Optimization of Pt(II) and Pt(IV) Adsorption from a Water Solution on Biochar Originating from Honeycomb Biomass

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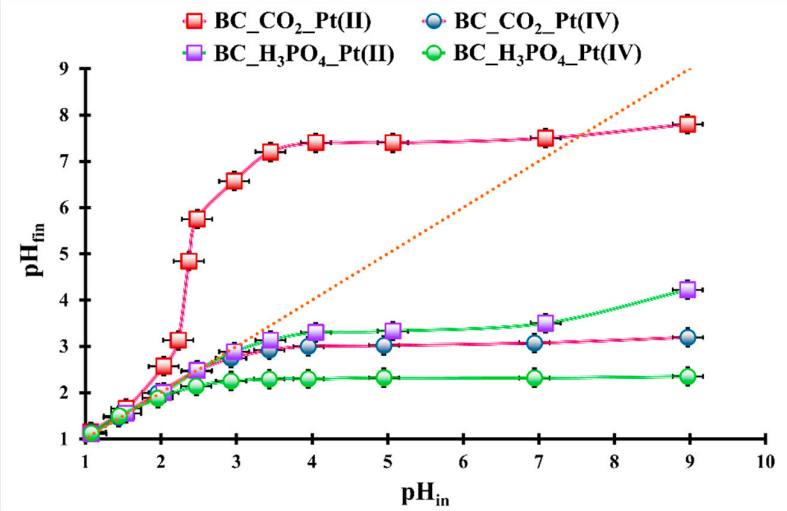
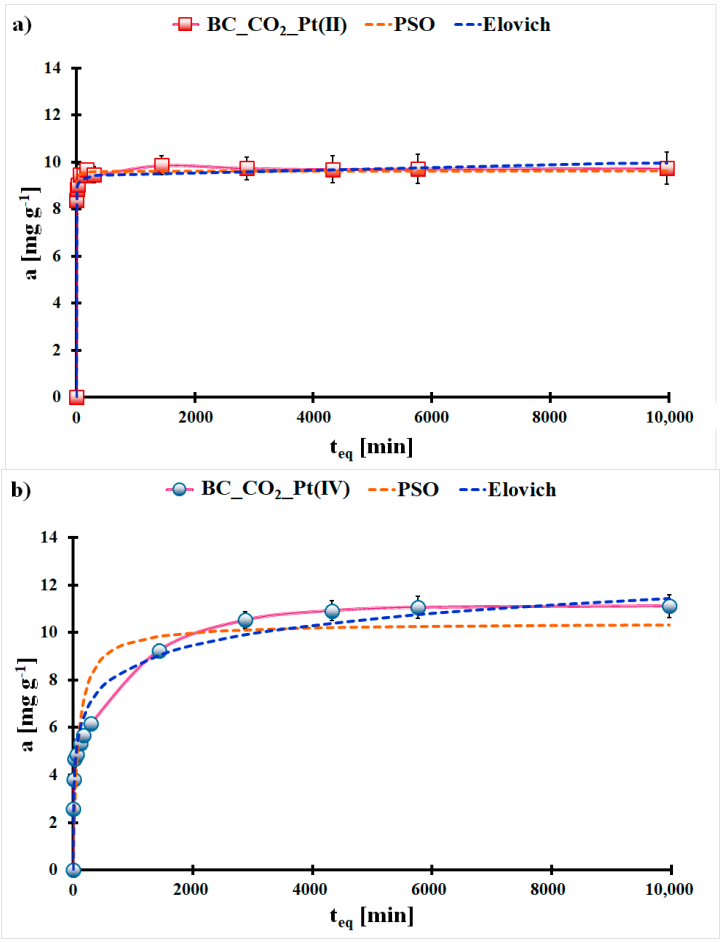


Figure S1. The pH_{fin} in the function of the pH_{in} for studied adsorption systems (Pt(II): m = 35 mg, V = 5 mL, t = 7 days, C_0 = 159 mg L^{-1}; Pt(IV): m_{BC_CO2} = 20 mg, m_{BC_H3PO4} = 25 mg, V = 5 mL, t = 7 days, C_0 = 195 mg L^{-1})


a)
BC_CO2_Pt(II)
PSO
Elovich
a [mg g-1]
teq [min]
0
2
4
6
8
10
12
14
0
2000
4000
6000
8000
10,000
b)
BC_CO2_Pt(IV)
PSO
Elovich
a [mg g-1]
teq [min]

