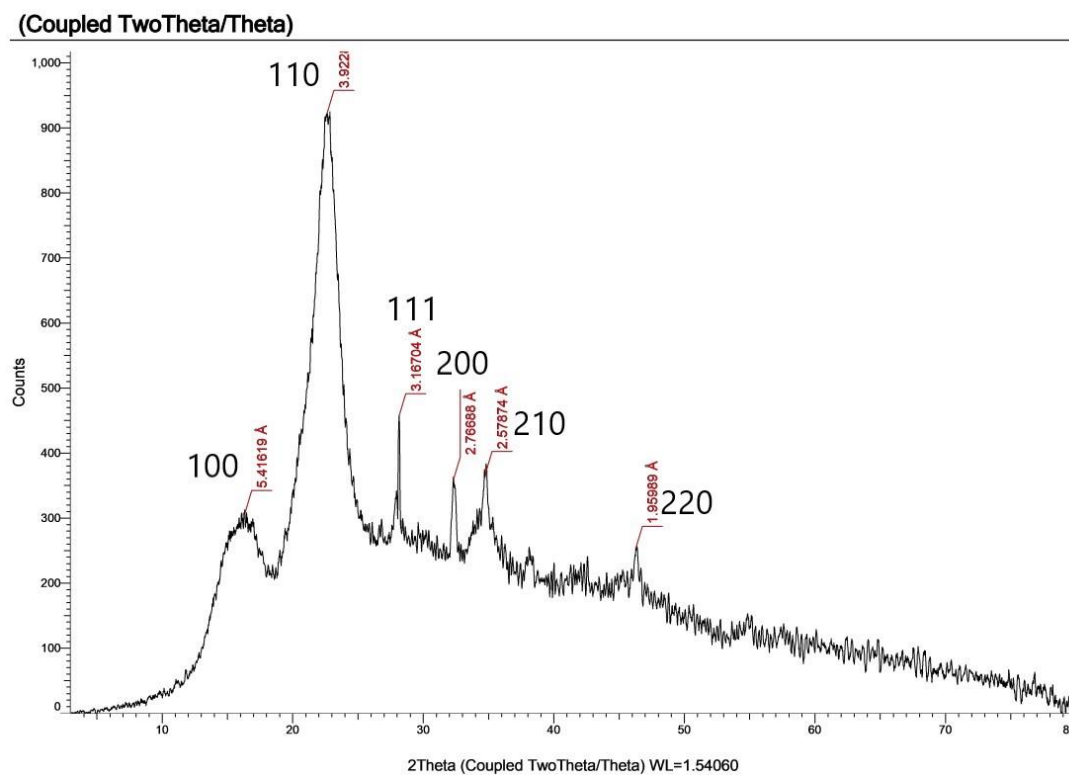
Ghalia Saleem Aljeddani, Reem Mohammad Alghanmi and Ragaa A. Hamouda



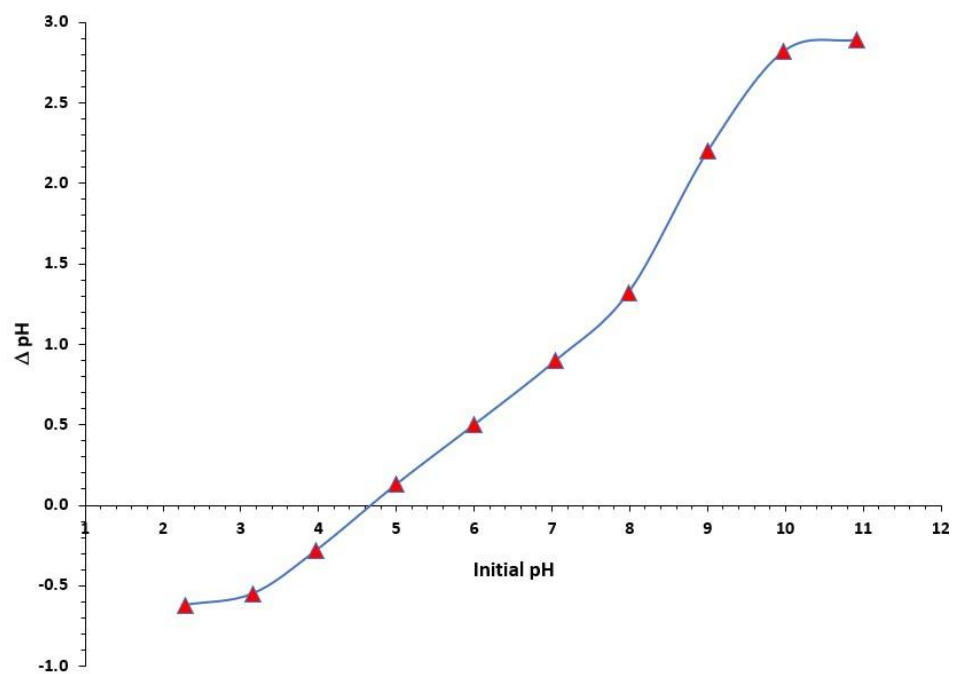
**Figure S1.** Chemical structure of CV dye and the electronic spectrum of 15 mg/L CV.



