Supplementary materials

Cationic lignin polymers as flocculant for municipal wastewater

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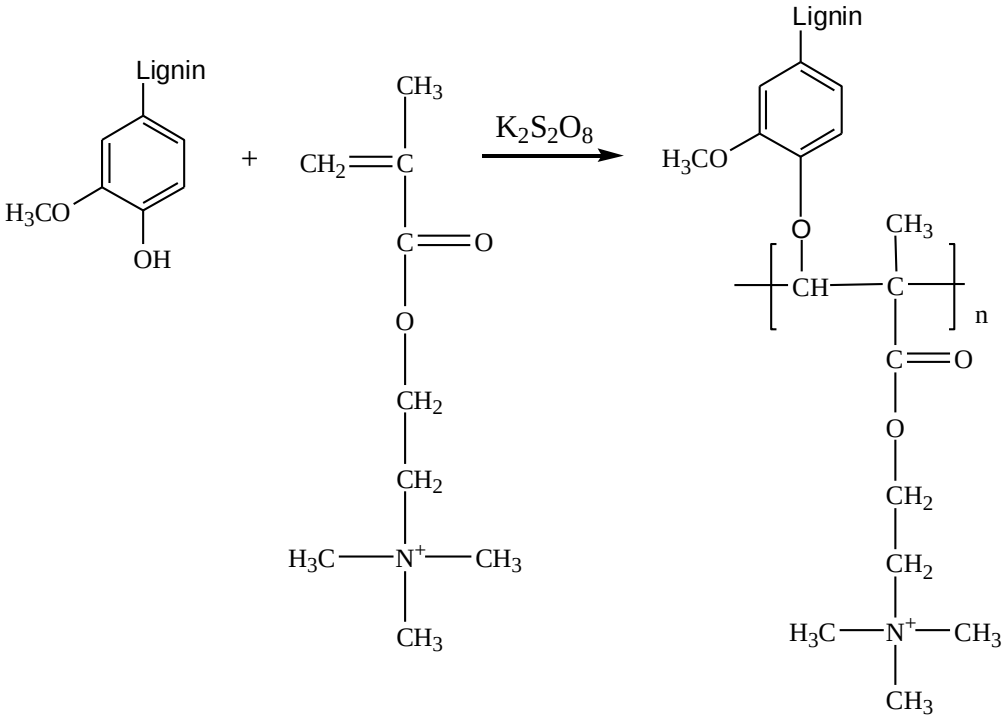

Figure S1. Polymerization reaction of kraft lignin and METAC [19].

