

Supporting Information

Molecular structure, morphology and growth mechanisms and rates of 5-hydroxymethyl furfural (HMF) derived humins

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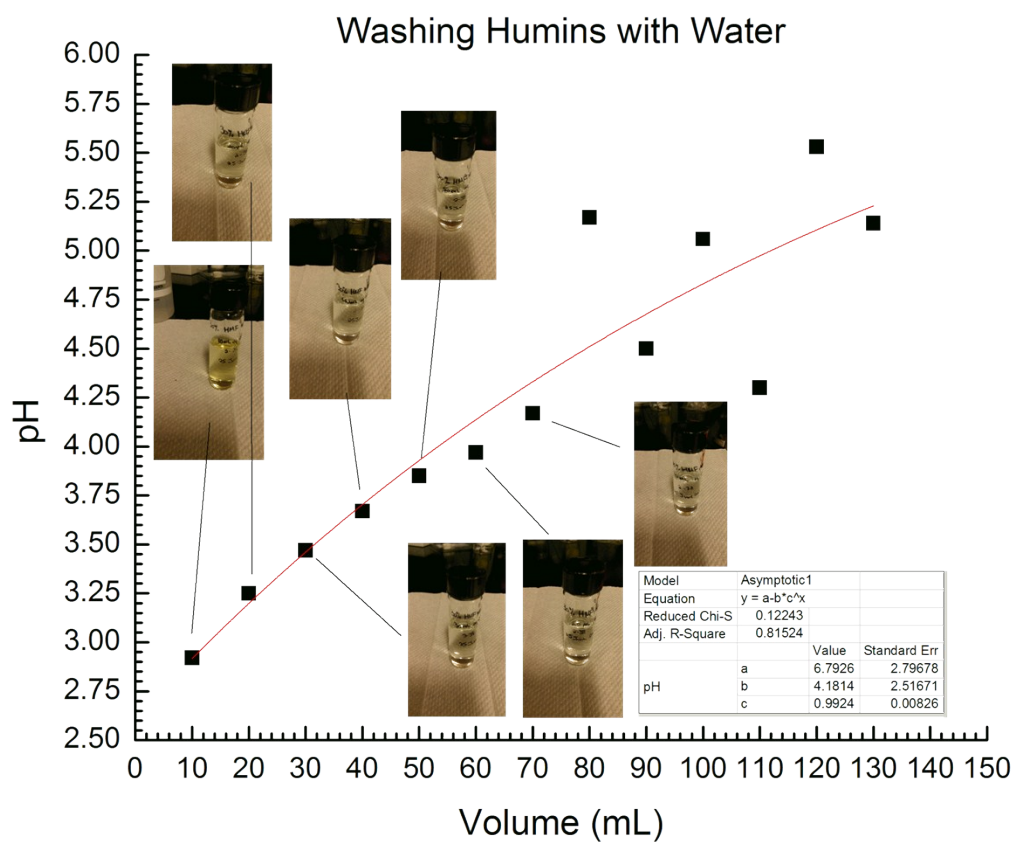


Figure S1: pH of water used for washing humins versus volume used during the washing procedure.

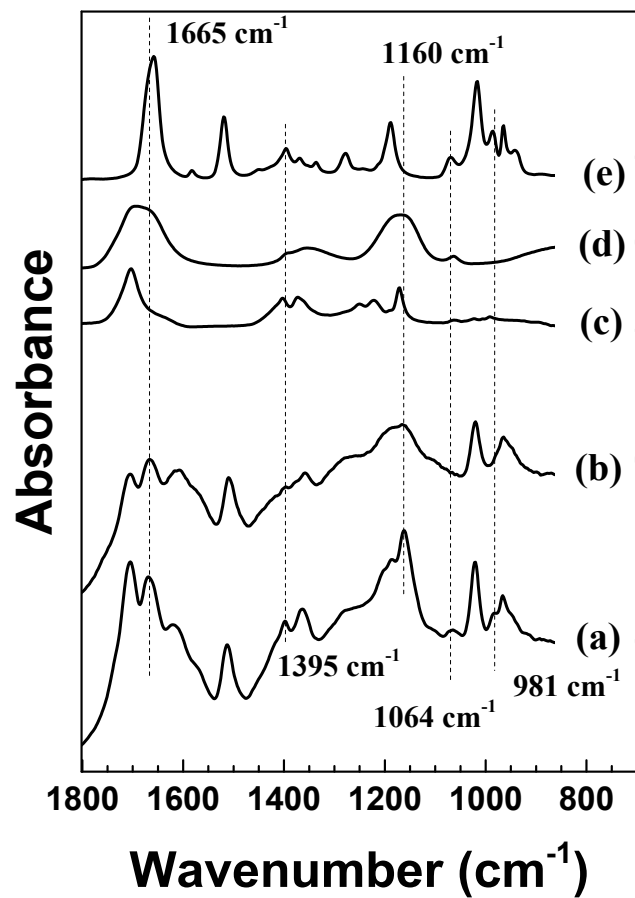


Figure S2: ATR-FTIR spectra of a) unwashed humins, b) washed humins, c) levulinic acid, d) formic acid and e) HMF.

