Supporting Information

Intensification effect of peroxide hydrogen on the complete dissolution of lignocellulose under mild condition

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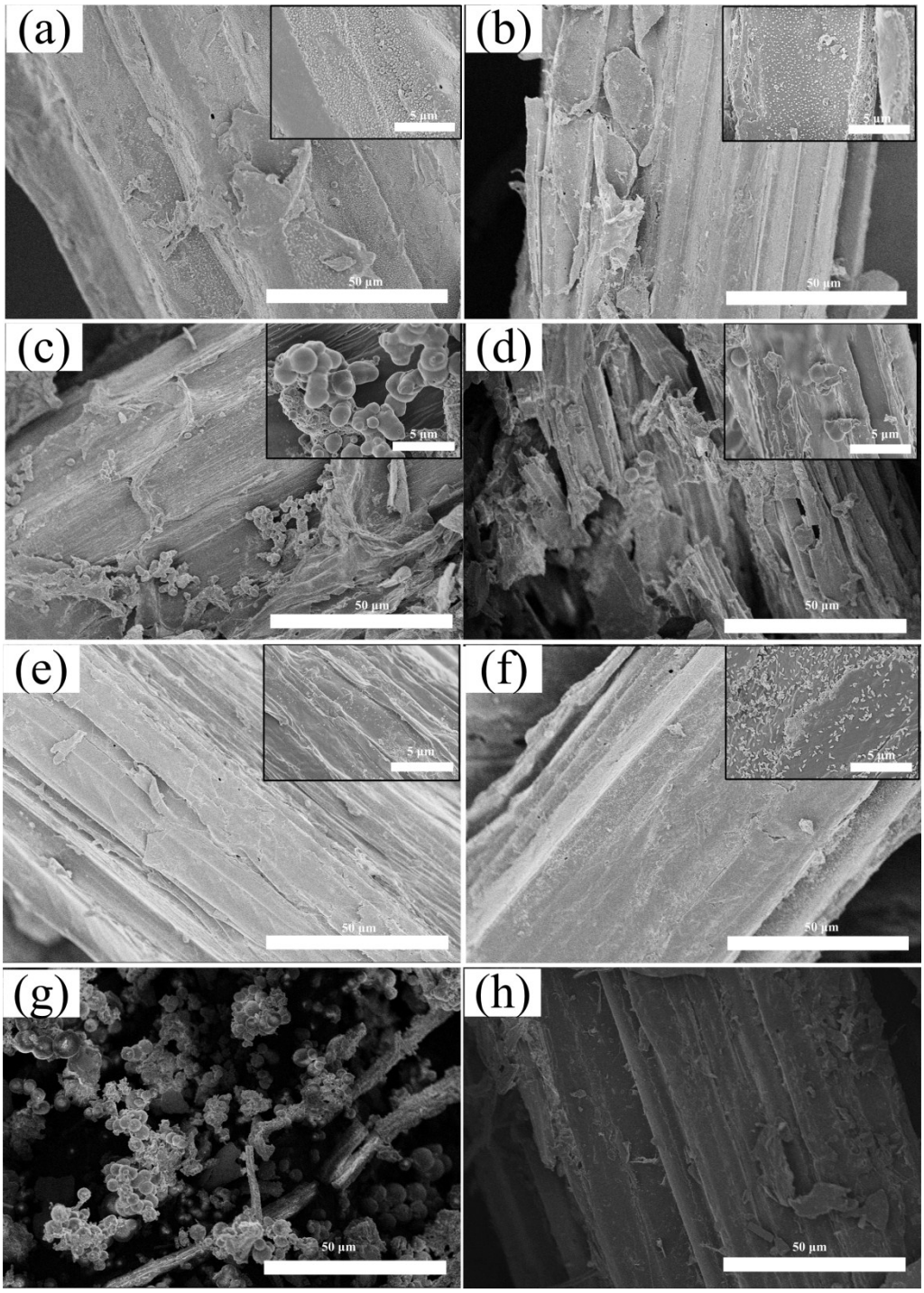

Fig S1 SEM morphologies of raw and residues obtained from different treatments

Corn straw treated by different solutions (a): water (b): MSW_{PH} (c): MSW_{SA} (d): MSW_{SA+PH} (e): 75.0% C_2H_5OH+25.0% H_2O (f): $MSEW_{PH}$ (g): $MSEW_{SA}$ (h): Raw corn straw

Condition: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 °C; 120 min.