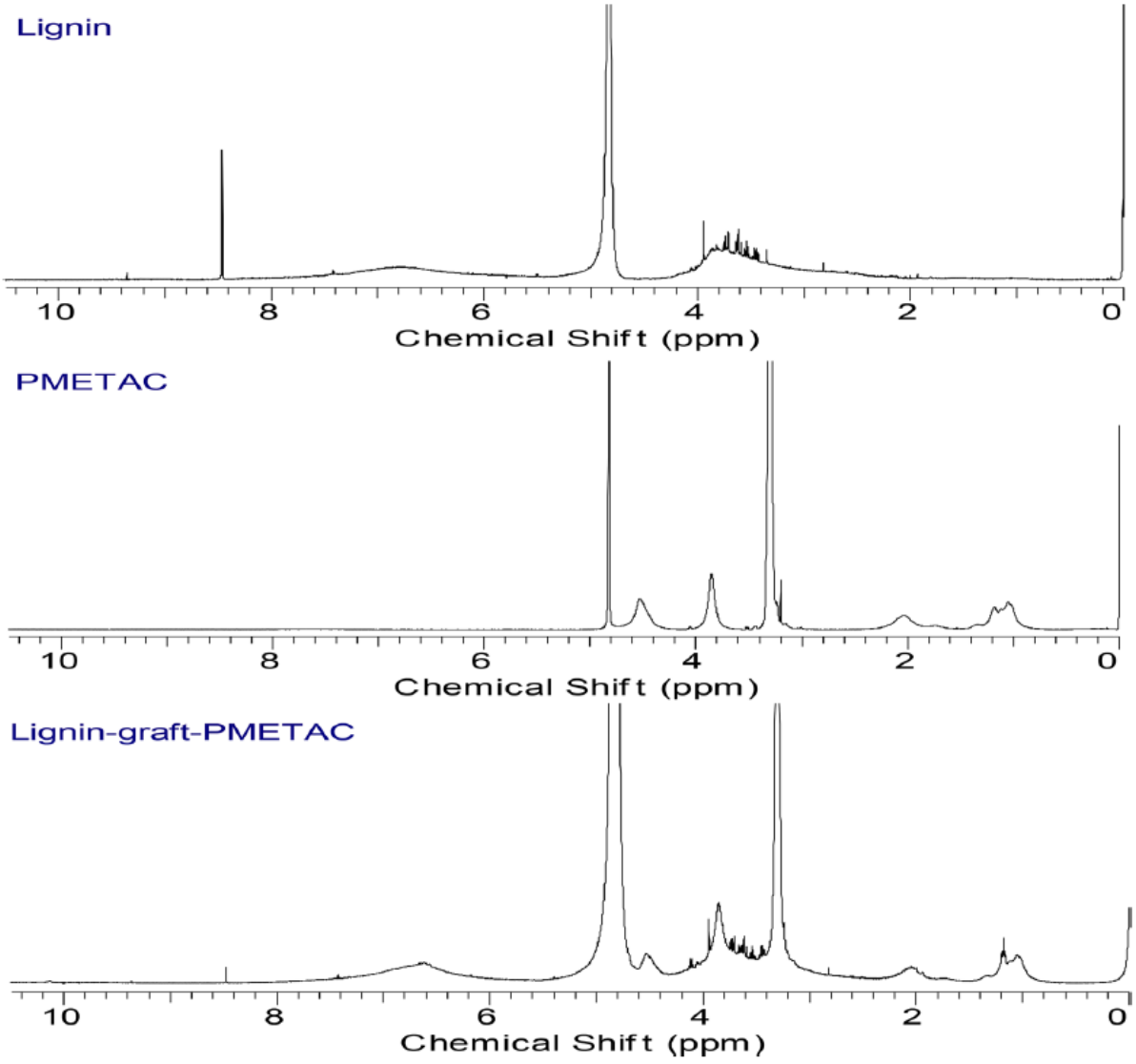

Figure S2. ^{1}H NMR spectra of lignin, PMETAC, and lignin-graft -PMETAC [19].

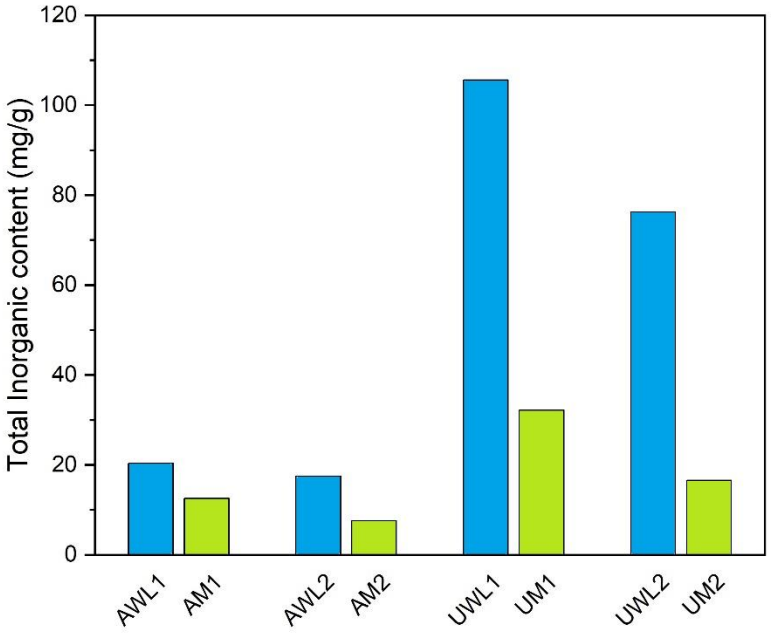

Figure S3. Comparison of total inorganic content of unmodified and modified lignin-METAC.

