Supplementary Materials for:

Stepwise Ethanol-Water Fractionation of Enzymatic Hydrolysis Lignin to Improve Its Performance as a Cationic Dye Adsorbent

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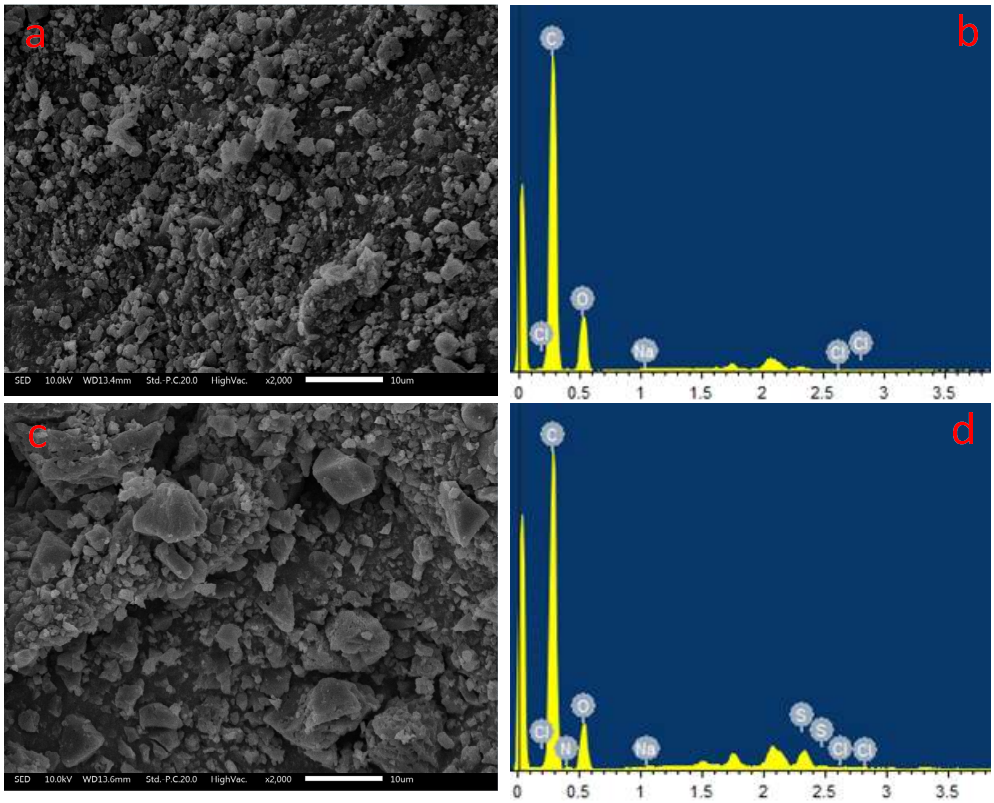

Figure S1. SEM (a and c) and EDS analyses (b and d) of S3 (a and b) and MB adsorbed S3 (c and d).

