Electronic Supplementary Material (ESI) for RSC Advances.

Factor analysis of the influence of environmental conditions on VOCs emissions from medium density fibreboard and the correlation of the factors with fitting parameters

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Table S1 Determination conditions of TD-GCMS

Instruments	Parameters	Values
TD	Tube desorption temperature	280 °C
	Tube desorption time	10 min
	Cold trap temperature	Low: 20 °C; high: 280 °C
	Cold trap desorption time	3 min
	Cold trap sorbent	Tenax TA
	Transfer line temperature	200 °C
	Split ratio	30:1
GC	Injector temperature	280 °C
	Column	DB-5MS, 60 m × 0.25 mm × 0.25 μm
	Carrier gas	He, constant flow, 1.2 $mL·min^{-1}$
	Temperature program	The initial temperature was held at 50 °C for 2 min, then heated at the rate of 5 $°C·min^{-1}$ to 225 °C and held for 2 min.
MS	Ion source	EI, 70 eV
	Ion source temperature	230 °C
	Quadrupole temperature	150 °C
	Mass range	Scan mode, 40-350 m/z
	Transfer line temperature	280 °C

Table S2 The fitting results of a_1 with relative humidity

Compounds	Exponential fitting		Linear fitting		Logarithmic fitting		Polynomial fitting		Power fitting	
	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2
n-Butyl acetate	$y=2.1361e^{0.7473x}$	0.9905	$y=2.2268x+2.0189$	0.9978	$y=0.8879\ln(x)+3.8229$	0.9856	$y=-0.7564x^2+2.9101x+1.893$	1	$y=3.9228x^{0.3005}$	0.9951
Ethylbenzene	$y=0.1163e^{1.1341x}$	0.9796	$y=0.218x+0.1002$	0.9959	$y=0.0872\ln(x)+0.2771$	0.9895	$y=-0.1006x^2+0.3089x+0.0835$	0.9997	$y=0.2935x^{0.4596}$	0.9994
PGMEA	$y=0.6876e^{1.0233x}$	0.9314	$y=1.0998x+0.6169$	0.9401	$y=0.4435\ln(x)+1.5126$	0.9499	$y=-1.3048x^2+2.2786x+0.3997$	0.9643	$y=1.5862x^{0.4152}$	0.9529
p/m-Xylene	$y=0.4873e^{1.7329x}$	0.8700	$y=1.7428x+0.3389$	0.9447	$y=0.7168\ln(x)+1.7718$	0.9927	$y=-2.7938x^2+4.2667x-0.1261$	0.9891	$y=2.0569x^{0.7285}$	0.9554
o-Xylene	$y=1.1052e^{0.7513x}$	0.9732	$y=1.154x+1.0467$	0.9879	$y=0.4643\ln(x)+1.9856$	0.9935	$y=-0.7562x^2+1.8372x+0.9208$	0.9957	$y=2.0421x^{0.3052}$	0.9975
Isopropyl benzene	$y=0.0755e^{1.5537x}$	0.9712	$y=0.2369x+0.0522$	0.9861	$y=0.0936\ln(x)+0.2433$	0.9574	$y=0.0527x^2+0.1893x+0.0609$	0.9870	$y=0.2677x^{0.6276}$	0.9845
1, 2, 4-Trimethylbenzene	$y=0.0858e^{1.2591x}$	0.9658	$y=0.1878x+0.0712$	0.9909	$y=0.0755\ln(x)+0.2238$	0.9945	$y=-0.1234x^2+0.2992x+0.0506$	0.9988	$y=0.2407x^{0.5138}$	0.9991

Table S3 The fitting results of a_1 with the air change rate

Compounds	Exponential fitting		Linear fitting		Logarithmic fitting		Polynomial fitting		Power fitting	
	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2
n-Butyl acetate	$y=0.5833e^{-0.604x}$	0.7069	$y=-0.1823x+0.5827$	0.5661	$y=-0.297\ln(x)+0.3679$	0.7580	$y=0.1728x^2-0.7902x+0.9547$	0.7987	$y=0.2824x^{-0.931}$	0.8508
PGMEA	$y=0.6651e^{-0.376x}$	0.6461	$y=-0.1662x+0.6739$	0.5682	$y=-0.269\ln(x)+0.4777$	0.7519	$y=0.1471x^2-0.6834x+0.9904$	0.7718	$y=0.4241x^{-0.589}$	0.7991
p/m-Xylene	$y=0.2923e^{-0.576x}$	0.7223	$y=-0.0855x+0.2837$	0.5848	$y=-0.137\ln(x)+0.1824$	0.7640	$y=0.0721x^2-0.3392x+0.4389$	0.7749	$y=0.1456x^{-0.872}$	0.8367
o-Xylene	$y=0.5942e^{-0.554x}$	0.7568	$y=-0.1671x+0.5678$	0.6119	$y=-0.267\ln(x)+0.3695$	0.7888	$y=0.1358x^2-0.6447x+0.8601$	0.7967	$y=0.3037x^{-0.834}$	0.8680
1, 2, 4-Trimethylbenzene	$y=0.0501e^{-0.506x}$	0.6651	$y=-0.0142x+0.0498$	0.5646	$y=-0.023\ln(x)+0.033$	0.7378	$y=0.0115x^2-0.0548x+0.0746$	0.7357	$y=0.0272x^{-0.77}$	0.7796

