

Supplementary Data

Separation of the heme protein Cytochrome C using a 3D structured graphene oxide bionanocomposite as adsorbent

Caroline Maria Bezerra de Araujo, Albertina Gonçalves Rios, Marcos Gomes Ghislandi, Alexandre Filipe Porfírio Ferreira, Maurício Alves da Motta Sobrinho, and Alírio Egídio Rodrigues

S.1 Adsorption Thermodynamics

The results of the adsorption isotherms obtained at three different temperatures, as well as the respective modelling for the Langmuir and Freundlich models are presented in Figure S1 and Table S1. As observed, all the isotherms exhibited a good fit to both isotherm models, however, at $T = 19\text{ }^{\circ}\text{C}$, the Freundlich model showed a better fit to the experimental data, indicating the occurrence of multilayer adsorption on heterogeneous sites; on the other hand, at $T = 31\text{ }^{\circ}\text{C}$, the Langmuir model showed a better fit to the experimental data, indicating a monolayer adsorption process.

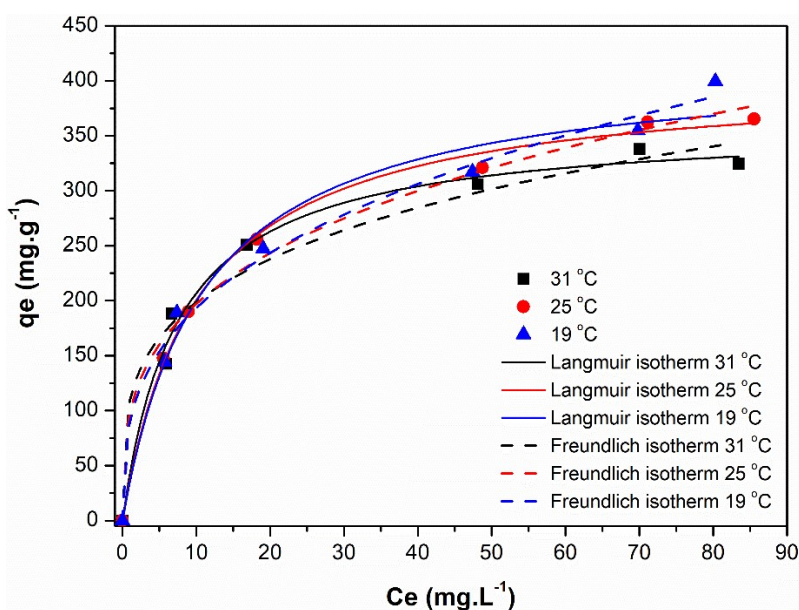


Fig. S1 Adsorption isotherms at three different temperatures, and modelling for the Langmuir and Freundlich isotherm models.

Table S1: Isotherms modelling parameters at different temperatures.

T (°C)	Experimental $q_{e\text{ max}}$ (mg.g ⁻¹)	Langmuir			Freundlich		
		K_L (L.mg ⁻¹)	q_{max} (mg.g ⁻¹)	R^2	K_F (mg ^{1-(1/n)} .(g ⁻¹).L ^{1/n})	n	R^2
31	324.53	0.135	360.68	0.989	109.64	3.87	0.971
25	365.32	0.098	404.33	0.997	98.33	3.31	0.990
19	399.49	0.091	418.57	0.976	90.15	3.02	0.990

The Van't Hoff plot was used to estimate the values regarding enthalpy and entropy changes in the Cytochrome C adsorption onto the GO-based bionanocomposite under different temperatures is depicted in Figure S2. Thermodynamic parameters were estimated from the slope and intercept of the graph.

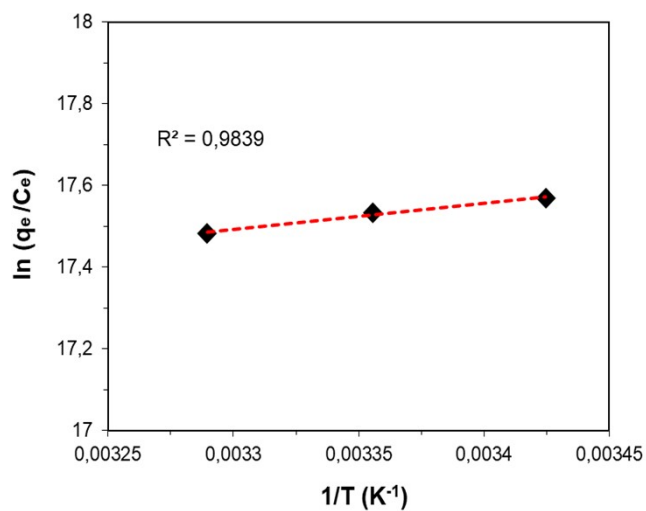


Fig. S2 Van't Hoff plot for Cytochrome C adsorption onto the GO-based bionanocomposite