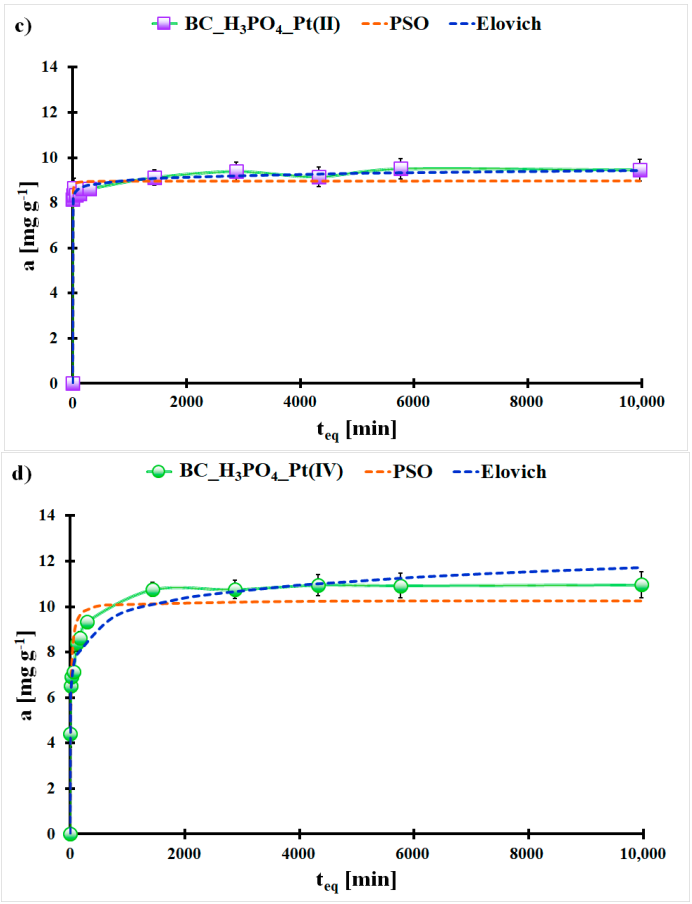
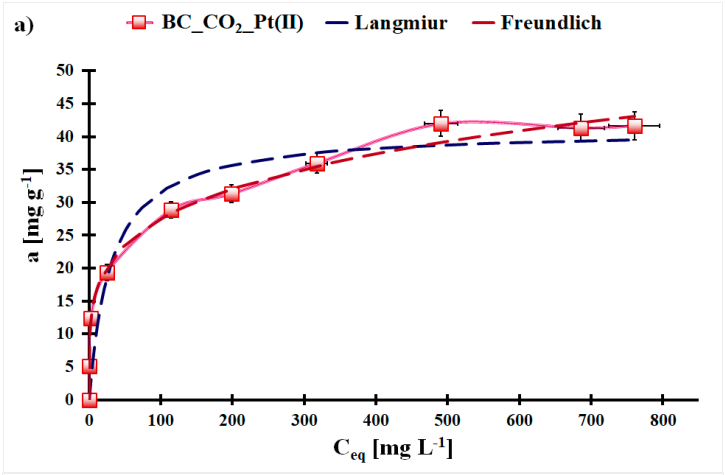
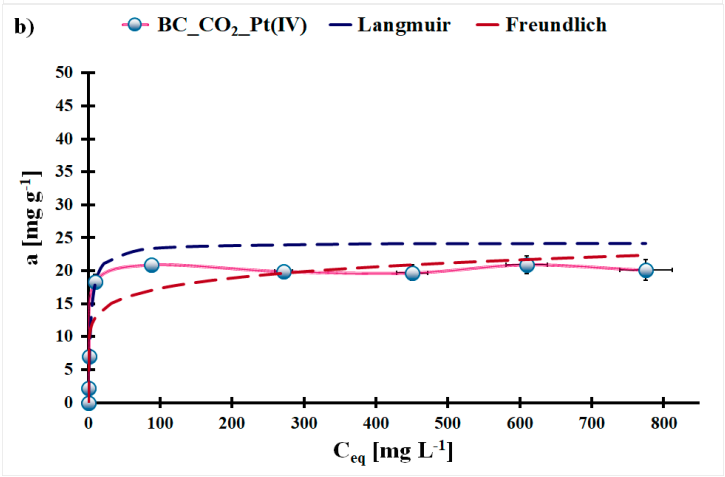


