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贵金属催化剂上两步法选择性降解有机溶剂型木质素

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Selective Degradation of Organosolv Lignin over Noble Metal Catalyst in a Two-Step Process

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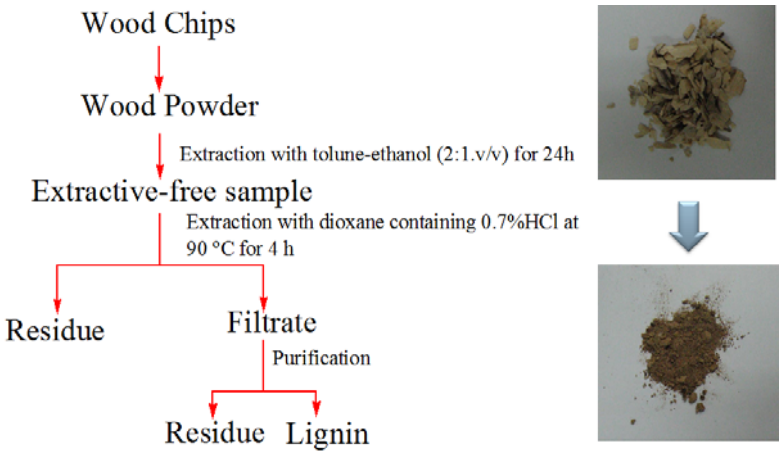


Figure S1 Flowchart of the laboratory-scale dioxane organosolv lignin process

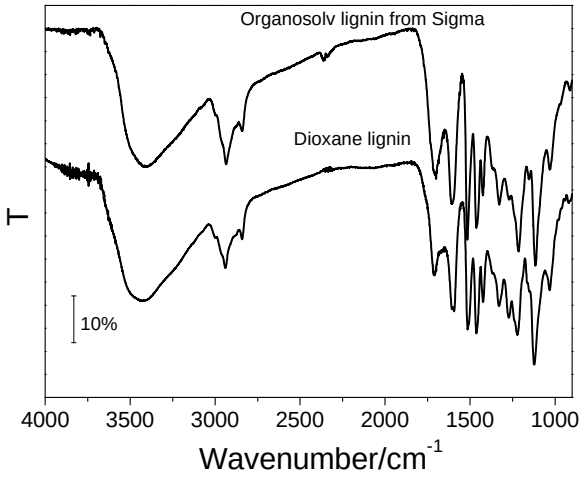


Figure S2 FTIR spectrum of lignin from different resources

Analysis Info

Analysis Name	11120172_20111206_000001.d	Acquisition Date	12/6/2011 4:10:12 PM
Sample	1	Instrument	Bruker Apex IV FTMS
Comment	ESI Positive	Operator	Peking University