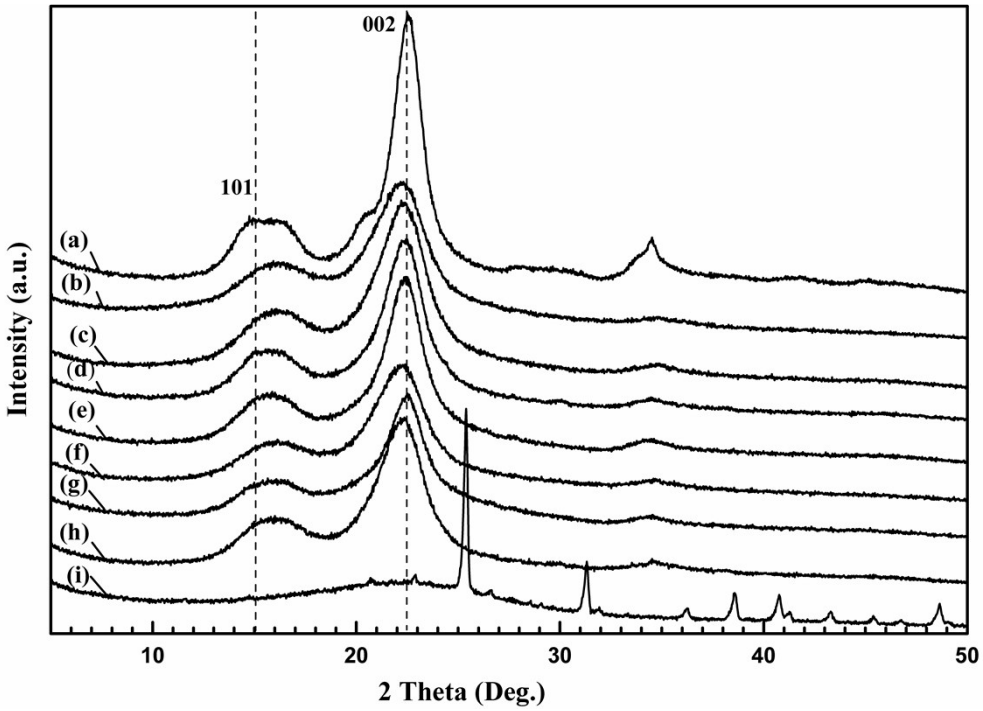

Fig S2 XRD of raw and treated corn straw from different treatment.

Corn straw dissolved in different solutions. （a） Microcrystalline cellulose (b): Raw corn straw; (c): water; (d): MSW_{PH}; (e): MSW_{SA}; (f): MSW_{SA+PH}; (g): 75.0% C_2H_5OH+25.0% H_2O; (h): $MSEW_{PH}$; (i): $MSEW_{SA}$;

Condition: corn straw 2.0 g; mixture solution 60 g; 170 °C; 120 min.

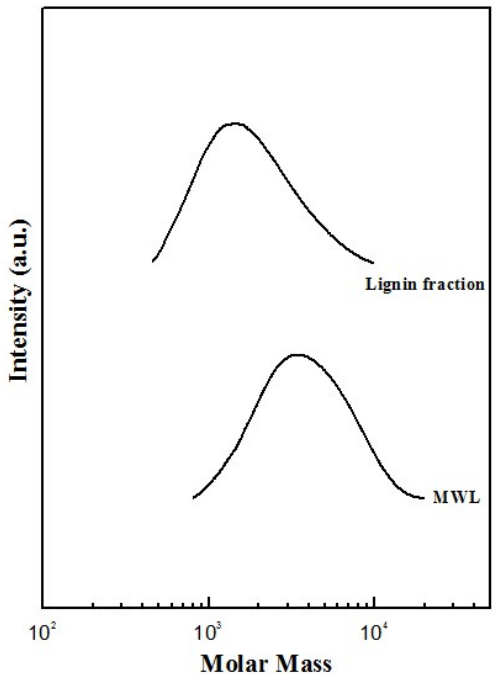

Fig S3 Molecular weight distribution curves of the MWL and lignin fraction

Conditions: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 °C; 120 min.