Table S4 The fitting results of b_1 with relative humidity

Compounds	Exponential fitting		Linear fitting		Logarithmic fitting		Polynomial fitting		Power fitting	
	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2
n-Butyl acetate	$y=0.0118e^{0.6913x}$	0.8857	y=0.0113x +0.0112	0.8820	y=0.0044ln(x) +0.0202	0.8312	$y=0.0138x^2-0.0012x+0.0135$	0.9062	$y=0.0205x^{0.2724}$	0.8544
Ethylbenzene	$y=0.0147e^{1.1269x}$	0.8856	y=0.0274x +0.0127	0.9091	y=0.0109ln(x) +0.0348	0.8952	$y=0.0062x^2+0.0217x+0.0137$	0.9100	$y=0.0369x^{0.4576}$	0.9072
PGMEA	$y=0.0038e^{1.3007x}$	0.9340	y=0.0089x +0.0031	0.9647	y=0.0036ln(x) +0.0103	0.9588	$y=-0.0016x^2+0.0104x+0.0029$	0.9653	$y=0.0111x^{0.5307}$	0.9661
p/m-Xylene	$y=0.0085e^{0.9625x}$	0.7590	y=0.0135x +0.0074	0.7772	y=0.0048ln(x) +0.0178	0.6271	$y=0.0498x^2-0.0315x+0.0157$	0.9716	$y=0.018x^{0.3465}$	0.6112
o-Xylene	$y=0.0086e^{0.8186x}$	0.6108	y=0.0102x +0.0081	0.6267	y=0.004ln(x) +0.0163	0.6142	$y=0.0107x^2+0.0005x+0.0099$	0.6394	$y=0.0167x^{0.331}$	0.6205
Isopropyl benzene	$y=0.0129e^{1.0012x}$	0.4683	y=0.0199x +0.012	0.4782	y=0.008ln(x) +0.0282	0.4760	$y=0.0228x^2-0.0006x+0.0158$	0.4896	$y=0.0293x^{0.4099}$	0.4877
1, 2, 4-Trimethylbenzene	$y=0.0087e^{1.4167x}$	0.7973	y=0.0234x +0.0066	0.8225	y=0.0092ln(x) +0.0255	0.7955	$y=0.0199x^2+0.0054x+0.0099$	0.8335	$y=0.0276x^{0.5745}$	0.8147

Table S5 The fitting results of b_1 with the air change rate

Compounds	Exponential fitting		Linear fitting		Logarithmic fitting		Polynomial fitting		Power fitting	
	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2	Formula	R^2
n-Butyl acetate	$y=0.0059e^{0.16x}$	0.4113	y=0.0013x +0.0058	0.4862	y=0.0014ln(x) +0.0075	0.2919	$y=0.0012x^2-0.0028x+0.0083$	0.6780	$y=0.0073x^{0.1702}$	0.2356
PGMEA	$y=0.0033e^{0.1873x}$	0.5342	y=0.0009x +0.0032	0.6211	y=0.001ln(x) +0.0044	0.4216	$y=0.0006x^2-0.0013x+0.0046$	0.7570	$y=0.0043x^{0.2128}$	0.3489
p/m-Xylene	$y=0.0044e^{0.1161x}$	0.4023	y=0.0006x +0.0044	0.4429	y=0.0007ln(x) +0.0052	0.3354	$y=0.0001x^2+0.0003x+0.0046$	0.4479	$y=0.0051x^{0.1387}$	0.2906
o-Xylene	$y=0.0042e^{0.1413x}$	0.4015	y=0.0007x +0.0042	0.4590	y=0.0009ln(x) +0.0051	0.3315	$y=0.0002x^2$-8E-05x+0.0047	0.4799	$y=0.005x^{0.1644}$	0.2749
1, 2, 4-Trimethylbenzene	$y=0.0045e^{0.1877x}$	0.4484	y=0.0011x +0.0044	0.5385	y=0.0013ln(x) +0.0059	0.3743	$y=0.0006x^2-0.0009x+0.0057$	0.6049	$y=0.0057x^{0.214}$	0.2952