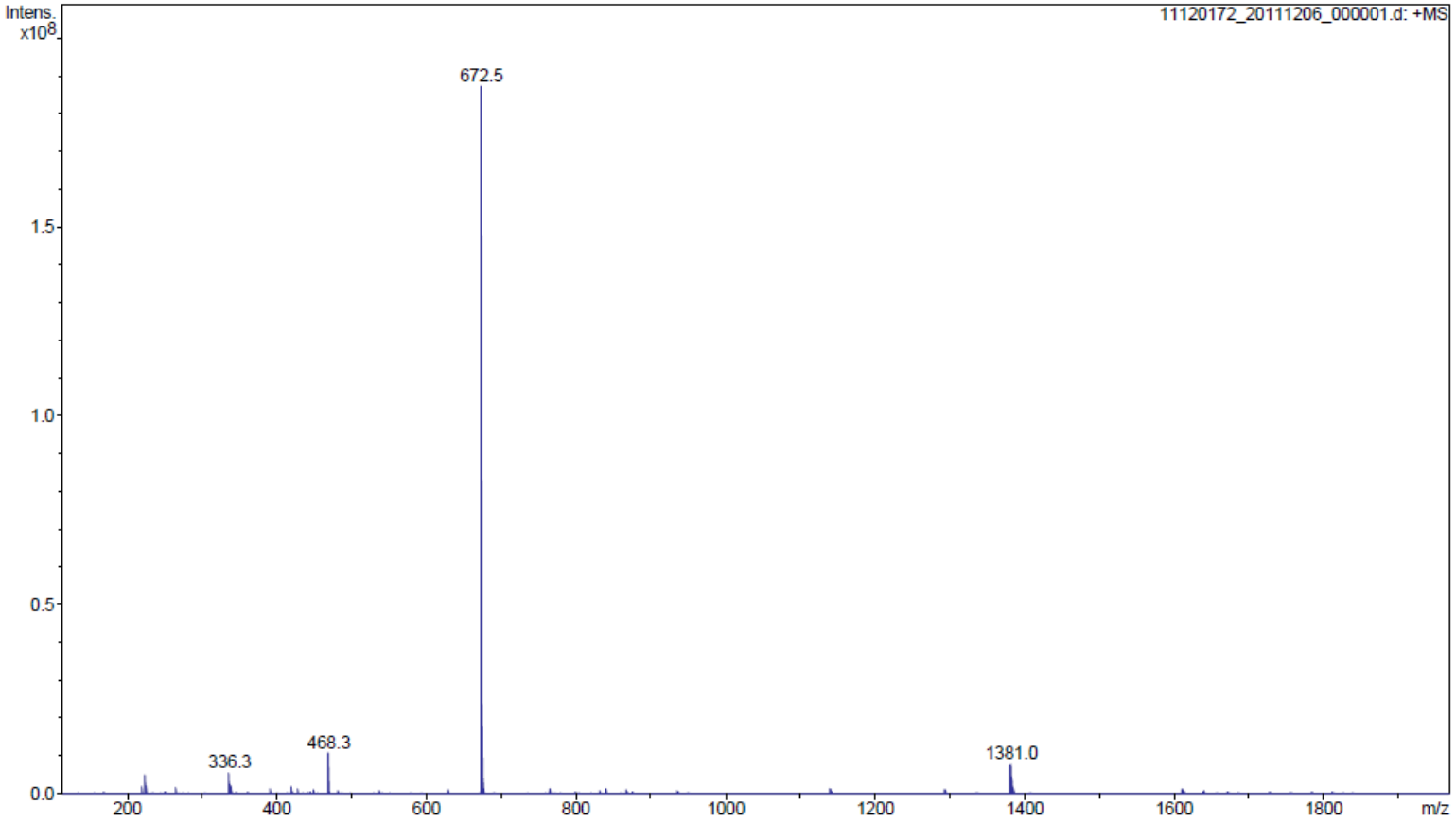
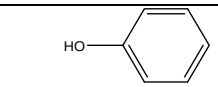
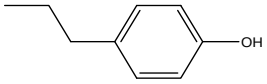
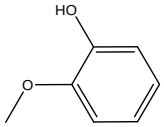
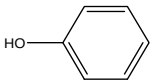
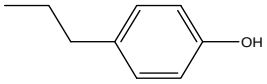
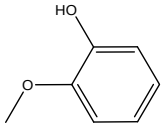
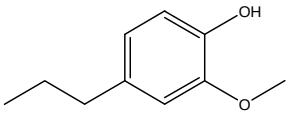
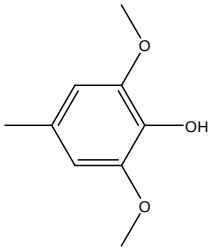
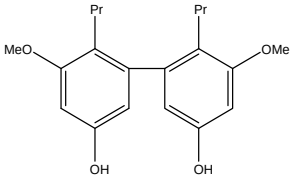
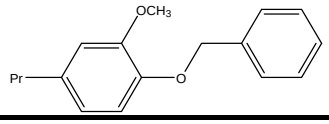


Figure S3 FT-ICR MS Spectrum of dioxane-lignin

Table S1 Hydrogenation of lignin model compounds

Entry	Substrate	Solvent	Conv. /%	Yield/%		
				Alkane[a]	-ol[b]	-one[c]
1		H_2O	100	49	47	3
2		H_2O	94	34	41	19
3		H_2O	85	12	13	10
4		H_2O, H_3PO_4	100	99	1	0
5		H_2O, H_3PO_4	96	90	0	0
6		H_2O, H_3PO_4	100	98	1	1
7		H_2O, H_3PO_4	100	96	2	1
8		H_2O, H_3PO_4	100	94	4	2
9[d]		H_2O, H_3PO_4	100	98	N.D.	N.D.
10[d]		H_2O, H_3PO_4	100	93	N.D.	N.D.

Reaction condition: solvent 60 mL, catalyst 0.05 g (10 wt.%), 250 ^{o}C, H_2 pressure 4 MPa, Pd/C 0.05 g, 800 rpm, 2 hours, 1 wt.% H_3PO_4.

a,b,c: alkane refers to the hydrodeoxyenation product of the substrate, such as cyclohexane in entry 1; -ol and -one refers to the alcohol and ketone of the corresponding substrate

d: N.D. means not determined. The alkane product of entry 9 is 1-propyl-2-(2-propylcyclohexyl) cyclohexane and entry 10 is methylcyclohexane and propylcyclohexane