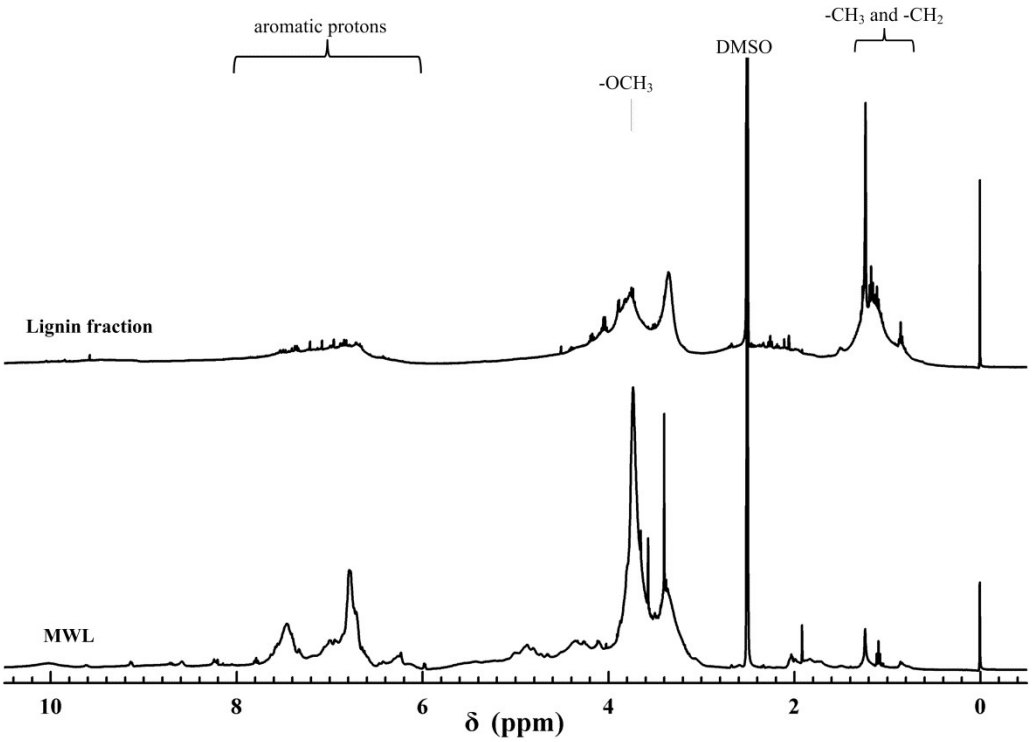

Fig S4 ^{1}H NMR spectra of MWL and lignin fraction.

Conditions: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 °C; 120 min.