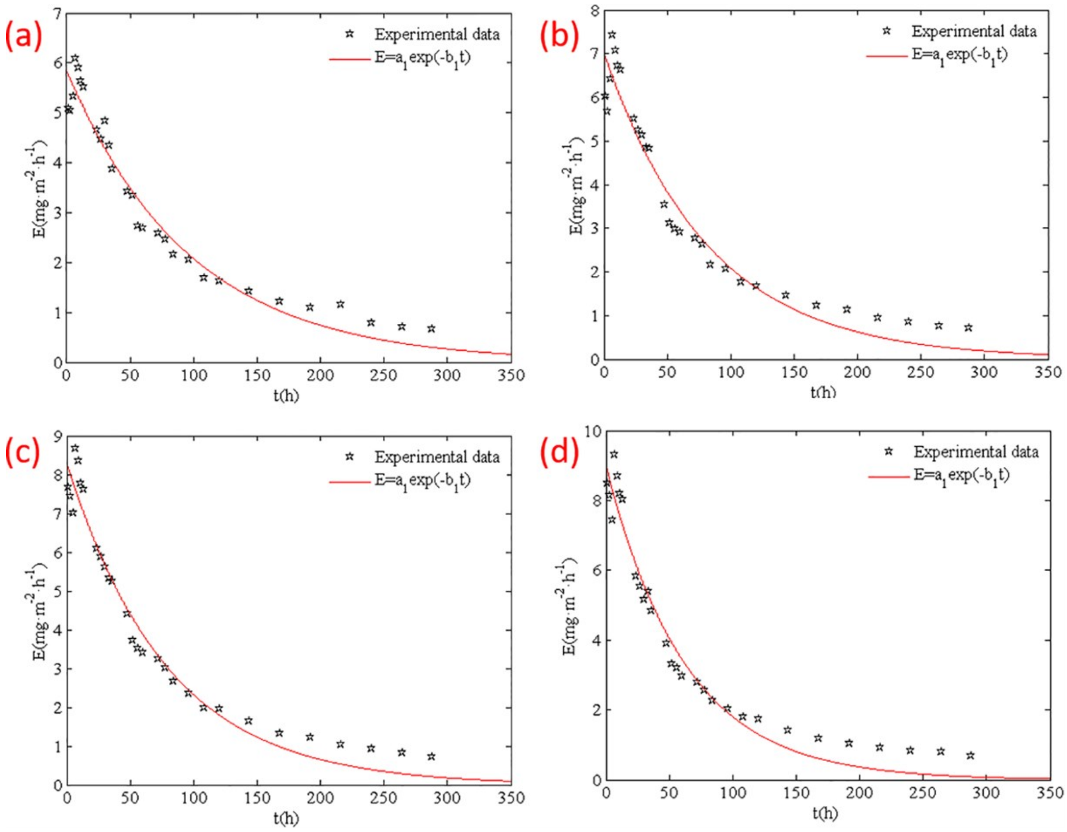

Fig. S1 Fitting of TVOC emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

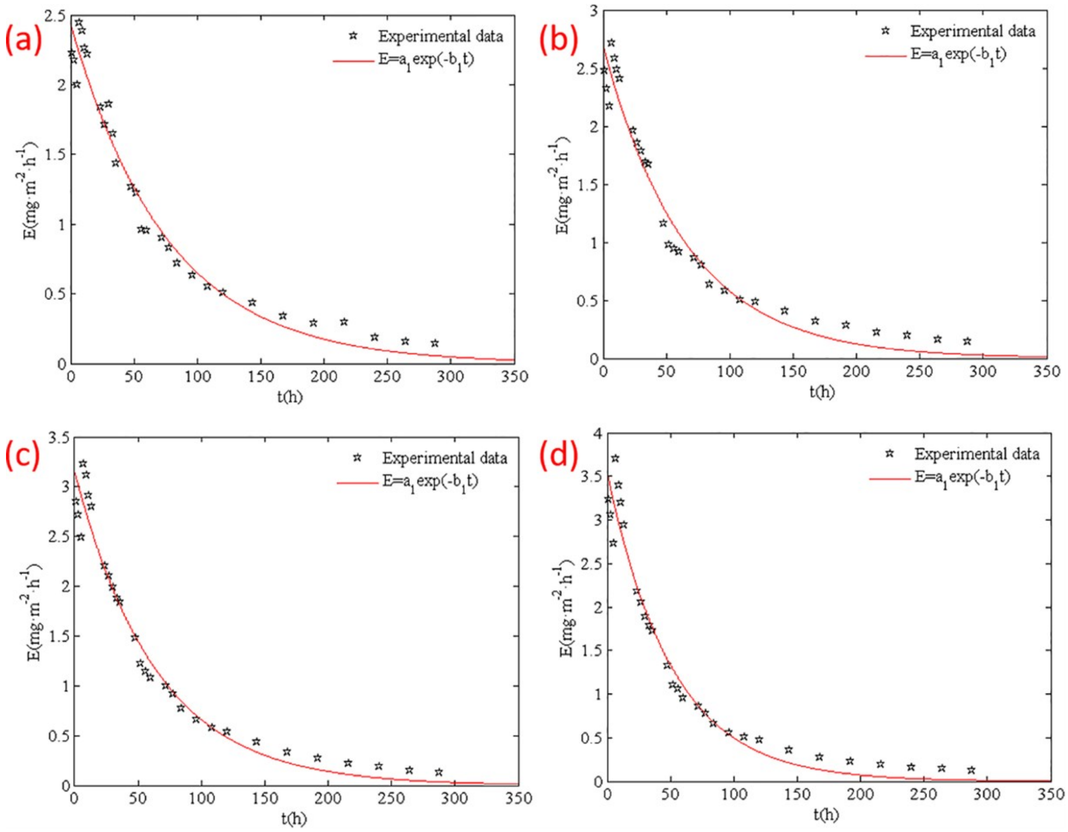

Fig. S2 Fitting of acetic acid butyl ester emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

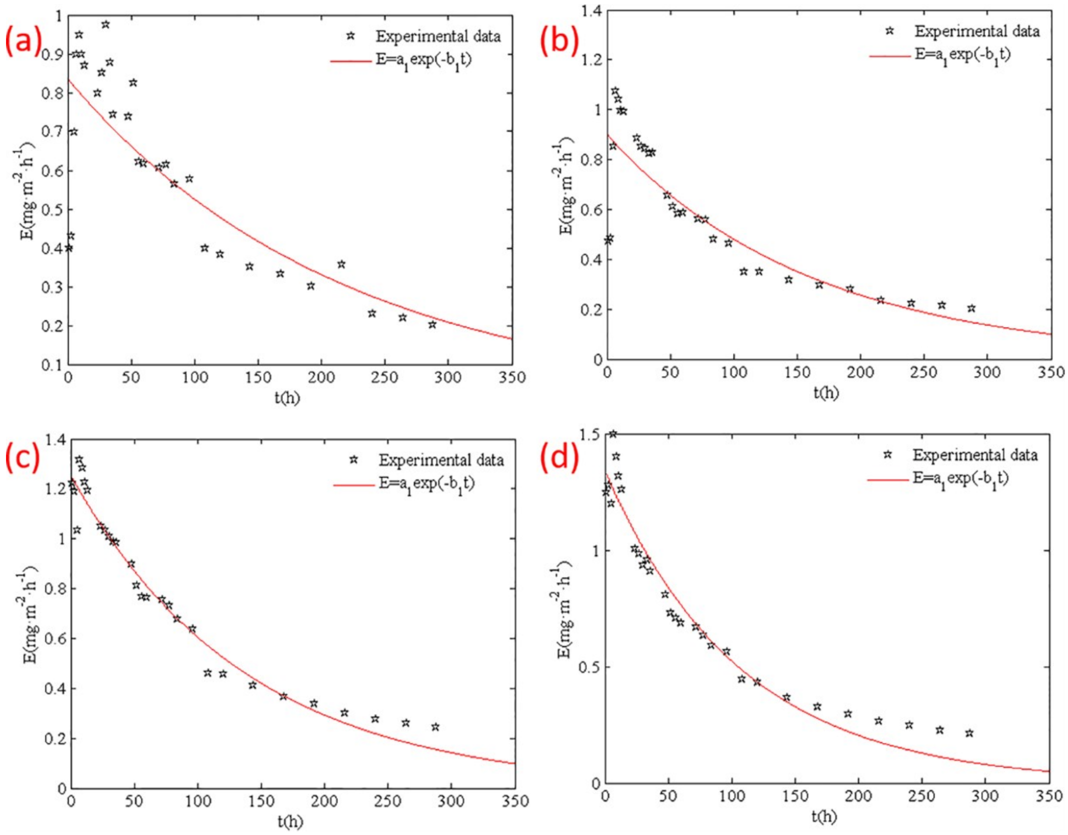

Fig. S3 Fitting of a PGMEA emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