Figure S2. The experimental Pt(II) and Pt(IV) adsorption kinetics data fitted to the theoretical pseudo-second-order and Elovich models for a) BC_CO_2_Pt(II), b) BC_CO_2_Pt(IV), c) BC_H_3PO_4_Pt(II) and d) BC_H_3PO_4_Pt(IV) ($m_{biochar}$ = 20 mg, $V_{sol.}$ = 5 mL, $C_{0\_Pt(II)}$ = 38.8 mg L^{-1}, $C_{0\_Pt(IV)}$ = 46.5 mg L^{-1}, T = (20 ± 4)°C), error bars denote standard deviations for 3 repeats)


a)
BC_CO2_Pt(II)
Langmiur
Freundlich
a [mg g-1]
Ceq [mg L-1]
0
5
10
15
20
25
30
35
40
45
50
0
100
200
300
400
500
600
700
800


b)
BC_CO2_Pt(IV)
Langmuir
Freundlich
a [mg g-1]
Ceq [mg L-1]
0
5
10
15
20
25
30
35
40
45
50
0
100
200
300
400
500
600
700
800

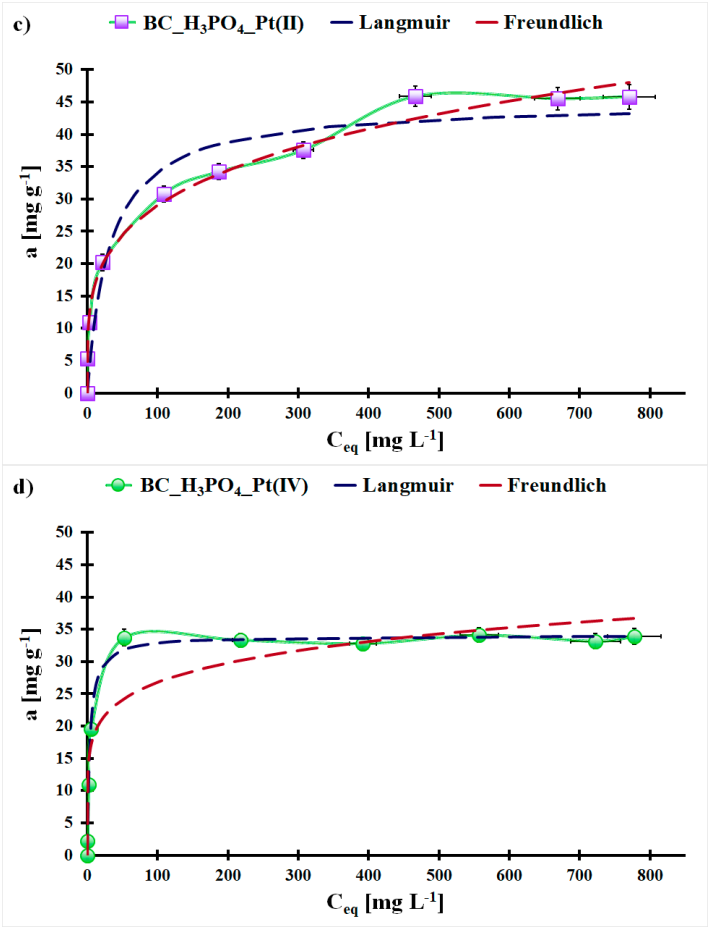


Figure S3. The experimental Pt(II) and Pt(IV) adsorption isotherms data fitted to the theoretical Langmuir and Freundlich models for a) BC_CO_2_Pt(II), b) BC_CO_2_Pt(IV), c) BC_H_3PO_4_Pt(II) and d) BC_H_3PO_4_Pt(IV) ($m_{biochar}$ = 20 mg, $V_{sol.}$ = 5 mL, pH_0 = 1.5, t_{eq} = 7 days, T = (25 ± 4) °C), error bars denote standard deviations for 3 repeats