

Table S1. Standard deviation of EMC of reference samples and WAW samples size at different RH in adsorption process and desorption process

EMC adsorption				EMC desorption			
RH	S _{Ref}	S _{WAW}	S _{WAW} /S _{Ref}	RH	S _{Ref}	S _{WAW}	S _{WAW} /S _{Ref}
5	0.03077411	0.152537375	495.67%	5	0.244441492	0.143292507	58.62%
10	0.084881984	0.144049996	169.71%	10	0.236863771	0.151134322	63.81%
15	0.141068374	0.141250746	100.13%	15	0.256459822	0.122852506	47.90%
20	0.177990601	0.118198464	66.41%	20	0.280786115	0.14620681	52.07%
25	0.201109333	0.131442416	65.36%	25	0.280074196	0.119811336	42.78%
30	0.248343425	0.119132584	47.97%	30	0.280879551	0.125650644	44.73%
35	0.280879973	0.116891174	41.62%	35	0.309056891	0.091201483	29.51%
40	0.292279344	0.125690313	43.00%	40	0.289292251	0.094998474	32.84%
50	0.425638729	0.128341658	30.15%	50	0.324283018	0.074412288	22.95%
60	0.647617894	0.127375371	19.67%	60	0.344542234	0.096764384	28.08%
70	0.917706641	0.224320934	24.44%	70	0.396637725	0.174556941	44.01%
80	1.153669392	0.280296464	24.30%	80	0.468277564	0.284820793	60.82%
90	1.434002429	0.283339341	19.76%	90	1.073748269	0.390481294	36.37%
95	1.842830753	0.313352808	17.00%	95	1.880183913	0.327840187	17.44%
98	2.825039367	0.357634656	12.66%	98	2.825039367	0.357634656	12.66%

Table S2. Standard deviation of parameters for models

	σ_{adm0}	σ_{dem0}	σ_k	σ_s	$\sigma_{1/W}$
Ref	0.295202896	1.250345052	0.012175796	11.25910483	0.193207533
WAW	0.065637261	0.366859902	0.001581139	2.503419881	0.042843879
WAW/Ref	22.23%	29.34%	12.99%	22.23%	22.18%

Table S3. Standard deviation of M_h value of reference samples and WAW samples size at different RH in adsorption process and desorption process

Mh adsorption				Mh desorption			
RH	S _{Ref}	S _{WAW}	S _{WAW} /S _{Ref}	RH	S _{Ref}	S _{WAW}	S _{WAW} /S _{Ref}
5	0.131170246	0.090713365	69.16%	5	0.161976409	0.159229736	98.30%
10	0.170035253	0.120409088	70.81%	10	0.248705594	0.197687242	79.49%
15	0.177737262	0.128209135	72.13%	15	0.295112152	0.194879745	66.04%
20	0.174892505	0.127366721	72.83%	20	0.319497636	0.177298259	55.49%
25	0.169394339	0.123071641	72.65%	25	0.332061326	0.155059303	46.70%
30	0.164371342	0.117533914	71.51%	30	0.338728087	0.132360967	39.08%
35	0.160962874	0.111744492	69.42%	35	0.342986885	0.111073788	32.38%
40	0.159406146	0.106149108	66.59%	40	0.346869193	0.092140729	26.56%
50	0.161064543	0.096196993	59.73%	50	0.357376682	0.063858024	17.87%
60	0.166942064	0.088106944	52.78%	60	0.373437562	0.052487659	14.06%
70	0.174871675	0.081696445	46.72%	70	0.394383461	0.057675938	14.62%
80	0.183505435	0.076693096	41.79%	80	0.418527526	0.070798336	16.92%
90	0.192115349	0.072806944	37.90%	90	0.444289939	0.085586271	19.26%
95	0.196292761	0.071216391	36.28%	95	0.457399442	0.092833084	20.30%
98	0.198742678	0.070353288	35.40%	98	0.465266401	0.097062383	20.86%

Table S4. Standard deviation of M_s value of reference samples and WAW samples size at different RH in adsorption process and desorption process

Ms adsorption				Mh desorption			
RH	S_{Ref}	S_{WAW}	S_{WAW}/S_{Ref}	RH	S_{Ref}	S_{WAW}	S_{WAW}/S_{Ref}
5	0.016855403	0.003023446	17.94%	5	0.009871873	0.007558903	76.57%
10	0.035400393	0.006296497	17.79%	10	0.018285451	0.015379637	84.11%
15	0.055904974	0.009850692	17.62%	15	0.024912685	0.023471972	94.22%
20	0.078691289	0.013727237	17.44%	20	0.029391582	0.031815181	108.25%
25	0.104147543	0.017975033	17.26%	25	0.031473001	0.040394957	128.35%
30	0.132775512	0.022642718	17.05%	30	0.031388101	0.049184776	156.70%
35	0.16518878	0.027813391	16.84%	35	0.031008533	0.058140891	187.50%
40	0.202178625	0.033560402	16.60%	40	0.03599392	0.067208204	186.72%
50	0.294286231	0.047289994	16.07%	50	0.086225559	0.085328067	98.96%
60	0.421961654	0.065196266	15.45%	60	0.206138191	0.102713431	49.83%
70	0.609659968	0.089883078	14.74%	70	0.43348929	0.118986423	27.45%
80	0.909487647	0.127288572	14.00%	80	0.853075059	0.13962605	16.37%
90	1.452574263	0.195288367	13.44%	90	1.649133827	0.200744225	12.17%
95	1.920578655	0.258962059	13.48%	95	2.308426107	0.27913197	12.09%
98	2.322232997	0.319217896	13.75%	98	2.840414638	0.355208955	12.51%

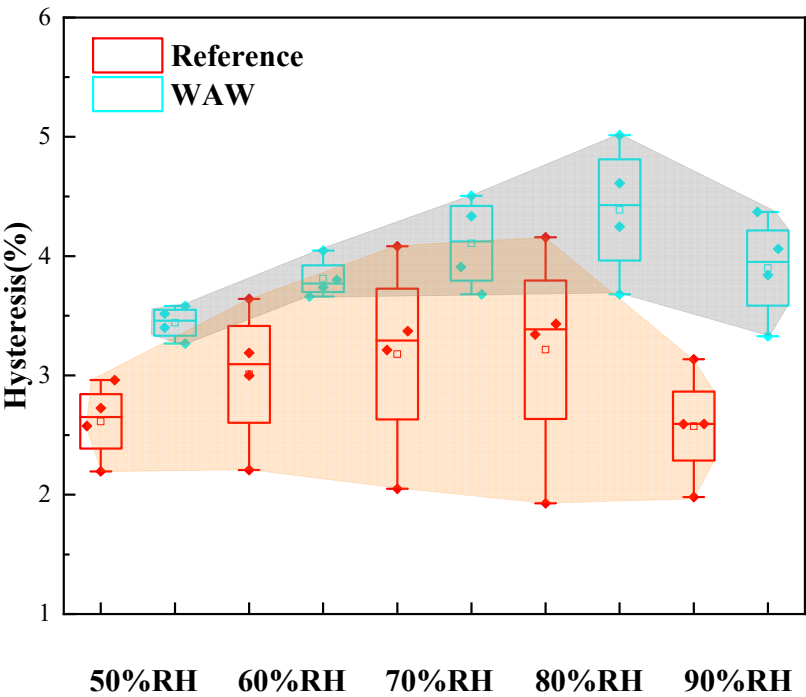


Figure S1. Hysteresis for Reference samples and WAW samples versus RH ranged from 50% to 90%