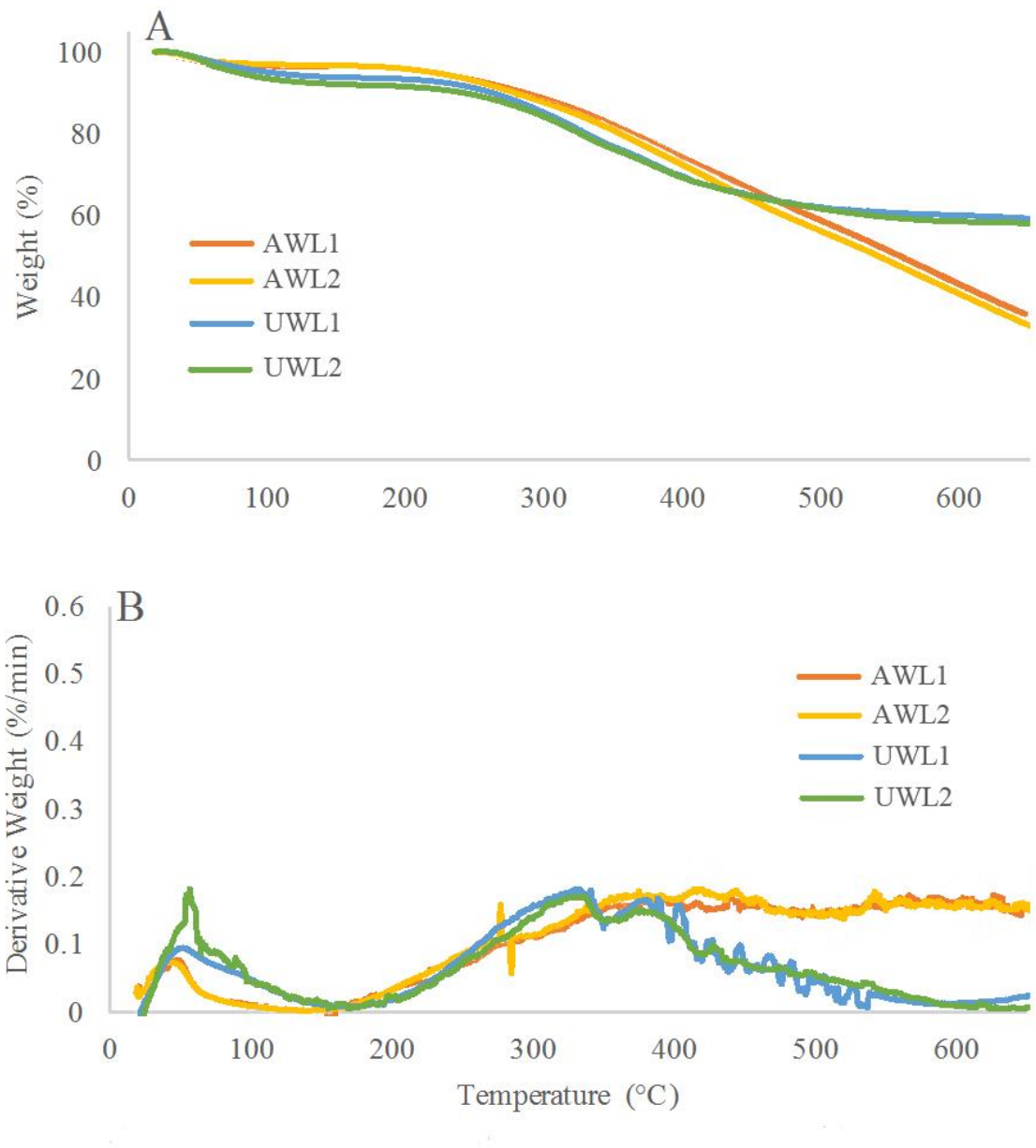

Figure S4. (A) Weight loss as a function of temperature, and (B) derivative weight loss as a function of temperature for unmodified lignin samples.

