Electronic Supplementary Information

Almost complete dissolution of woody biomass with tetra-*n*-butylphosphonium hydroxide aqueous solution at 60 °C

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Water content of woods

The water content of each wood powder was measured with thermogravimetric analysis (TGA). The TGA measurements were performed using a SEIKO TG/DTA 220 instrument with a heating rate of 10 °C min^{-1} from 25 to 110 °C, and retain at 110 °C for 20 min under nitrogen gas.

Table S1. Water content of woody biomass used in this study.

Woody biomass	Water content (wt%)
Oak	2.9
Eukalyptus	4.3
Cedar	5.9
Pine	5.3
Spruce	5.6
Ginkgo	4.6

Appearance of $[P_{4,4,4,4}]OH$ aq. solution/wood mixtures

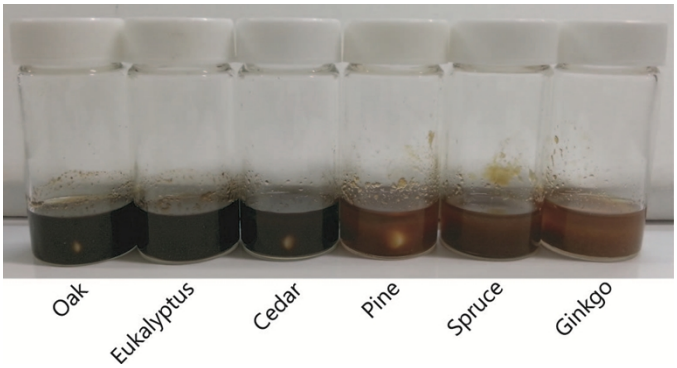

Figure S1. Appearance of 50% $[P_{4,4,4,4}]OH$ aq. solution/wood mixtures (5 wt% wood) after 1 h stirring without heating (at 25 °C). White things in some vials are magnetic stirring bars.

Correlation between dissolution degree of woods and their components

Amounts of holocellulose and α-cellulose were decided with reference to a paper which was written by Pettersen *et al.* Lignin contents were determined with sulfuric acid method published by Ritter *et al.* in 1932. Sum amount of β- and γ-cellulose (g) was determined by following equation.

[β-Cellulose] + [γ-Cellulose] = Holocellulose – [α-Cellulose] (Eq.)

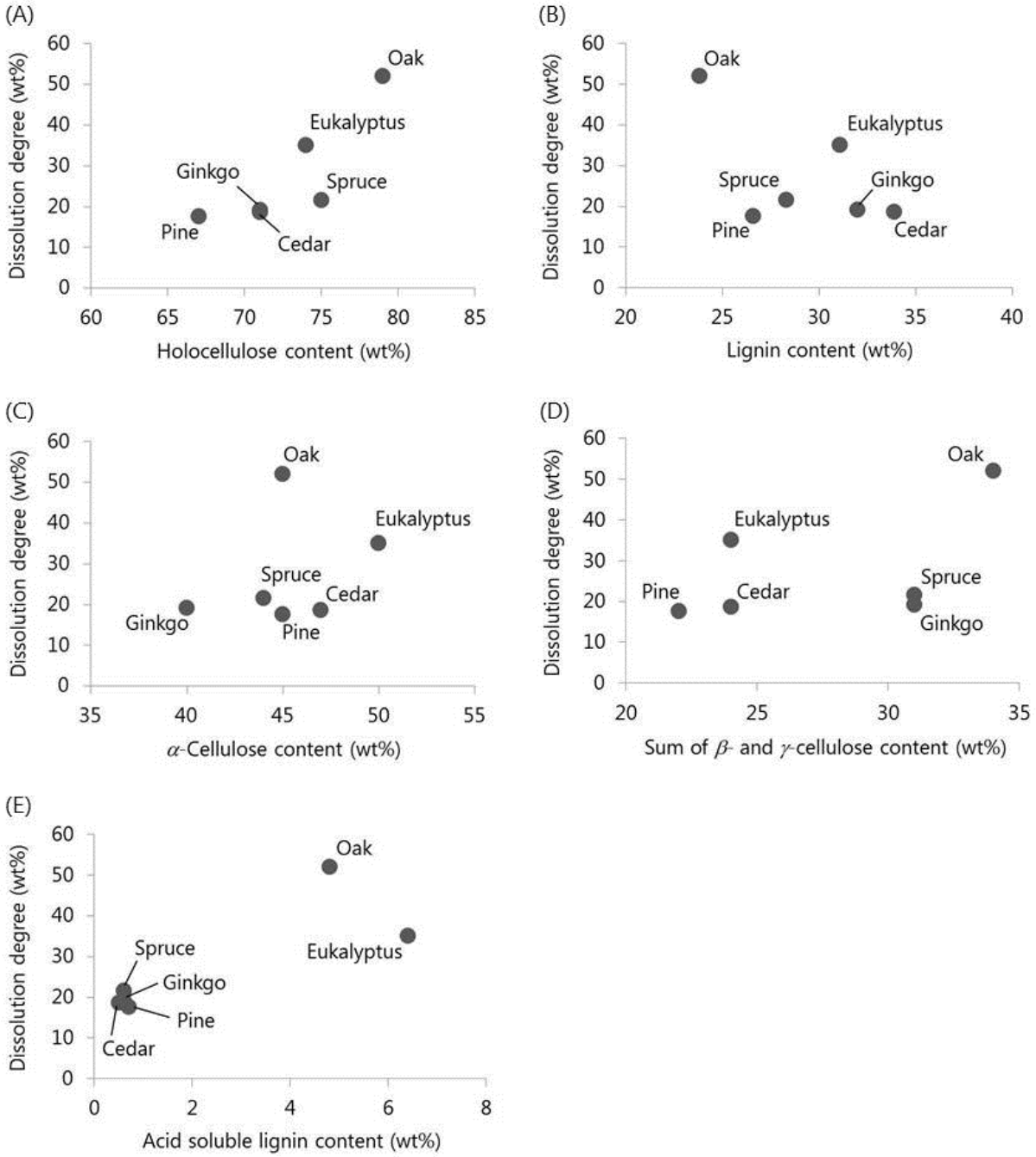

Figure S2. Correlation between dissolution degree of woods and their components, (A) holocellulose, (B) lignin, (C) α-cellulose, (D) sum of β- and γ-cellulose, and (E) acid soluble lignin.

Reference

1. R. C. Pettersen, in *The Chemistry of Solid Wood*, ed. R. M. Rowell, ACS Publications, Washington, DC, 1984, vol. 207, pp. 57-126.
2. G. J. Ritter, R. M. Seborg and R. L. Mitchell, *Ind. Eng. Chem. Anal. Ed.*, 1932, **4**, 202-204.