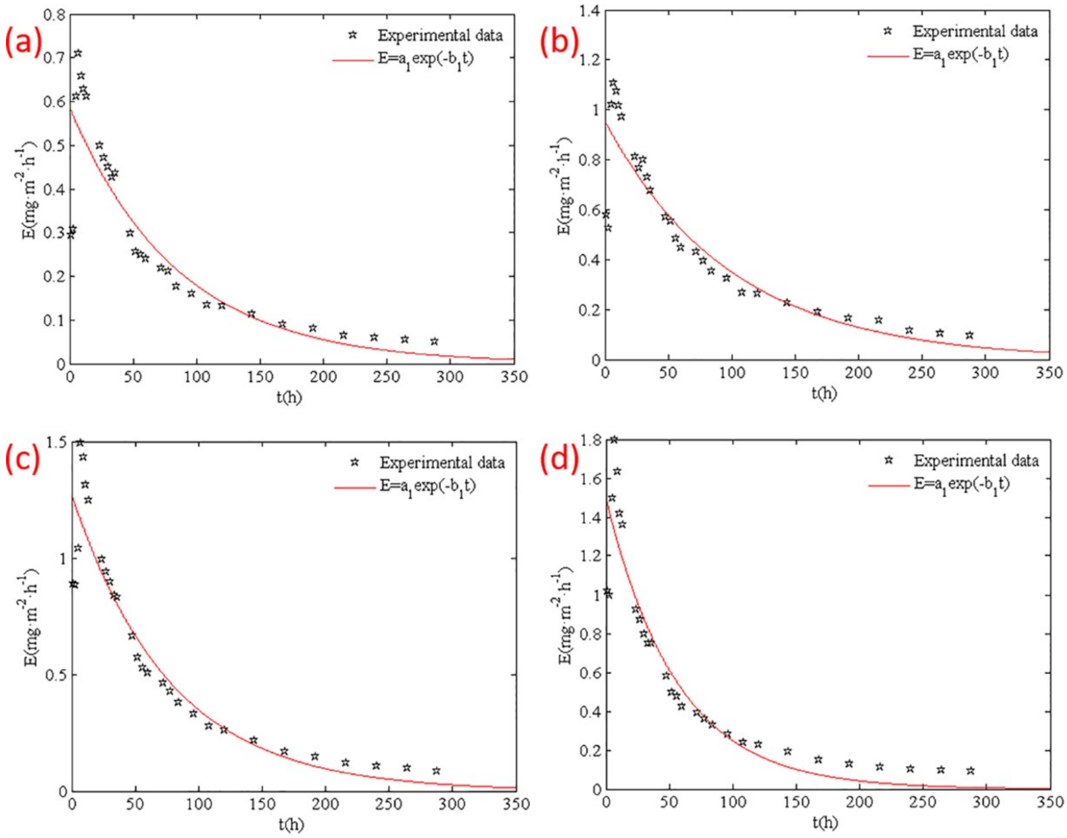

Fig. S4 Fitting of m/p-Xylene emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

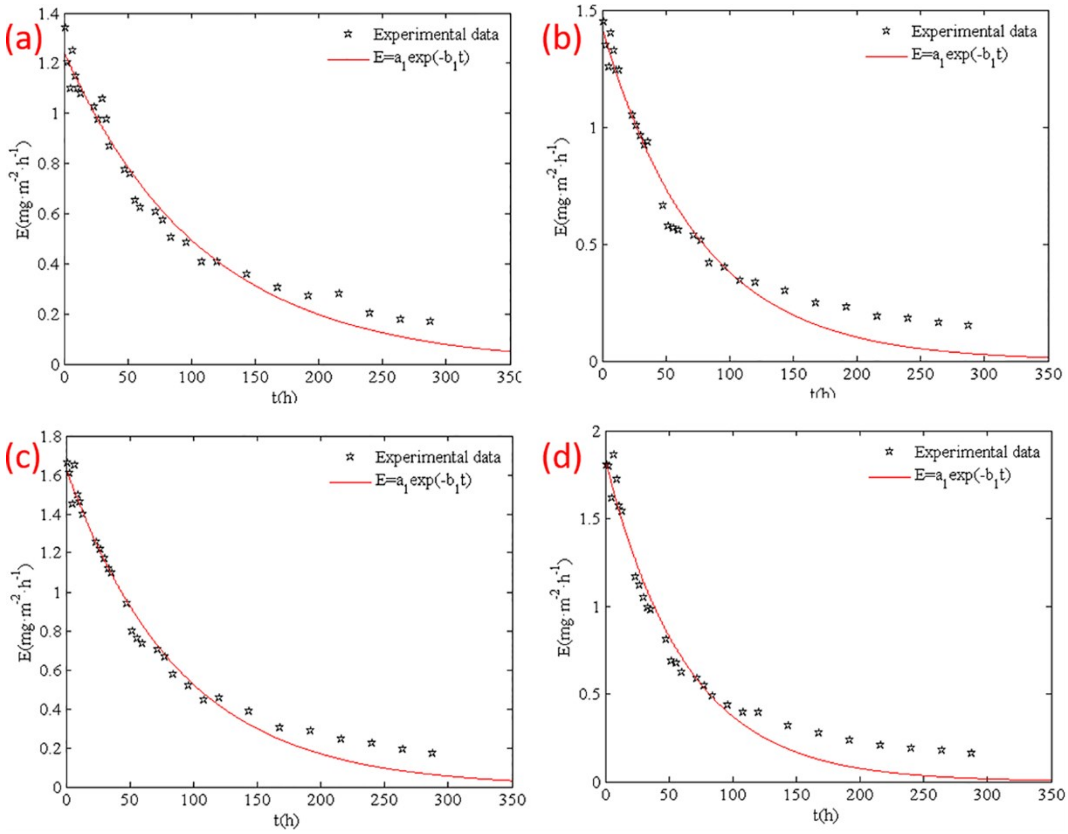

Fig. S5 Fitting of o-Xylene emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

