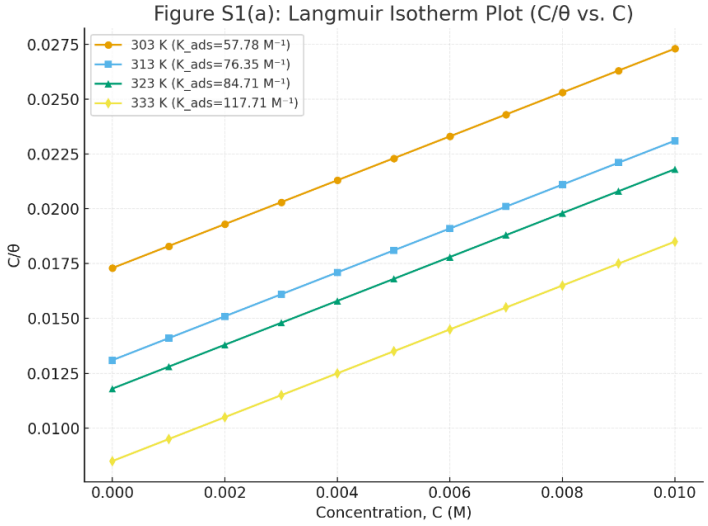
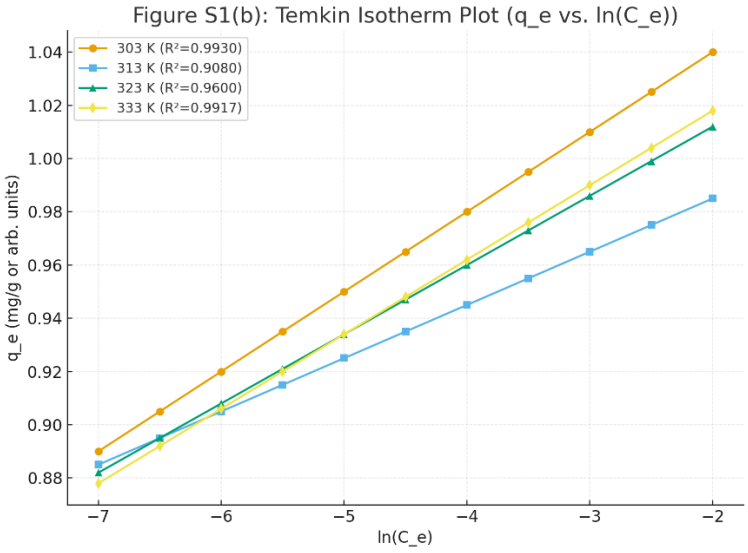
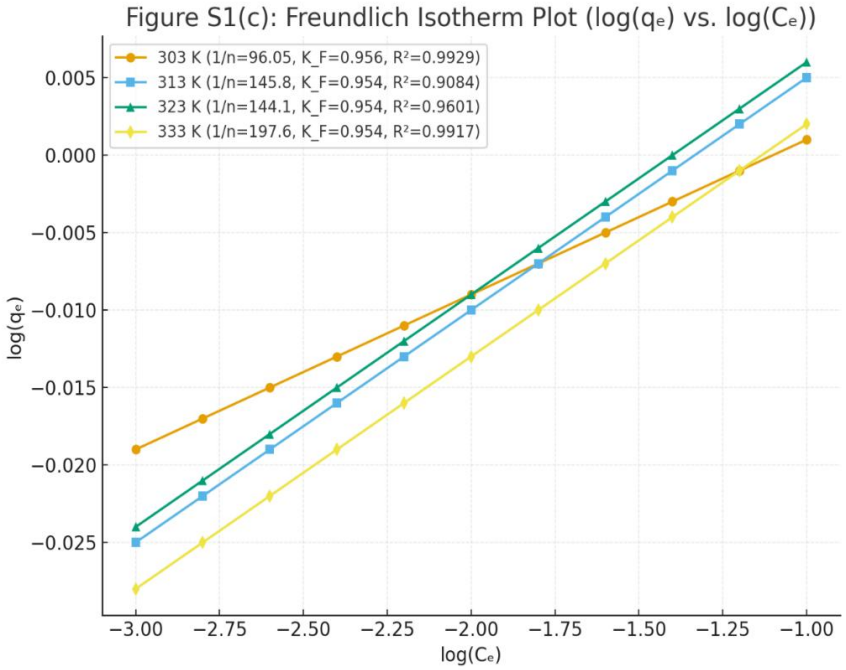
Supplementary Materials