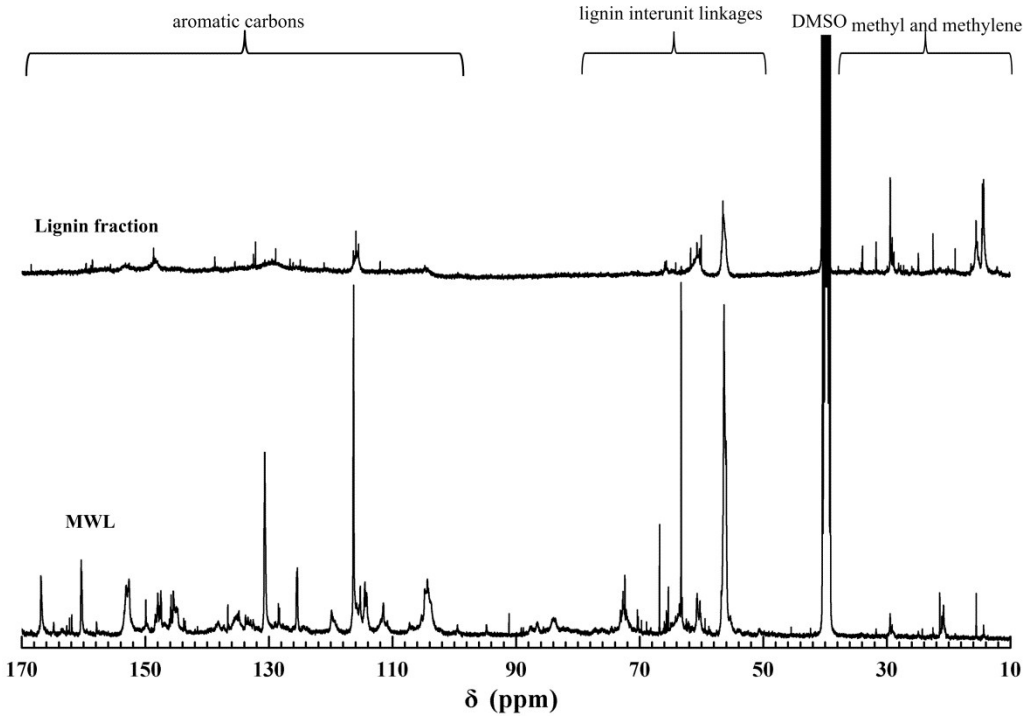

Fig S5 ^{13}C NMR spectra of MWL and lignin fraction.

Conditions: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 °C; 120 min.

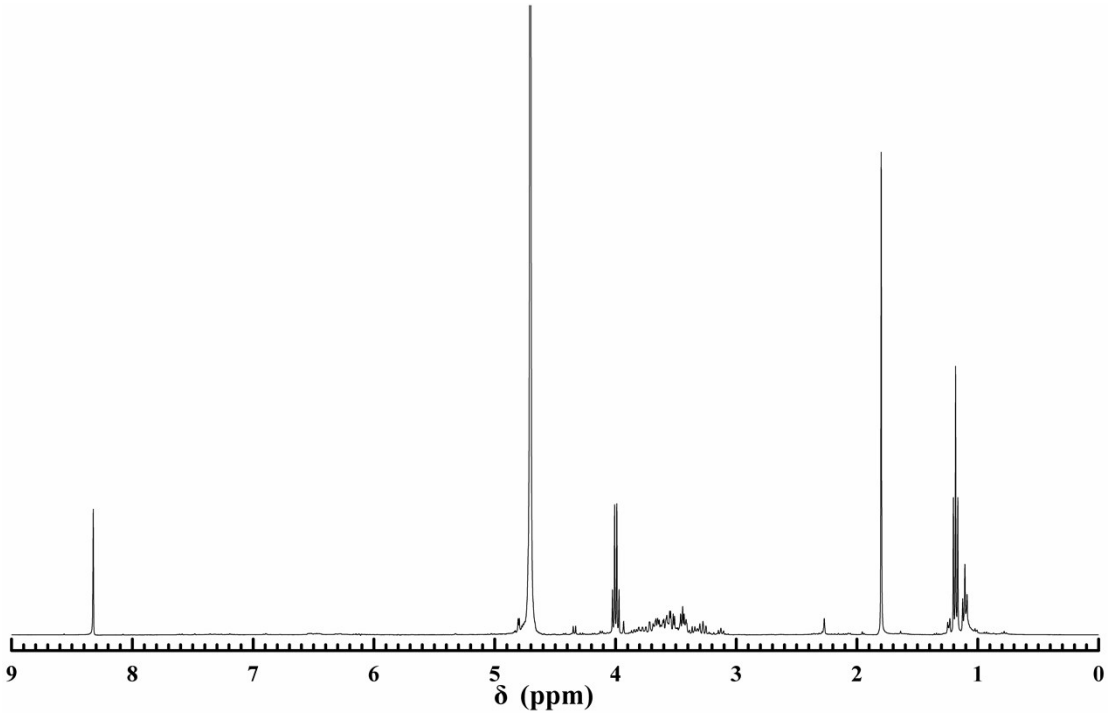

Fig S6 ^{1}H NMR spectra of water-soluble part.