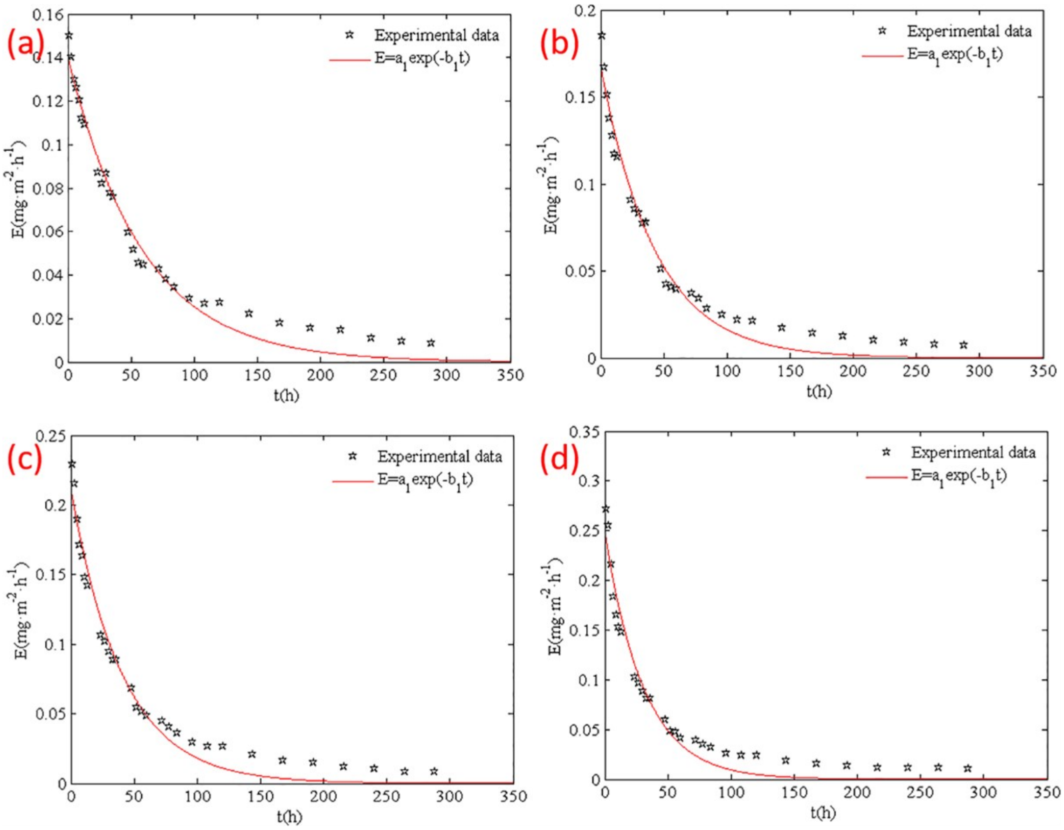

Fig. S6 Fitting of Ethylbenzene emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

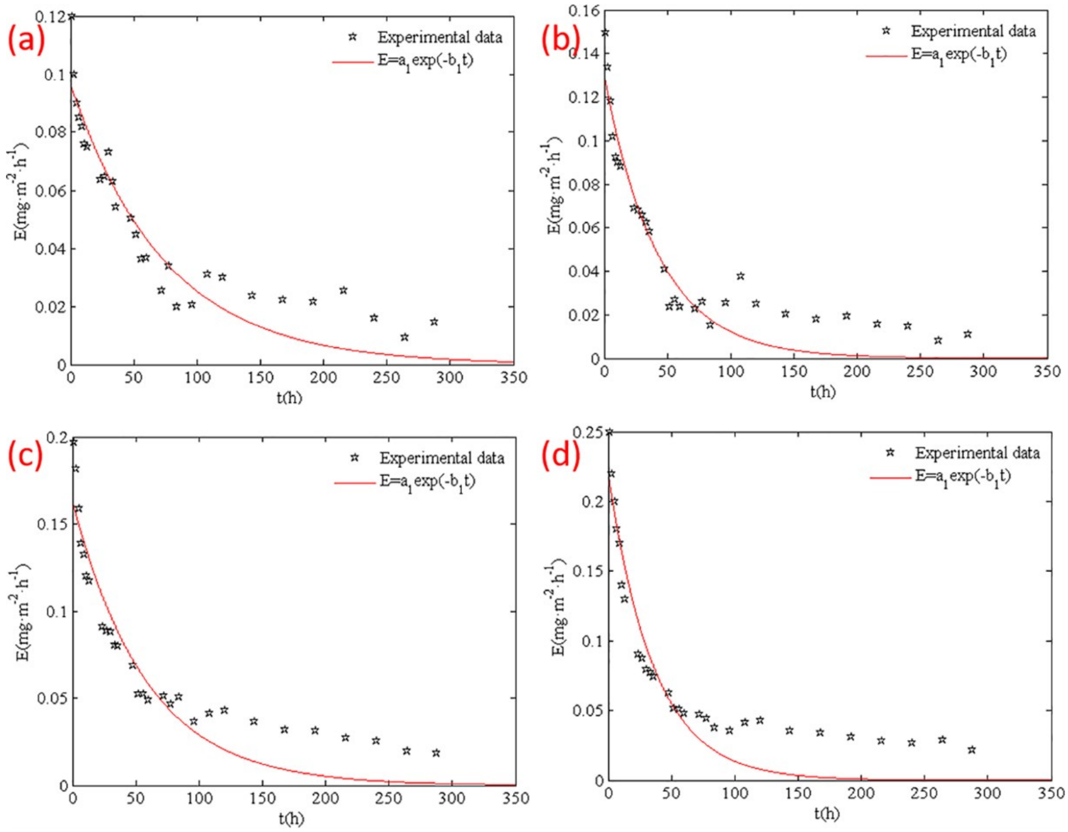

Fig. S7 Fitting of Isopropyl benzene emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

