

Supporting Information.

Table S1. Compositional analysis. Chemical composition analysis of all the allomorphs of cellulose-I suggests that no degradation of cellulose occurred during their preparation.

Sample	Arabinan	Galactan	Glucan	Xylan	Ash
Fluka CL Cel I	0.0%	0.0%	99.0 ± 0.3%	0.8%	0.1%
Fluka CL Cel II 145°C	0.0%	0.0%	99.8 ± 0.8%	0.0%	0.2%
Fluka CL Cel III 130°C	0.0%	0.0%	99.1 ± 0.8%	0.7%	0.1%

Table S2. Inductively coupled plasma atomic emission spectroscopy (ICP-AES) analysis reported as PPM ($\mu\text{g/g}$) of the cellulose samples. If the element was below the instrument detection limit, it is indicated by BDL. ICP-AES analysis suggests that the ash content of the samples is insufficient to have a major influence on their pyrolysis behavior.⁴⁵

Sample	CI-H	CI-M	CI-L	CII-H	CII-M	CII-L	CIII-H	CIII-M	CIII-L	Amorph
Dilution	98.0	251.0	413.0	148.0	185.0	165.0	176.0	130.0	171.0	862.0
Al	7.7 ± 0.08	18.6 ± 0.11	16.1 ± 0.11	12.6 ± 0.14	10.5 ± 0.20	6.0 ± 0.06	5.0 ± 0.15	8.9 ± 0.06	5.6 ± 0.06	25.8 ± 0.76
Ca	21.5 ± 0.11	56.7 ± 0.66	69.6 ± 0.20	85.2 ± 1.24	159.5 ± 1.61	28.1 ± 0.29	17.0 ± 0.06	16.1 ± 0.03	14.3 ± 0.09	167.9 ± 1.70
Fe	2.4 ± 0.10	64.4 ± 0.57	10.3 ± 0.94	32.4 ± 0.36	24.4 ± 0.33	25.5 ± 0.20	27.2 ± 0.32	9.1 ± 0.11	13.5 ± 0.04	321.1 ± 3.32
K	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Mg	5.9 ± 0.09	16.0 ± 0.20	27.4 ± 0.02	20.8 ± 0.31	30.6 ± 0.46	6.6 ± 0.03	5.3 ± 0.04	4.9 ± 0.02	5.1 ± 0.04	36.3 ± 0.24
Na	28.1 ± 0.12	50.6 ± 1.80	109.3 ± 1.30	251.3 ± 2.85	510.3 ± 3.05	33.7 ± 0.33	26.2 ± 0.82	35.7 ± 0.37	34.8 ± 0.43	87.4 ± 7.93
P	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
S	32.9 ± 0.94	BDL	BDL	23.5 ± 1.63	29.2 ± 1.45	22.8 ± 2.63	30.2 ± 1.83	37.8 ± 0.68	34.7 ± 1.71	86.6 ± 2.66

(45) Patwardhan, P. R.; Satrio, J. A.; Brown, R. C.; Shanks, B. H. Influence of inorganic salts on the primary pyrolysis products of cellulose. *Bioresource Technol* **2010**, *101* (12), 4646.