Conditions: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 ℃; 120 min.

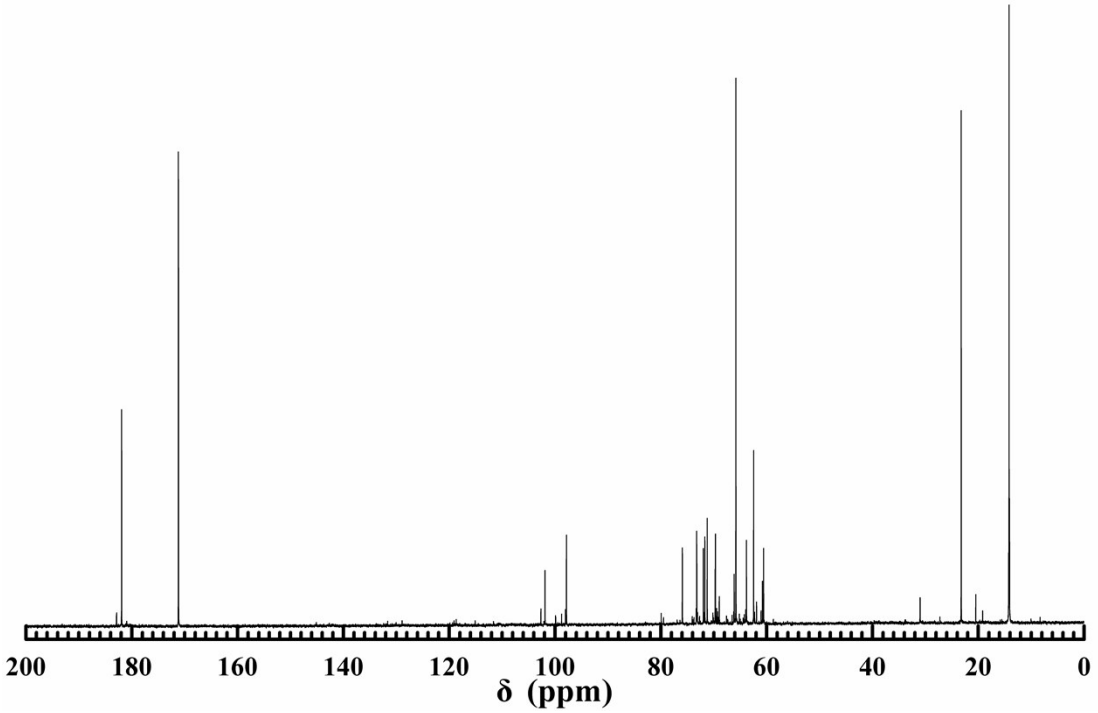

Fig S7 ^{13}C NMR spectra of water-soluble part.

Conditions: corn straw 2.0 g; $MSEW_{SA+PH}$ 60 g; 170 ℃; 120 min.

Table S1 HPLC analysis of the liquids treated at different mixture solutions

Entry	Mixture solvents				Sugars			Volatile chemical productions		
	C_2H_5OH (wt%)	H_2SO_4 (wt%)	H_2O_2 (wt%)	H_2O (wt%)	Glucose (g L^{-1})	Xylose (g L^{-1})	Arabinose (g L^{-1})	LA (g L^{-1})	5-HMF (g L^{-1})	FF (g L^{-1})
1	0	0	0	100	0.292	0.424	0.144	-	-	-
2	0	0	1.5	98.5	0.199	2.538	0.282	0.029	-	0.114
3	0	2.0	0	98.0	2.375	4.731	0.788	0.284	0.076	1.853
4	0	2.0	1.5	96.5	5.391	1.394	0.163	0.565	0.122	0.958
5	75.0	0	0	25.0	0.196	0.154	-	0.157	-	-
6	75.0	0	1.5	23.5	0.174	0.172	0.083	-	-	-
7	75.0	2.0	0	23.0	0.032	0.225	-	1.855	-	1.095
8	75.0	2.0	1.5	21.5	1.753	2.042	1.422	0.593	0.164	2.586

Condition: corn stalk 2.0 g; Liquid 60 g; 170 °C; 120 min.