Supplementary Materials: CO_2 Adsorption by *para*-Nitroaniline Sulfuric Acid-Derived Porous Carbon Foam

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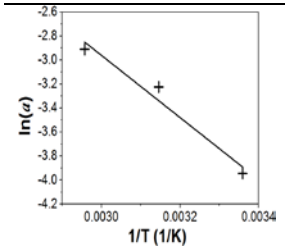
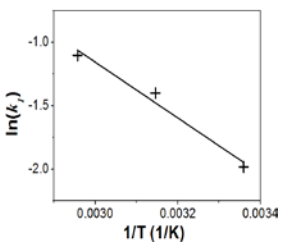
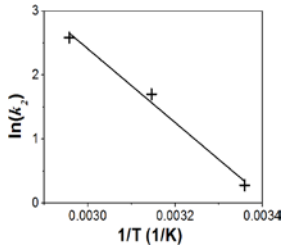
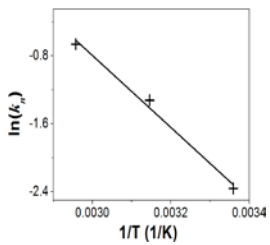
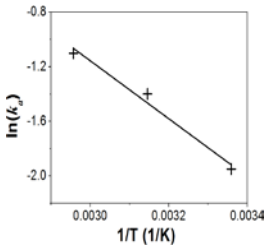
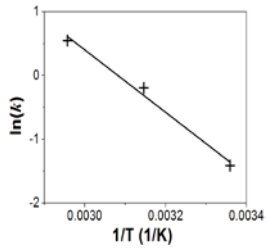
Kinetic of Absorption of CO_2

Full details of the kinetic models are available in Reference [36].

Table S1. Fitting results for the CO_2 adsorption curves for the NCPS foam with related Arrhenius plots.

NSPC		Elovich			Pseudo-First-Order			Pseudo-Second-Order			Pseudo-*n*th-Order				Modified Avrami				Extended			
T (°C)	Q(0) (mg)	*a* (Hz)	α	R^2	k_1 (Hz)	w_∞	R^2	k_2 (Hz)	w_∞	R^2	k_n (Hz)	w_∞	*n*	R^2	k_a (Hz)	w_∞	*m*	R^2	*k* (Hz)	w_∞	*m*	*n*	R^2
24.5	1.48	1.94×10^{-2}	3.65×10	0.9718	1.38×10^{-1}	8.06×10^{-2}	0.9986	1.32	1.02×10^{-1}	0.9896	9.44×10^{-2}	7.86×10^{-2}	0.86	0.9992	1.42×10^{-1}	7.91×10^{-2}	1.08	0.9996	2.44×10^{-1}	8.07×10^{-2}	1.17	1.22	0.9998
44.7	1.45	3.97×10^{-2}	8.54×10	0.9271	2.47×10^{-1}	4.97×10^{-2}	0.9987	5.49	5.74×10^{-2}	0.9817	2.66×10^{-1}	4.98×10^{-2}	1.02	0.9987	2.47×10^{-1}	4.97×10^{-2}	1.02	0.9988	8.23×10^{-1}	5.06×10^{-2}	1.24	1.42	0.9998
65.0	1.44	5.45×10^{-2}	1.58×10^2	0.8947	3.32×10^{-1}	3.22×10^{-2}	0.9973	1.33×10	3.59×10^{-2}	0.9788	5.15×10^{-1}	3.24×10^{-2}	1.11	0.9981	3.32×10^{-1}	3.23×10^{-2}	0.97	0.9975	1.73	3.28×10^{-2}	1.25	1.52	0.9993

Arrhenius plots: $\ln(k) = m^*(1/T) + c$

Elovich	Pseudo-First Order	Pseudo-Second Order	Pseudo-*n*th Order	Modified Avrami	Extended
					
$R^2 = 0.966$; $m = -2.59 \times 10^3$ $c = 4.8$	$R^2 = 0.978$; $m = -2.20 \times 10^3$ $c = 5.4$	$R^2 = 0.990$: $m = -5.76 \times 10^3$ $c = 19.7$	$R^2 = 0.992$: $m = -4.23 \times 10^3$ $c = 11.9$	$R^2 = 0.982$: $m = -2.12 \times 10^3$ $c = 5.2$	$R^2 = 0.989$: $m = -4.90 \times 10^3$ $c = 15.1$

The activation energy (E_a) of CO_2 adsorption is calculated from the slope (m) of the Arrhenius plot: $E_a = -m \times R$, where R is the ideal gas constant 8.314 J/(K·mol).

In the case of the pseudo-first-order model, $E_a = -(-2.20 \times 10^3\ 1/K) \times 8.314$ J/(K·mol) = 18,290.8 J/mol = 18.3 kJ/mol.