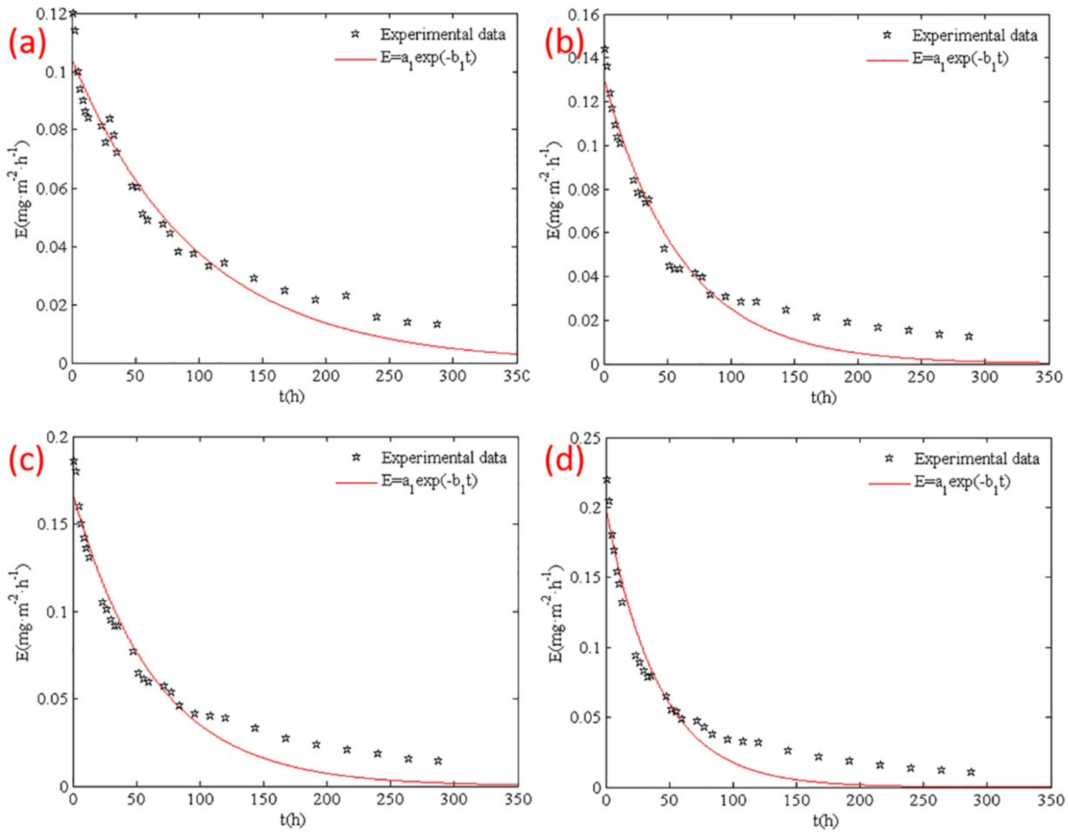

Fig. S8 Fitting of 1,2,4-Trimethylbenzene emission rates with single exponential model at ACR 1.0 h^{-1} and different relative humidity: (a) 20%; (b) 30%; (c) 50%; (d) 70%.

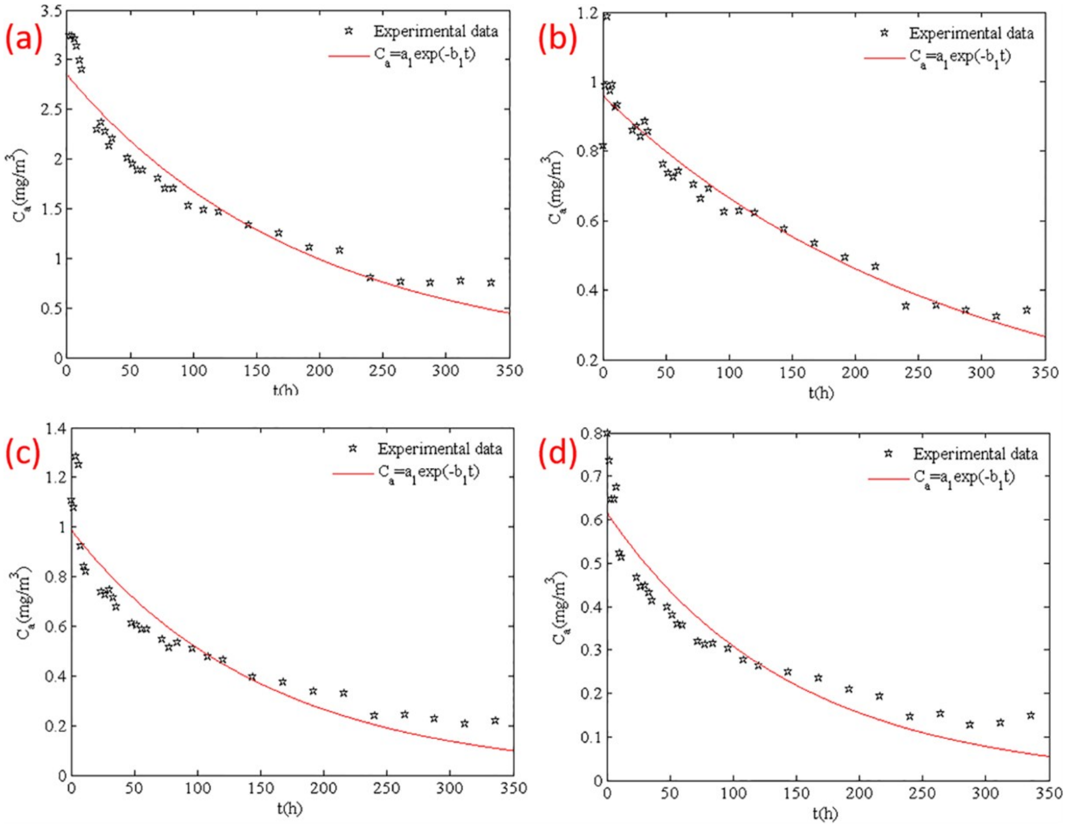

Fig. S9 Fitting of TVOC concentrations with single exponential model at RH 50% and different ACR: (a) 0.5 h^{-1}; (b) 1.0 h^{-1}; (c) 2.0 h^{-1}; (d) 3.0 h^{-1}.