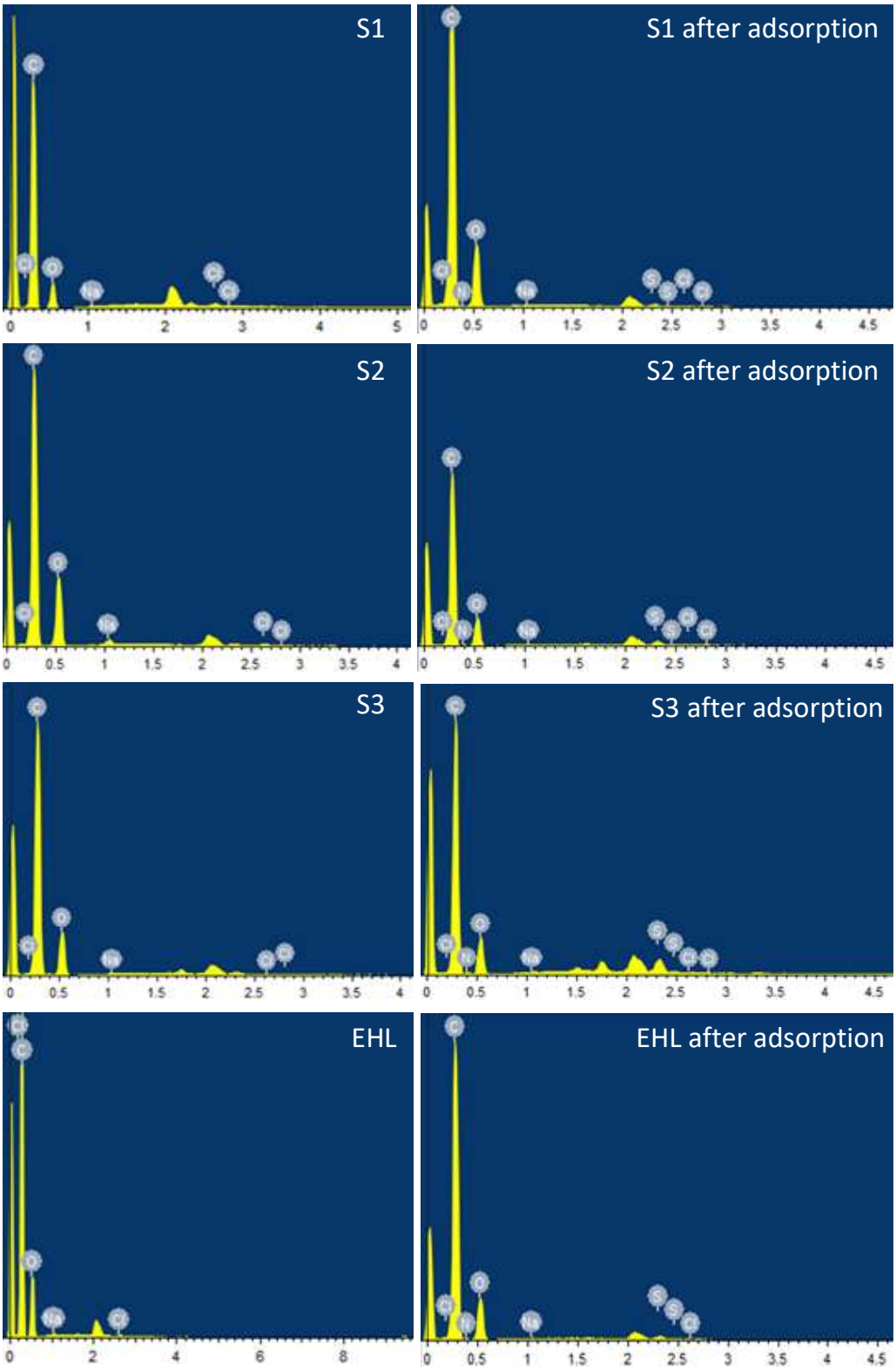

Figure S2. EDS analyses of lignin before and after methylene blue adsorption.

Table S1. Element compositions of lignin and MB adsorbed lignin based on EDS spectra after normalization.

Sample	C	O	Na	Cl	N	S
S1	63.19±1.73	35.31±1.87	0.12±0.04	0.38±0.14	-	-
S2	63.62±1.61	35.58±1.79	0.67±0.06	0.27±0.12	-	-
S3	67.83±1.05	32.09±1.08	0.07±0.01	0.02±0.01	-	-
EHL	67.92±1.87	31.71±1.87	0.20±0.01	0.18±0.02	-	-
S1 after adsorption	67.99±2.80	30.92±2.51	0.04±0.01	0.02±0.01	0.74±0.27	0.33±0.14
S2 after adsorption	68.30±1.27	29.09±0.16	0.05±0.03	0.04±0.01	2.03±0.16	0.52±0.24
S3 after adsorption	69.84±4.86	24.15±2.74	0.07±0.02	0.06±0.02	4.40±1.06	1.48±0.02
EHL after adsorption	69.73±1.94	27.64±2.32	0.04±0.01	0.02±0.01	1.90±0.35	0.67±0.16