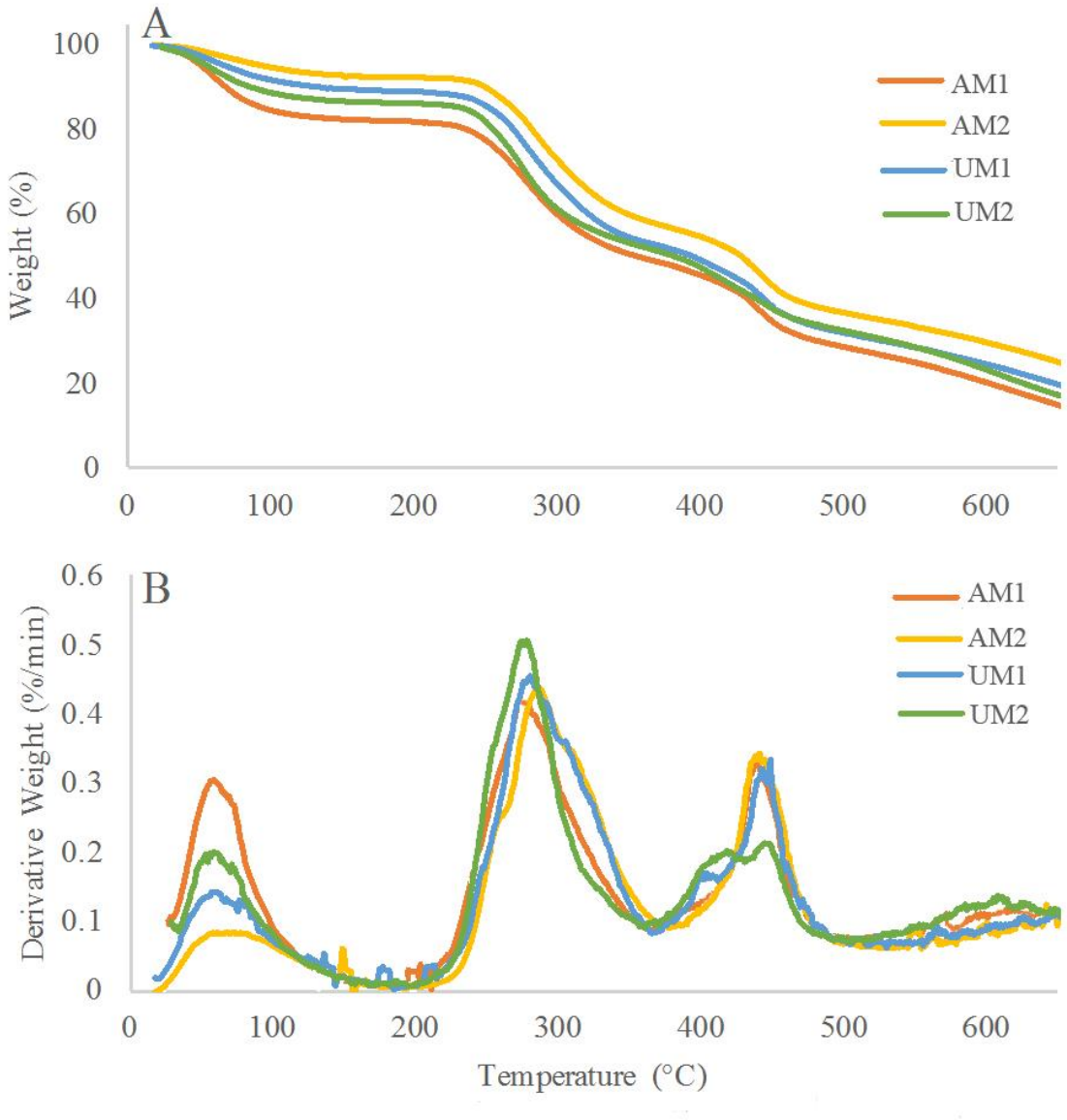

Figure S5. (A) Weight loss as a function of temperature, and (B) derivative weight loss as a function of temperature for lignin-METAC samples.

Table S1. Trace elemental analysis of unmodified lignin determined via ICP MS analysis

	Inorganic Elements (µg/g)													
	Al	**Ba**	**Ca**	**Cr**	**Cu**	**Fe**	**K**	**Mg**	**Mn**	**Na**	**S**	**Si**	**V**	**Zn**
Unmodified														
AW L1	29	0.83	55	1.03	1.23	33.6	289	19.4	5.2	3,052	16,720	270	0.79	2.37
AW L2	21	<DL	41	0.86	1.52	9.7	177	10.7	1.8	1,754	15,216	117	2.11	0.53
UW L1	68	8.66	843	0.80	0.95	38.1	9772	349.7	185.4	75,144	17,536	447	8.31	17.86
UW L2	118	3.64	184	0.26	1.32	58.6	6322	184.1	92.7	53,738	15,221	116	1.71	10.89

<DL: below the Detectable Limits.