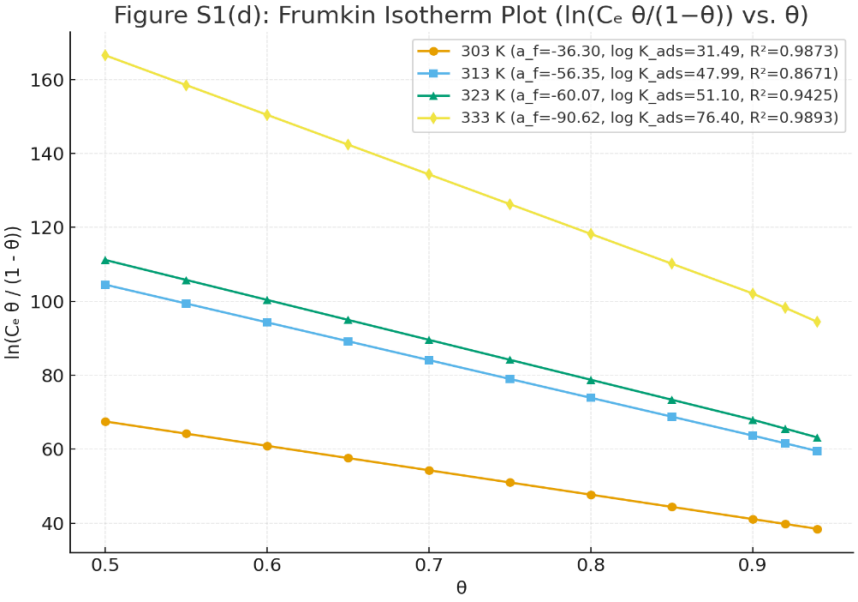
Table S1. Surface Coverage (θ) of the collagen-IL composite.

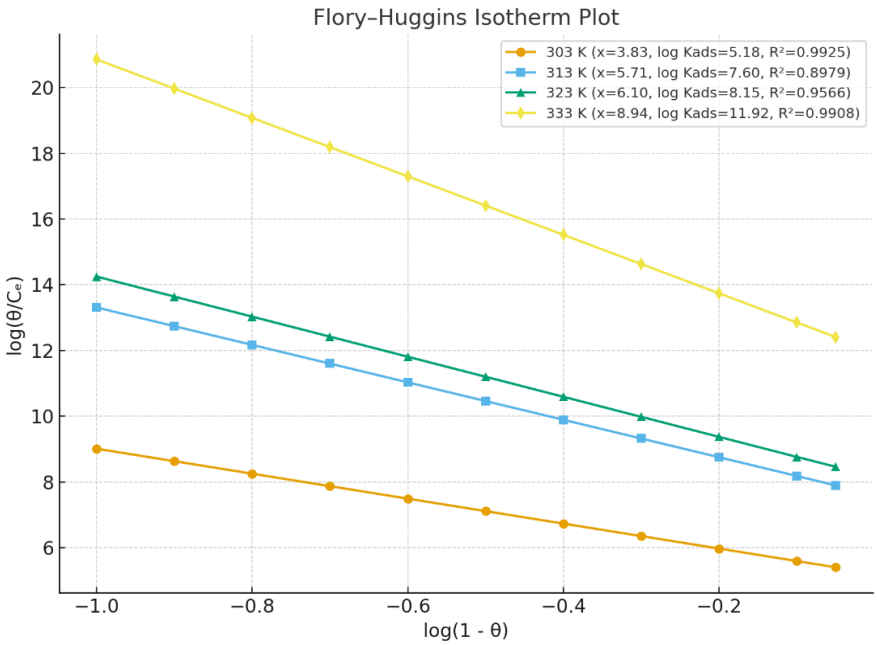
Conc. (g/L)	30 °C	40 °C	50 °C	60 °C
1.0	0.9563	0.9548	0.9542	0.9540
1.5	0.9609	0.9558	0.9575	0.9557
2.0	0.9630	0.9584	0.9582	0.9575
2.5	0.9657	0.9609	0.9607	0.9583



