Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Probing and visualizing the heterogeneity of fiber cell wall deconstruction in sugar maple (*acer saccharum*) during liquid hot water pretreatment

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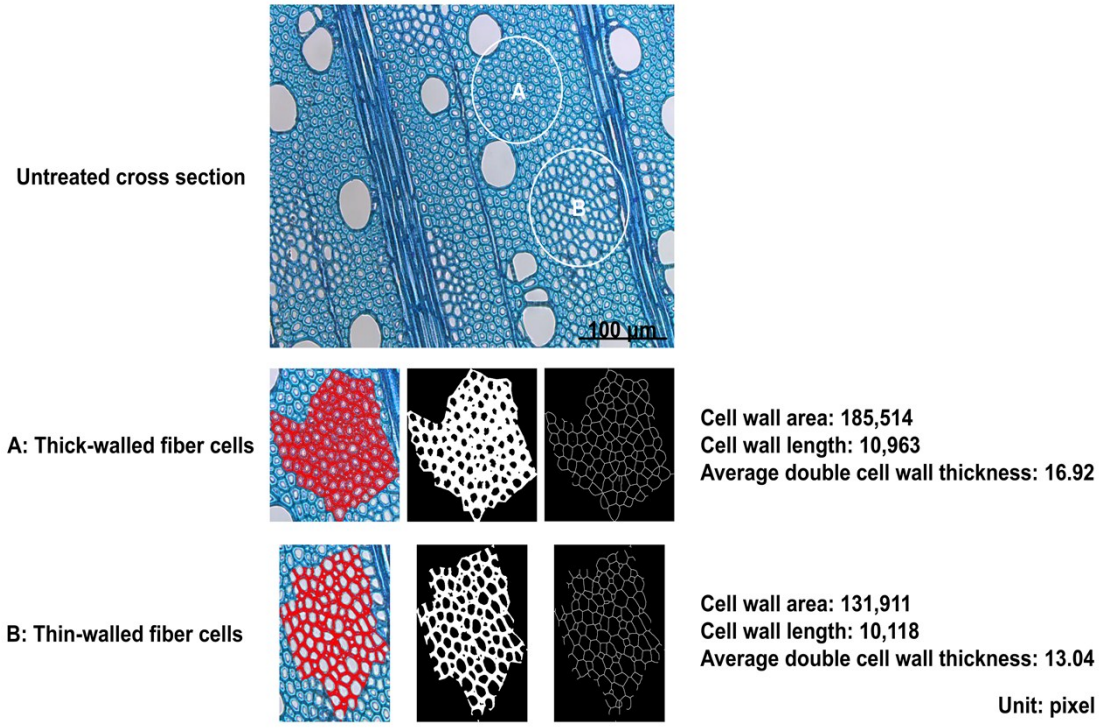

Fig S1. LM image analysis for untreated cross section stained with toluidine blue by Image-Pro Plus software. Two regions (Circle A and B) were analysed to measure the cell wall thickness. Double cell wall thickness is the cell wall area divided by the cell wall length.

Chemical component analysis

The chemical component analysis of untreated and LHW-pretreated sugar maple was performed according to the US National Renewable Energy Laboratory procedures (A. Sluiter, B. Hames, R. Ruiz, C. Scarlata, J. Sluiter, D. Templeton and D. Crocker, *Laboratory analytical procedure*, 2008, **1617**).

Table S1 Effect of liquid hot water pretreatment on chemical composition of sugar maple.

Sample no.	Temp. (°C)	Residence time (min)	Solid yield[a] (%)	Chemical composition[a] (%)							
				Glu	Xyl	Man	Ara	Gal	Rha	KL	ASL
Untreated				39.7	17.8	3.4	1.0	0.9	0.7	22.4	4.1
1	170	10	91.6	37.2	13.9	3.1	0.9	0.8	0.6	19.5	3.8
2	170	20	84.1	36.3	10.7	2.7	0.7	0.8	0.6	18.9	2.9
3	170	30	76.2	35.1	8.2	2.9	0.5	0.7	0.4	18.1	2.3
4	170	40	71.4	35.5	6.1	2.2	0.5	0.4	0.5	17.9	2.1

[a] Solid yield and chemical composition were calculated based on the original oven-dry untreated biomass. All the measurements were obtained in triplicate, and the mean value has been indicated. Glu = Glucan, Xyl = Xylan, Man = Mannan, Ara = Arabian, Gal = Galactan, Rha = Rhamnan, KL = Klason lignin, ASL = Acid soluble lignin.