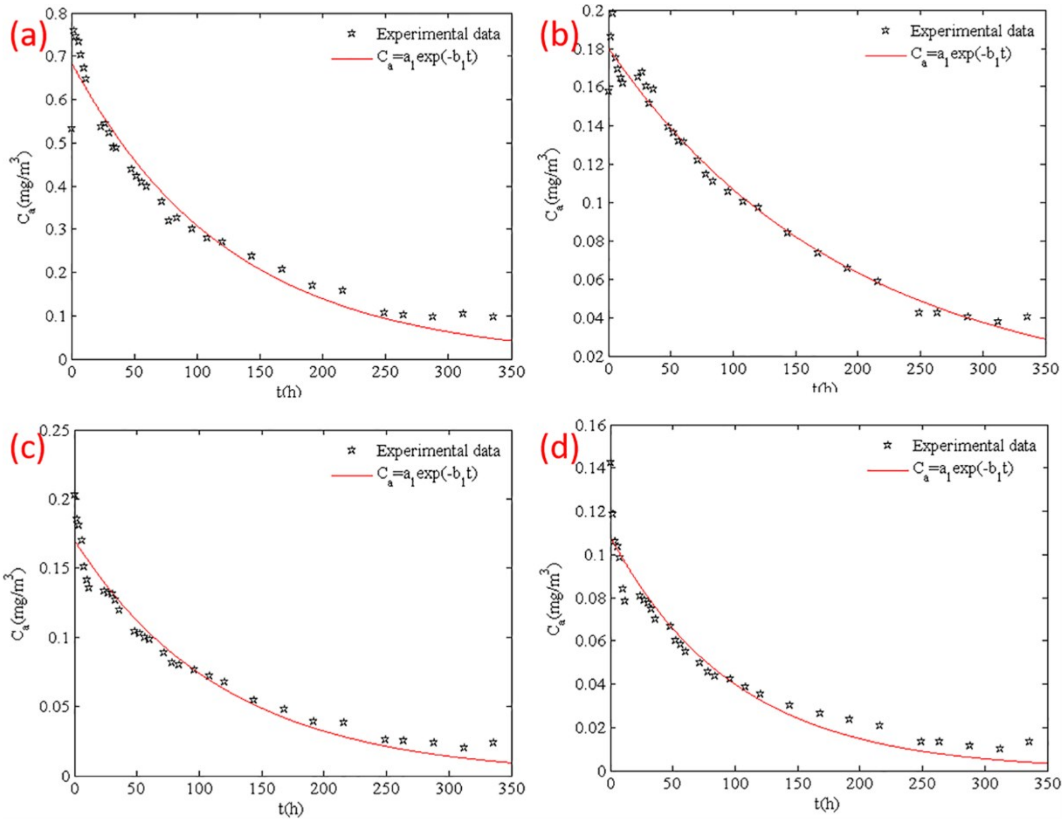

Fig. S10 Fitting of Acetic acid butyl ester concentrations with single exponential model at RH 50% and different ACR: (a) 0.5 h^{-1}; (b) 1.0 h^{-1}; (c) 2.0 h^{-1}; (d) 3.0 h^{-1}.

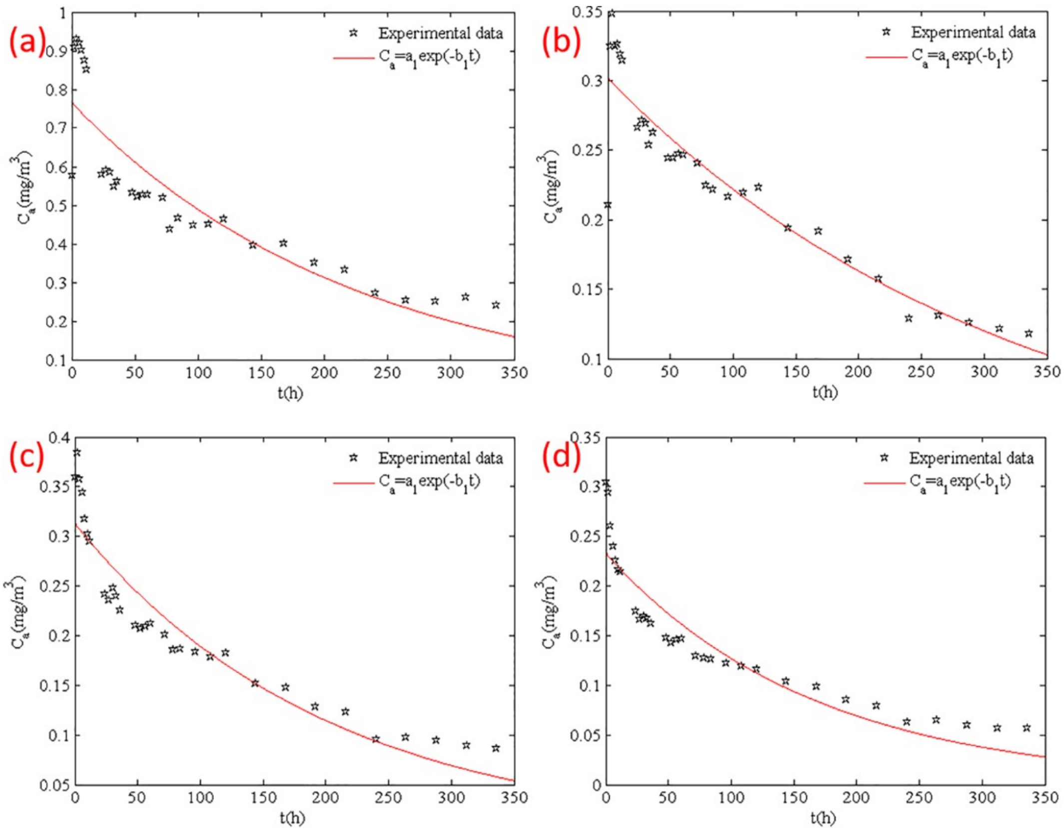

Fig. S11 Fitting of PGMEA concentrations with single exponential model at RH 50% and different ACR: (a) 0.5 h^{-1}; (b) 1.0 h^{-1}; (c) 2.0 h^{-1}; (d) 3.0 h^{-1}.