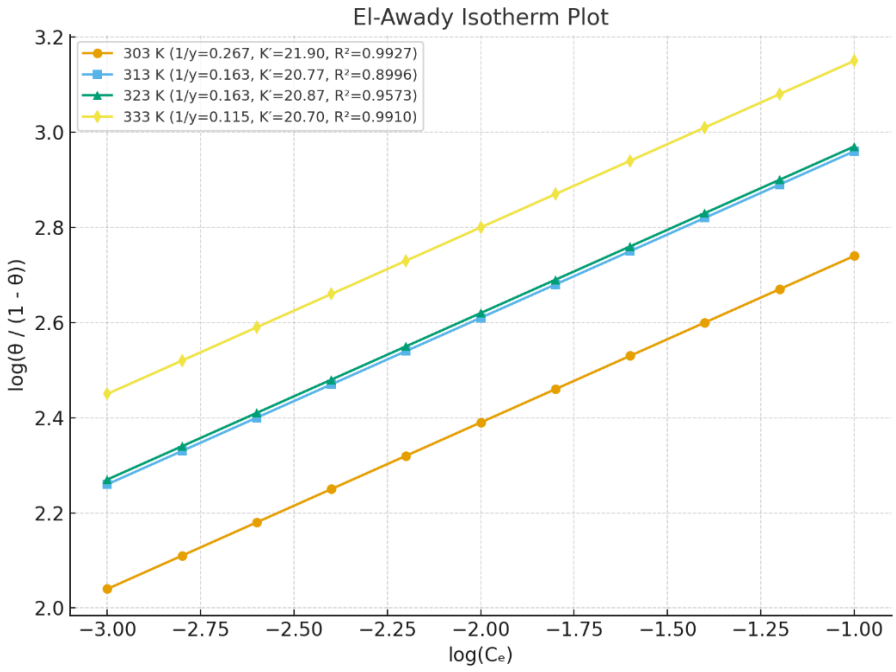



Figure S1(c): Freundlich Isotherm Plot (log(qₑ) vs. log(Cₑ))
303 K (1/n=96.05, K_F=0.956, R²=0.9929)
313 K (1/n=145.8, K_F=0.954, R²=0.9084)
323 K (1/n=144.1, K_F=0.954, R²=0.9601)
333 K (1/n=197.6, K_F=0.954, R²=0.9917)
log(qₑ)
log(Cₑ)


Figure S1(d): Frumkin Isotherm Plot (ln(Cₑ θ/(1−θ)) vs. θ)
303 K (a_f=-36.30, log K_ads=31.49, R²=0.9873)
313 K (a_f=-56.35, log K_ads=47.99, R²=0.8671)
323 K (a_f=-60.07, log K_ads=51.10, R²=0.9425)
333 K (a_f=-90.62, log K_ads=76.40, R²=0.9893)
ln(Cₑ θ / (1 - θ))
θ



(**e**)



(**f**)

Figure S1. (**a**) Langmuir isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl. (**b**) Temkin isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl. (**c**) Freundlich isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl. (**d**) Frumkin isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl. (**e**) Flory-Huggins isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl. (**f**) El-Awady isotherm plots for the adsorption of the collagen-BMIM·Br composite on mild steel in 1.5 M HCl.