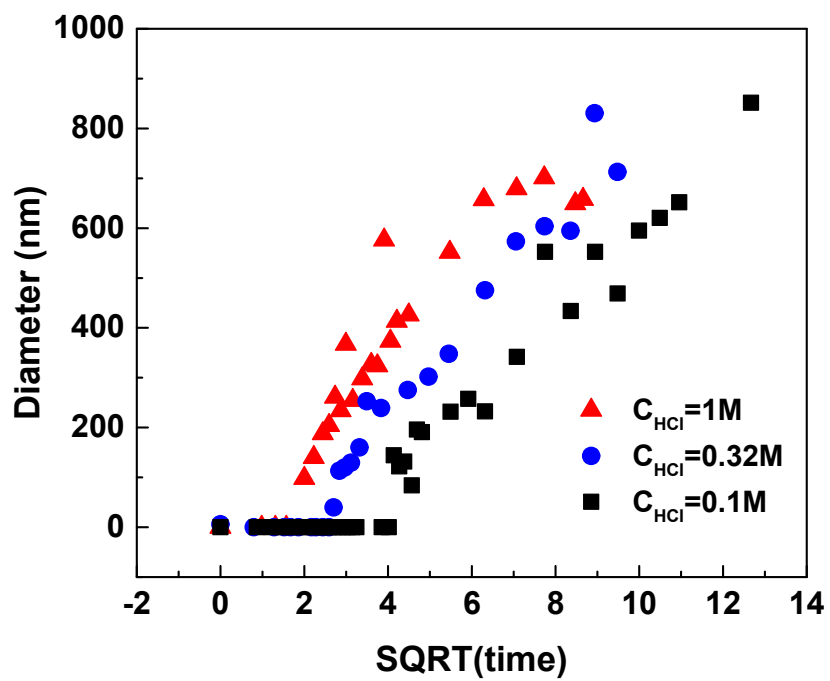
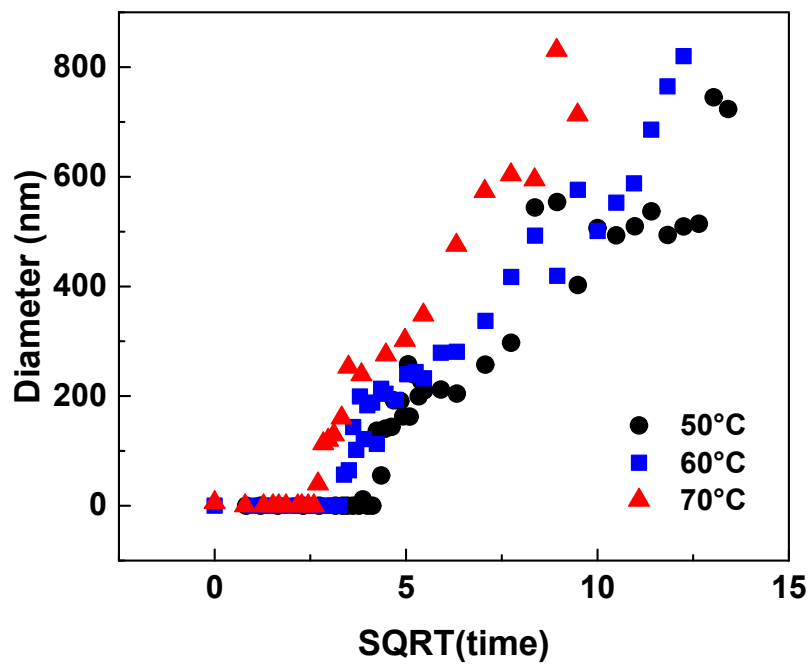


Figure S3: Particle size growth versus the square root of time of Figure's 7 data

Table S1: Reaction data during the degradation of HMF under several conditions

Solvent	Temperature, °C	HMF Conversion, %	Yield, %		Carbon Balance, %
			Levulinic acid	Formic acid	
H ₂ O, pH=1	120	10.8	6.3	1.6	97
		20.1	11.3	2.7	94
50%DMSO-50%H ₂ O (0.1M HCl)	120	8	3.7	0.6	96
		22	8.8	1.8	88
H ₂ O, pH=1	70	1.4	0.7	0.4	>97
H ₂ O, pH=0.5		2.6	1.5	0.7	
H ₂ O, pH=0		10.1	4.8	2.1	
H ₂ O, pH=1	60	3.3	0.3	0.2	
H ₂ O, pH=0.5		2.4	0.8	0.4	
H ₂ O, pH=0		3.1	1.7	0.8	
H ₂ O, pH=1	50	1.7	0.1	0.1	
H ₂ O, pH=0.5		2	0.2	0.15	
H ₂ O, pH=0		1.5	0.4	0.3	