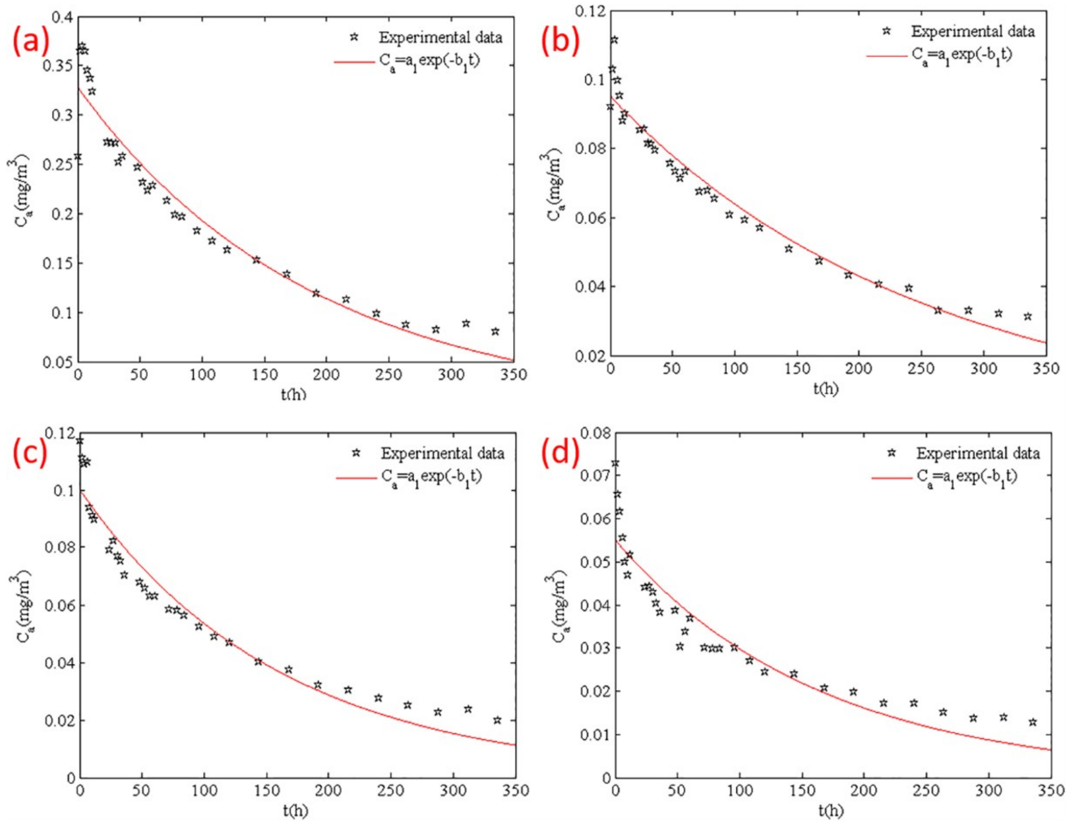

Fig. S12 Fitting of p/m-Xylene concentrations with single exponential model at RH 50% and different ACR: (a) 0.5 h^{-1}; (b) 1.0 h^{-1}; (c) 2.0 h^{-1}; (d) 3.0 h^{-1}.

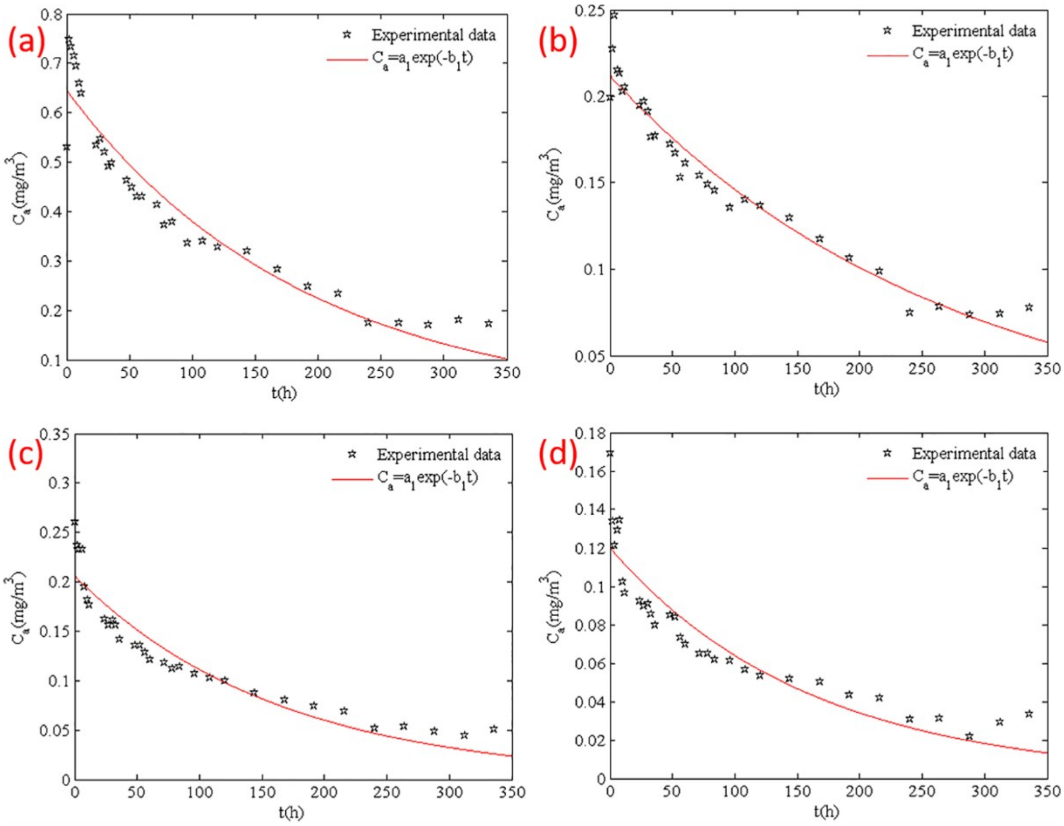

Fig. S13 Fitting of o-Xylene concentrations with single exponential model at RH 50% and different ACR: (a) 0.5 h^{-1}; (b) 1.0 h^{-1}; (c) 2.0 h^{-1}; (d) 3.0 h^{-1}.