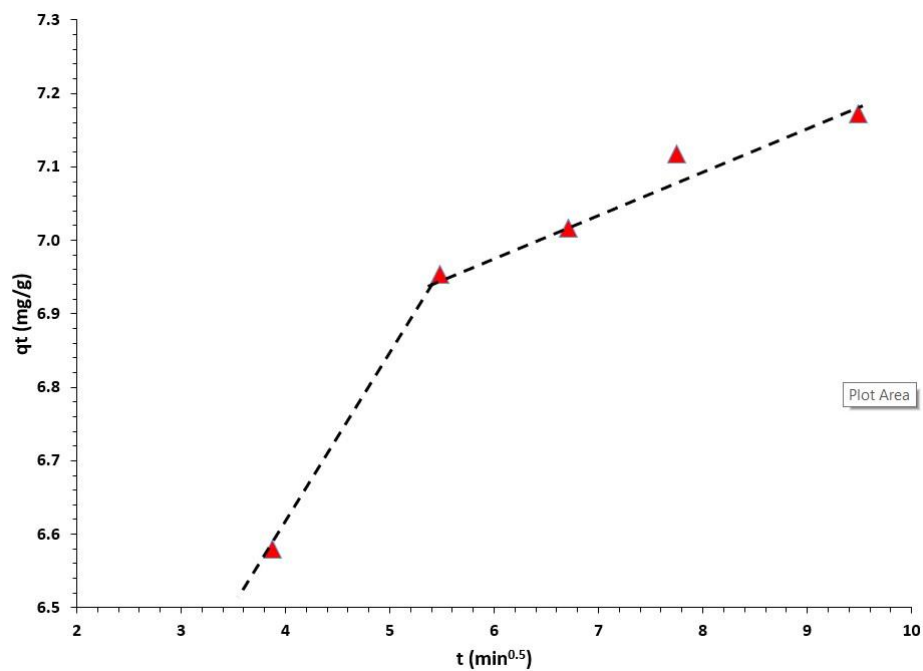
**Figure S2.** FTIR spectra of PNH, PNH-OH, MCC, Ag-Cell-NCMs, and Ag-Cell-NCMs-CV.



**Figure S3.** XRD patterns of Ag-Cell-NCMs adsorbed CV dye.



**Figure S4.** The pH<sub>zpc</sub> of Ag-Cell nanocomposite.



**Figure S5.** Intraparticle diffusion of CV dye on Ag-Cell-NCMs (Conditions; 0.02 g adsorbent dose, pH 6, temperature 25 °C, dye initial concentration 15 mg/L, contact time 15-90 min, and shaking speed 200 rpm).

**Table S1.** Application of different kinetic models.

<b>Kinetic model</b>	<b>at 298 K</b>
Pseudo-first-order	
k1 (1/min)	0.0205
qe-experimental (mg/g)	7.0928
qe-calculated (mg/g)	1.0281
R2	0.9823
Elovich	
$\beta$ (g/mg)	0.3758
$\alpha$ (mg/g min)	5.3197
qe-experimental (mg/g)	7.0928
qe-calculated (mg/g)	7.0107
R2	0.9417
Intraparticle diffusion	
Kid (mg/g min <sup>1/2</sup> )	0.1342
Ci	6.1180
R2	0.9090

**Table S2.** Freundlich, and Temkin adsorption parameters.

<b>Isotherm model</b>	<b>298 K</b>
Freundlich	
Kf	12.248
1/n	0.1009
R2	0.9700
Temkin	
KT	$4.89 \times 10^{-7}$
B	- 0.4932
R2	0.6610