

Supplementary information

Table 1 P-values from Kruskal-Wallice test to assess if peak ratios are statistically different for TT, TT_{evap} and untr.

Species	Ratio	Treatment	p-value	Posthoc: Dunn, Benjamini—Hofberg correction
Beech	1056/1107	Non	0.167	
		Multi-solvent	0.298	
	1502/1107	Non	0.584	
		Multi-solvent	0.063	
	1739/1502	Non	0.063	
		Multi-solvent	0.018	untr x TT: 0.0748, untr x TT _{evap} : 0.0181 , TT x TT _{evap} : 0.433
Scots pine	1056/1107	Non	0.024	untr x TT: 0.0362 , untr x TT _{evap} : 0.845, TT x TT _{evap} : 0.0362
		Multi-solvent	0.084	
	1502/1107	Non	0.368	
		Multi-solvent	0.584	
	1739/1502	Non	0.023	untr x TT: 0.0181 , untr x TT _{evap} : 0.170, TT x TT _{evap} : 0.170
		Multi-solvent	0.926	

Table 2 P-values Kruskal-Wallice test, assessing if lumen areas are statistically different for TT, TT_{evap} and untr., based on light microscopy.

Species	Zone	Extraction	p-value
Beech	EW	Non	0.00136
		Multi-solvent	0.0798
		Water	/
	LW	Non	1.28 x 10⁻⁴
		Multi-solvent	0.0729
		Water	1.13 x 10⁻⁴
Scots pine	EW	Non	0.2821
		Multi-solvent	0.0314
		Water	0.0453
	LW	Non	5.07 x 10⁻⁸
		Multi-solvent	6.29 x 10⁻⁷
		Water	4.81 x 10⁻¹⁶

Table 3 P-values from posthoc Dunn, with Benjamini—Hofberg correction, comparing TT, TT_{evap} and untr lumen areas, based on light microscopy.

			Non		Multi-solvent		Water	
			TT	TT _{evap}	TT	TT _{evap}	TT	TT _{evap}
Beech	EW	untr	8.59 x 10⁻⁴	0.1217	0.0955	0.1664	0.2818	
		TT		0.1217		0.5926		
	LW	untr	7.18 x 10⁻⁵	0.1005	0.0885	0.0885	1.24 x 10⁻³	0.1304
		TT		0.1005		0.6855		1.73 x 10⁻⁴
Scots pine	EW	untr	0.4536	0.4377	0.0326	0.4471	0.0542	0.8044
		TT		0.4401		0.0507		0.0570
	LW	untr	0.0153	2.37 x 10⁻⁷	0.279	2.36 x 10⁻⁶	0.4274	1.72 x 10⁻¹²
		TT		2.52 x 10⁻⁴		4.03 x 10⁻⁵		7.80 x 10⁻¹³

Table 4 P-values Kruskal-Wallice test, assessing if lumen areas are statistically different for non-extracted, water extracted and multi-solvent extracted, based on light microscopy.

Species	Zone	Extraction	p-value
Beech	EW	untr	0.0120
		TT	0.0275
		TT _{evap}	/
	LW	untr	0.953
		TT	0.0281
		TT _{evap}	7.73 x 10⁻³
Scots pine	EW	untr	6.38 x 10⁻⁶
		TT	9.50 x 10⁻⁵
		TT _{evap}	2.09 x 10⁻⁵
	LW	untr	0.475
		TT	1.08 x 10⁻³
		TT _{evap}	3.02 x 10⁻⁴

Table 5 P-values from posthoc Dunn, with Benjamini—Hofberg correction comparing non-extracted, water extracted and multi-solvent extracted lumen areas, based on light microscopy.

			untr		TT		TT _{evap}	
			Multi-solvent	Water	Multi-solvent	Water	Multi-solvent	Water
Beech	EW	Non	0.0176	0.0176	0.5477	0.0307	0.1306	
		Multi-solvent		0.9803		0.0557		
	LW	Non	0.9508	0.9508	0.0239	0.2002	0.8959	0.0153
		Multi-solvent		0.9508		0.2963		1.66 x 10⁻²
	EW	Non	2.14 x 10⁻³	0.6951	0.1279	4.94 x 10⁻³	0.0067	0.1261

Scots pine	Multi-solvent	1.96 x 10⁻⁵		5.88 x 10⁻⁵		3.00 x 10⁻⁵	
	LW Non Multi-solvent	0.4551	0.8554	0.7794	2.34 x 10⁻³	0.0084	4.94 x 10⁻⁴
			0.4551		2.02 x 10⁻³		0.3901

Table 6 P-values Kruskal-Wallice test, assessing if T₂ values of cell wall and cell lumen are statistically different for TT, TT_{evap} and untr.

Species	Extraction	p-value T ₂ value cell wall	p-value T ₂ value cell lumen
Beech	Non	0.0050	0.0133
	Multi-solvent	0.0024	0.0043
	Water	0.1585	0.0075
Scots pine	Non	0.0216	0.0122
	Multi-solvent	0.0179	0.0028
	Water	0.0047	0.0019

Table 7 P-values from posthoc Dunn, with Benjamini—Hofberg correction comparing T₂ values cell wall and cell lumen for non-extracted, water extracted and multi-solvent extracted beech and Scots pine.

			Non		Multi-solvent		Water	
			TT	TT _{evap}	TT	TT _{evap}	TT	TT _{evap}
T₂ value cell wall	Beech	untr	0.0627	0.0045	0.0986	0.0016	0.5194	0.1730
		TT		0.1585		0.1036		0.3781
	Scots pine	untr	0.0578	0.0391	0.0229	0.0229	0.0547	0.0038
		TT		0.7113		0.8797		0.2566
T₂ value cell lumen	Beech	untr	0.0510	0.3586	0.0594	0.2277	0.0091	0.0334
		TT		0.0177		0.0033		0.4191
	Scots pine	untr	0.1457	0.0111	0.1057	0.0019	0.0766	0.0012
		TT		0.2658		0.0848		0.0766

Table 8 P-values Kruskal-Wallice test, assessing if (cell wall) moisture contents and moisture concentration are statistically different for TT, TT_{evap} and untr.

Species	Extraction	p-value cell wall moisture content LFNMR	p-value cell wall moisture content DSC	p-value moisture concentration	p-value moisture content
Beech	Non	0.0115	0.0019	4.89 x 10⁻³	0.0037
	Multi-solvent	0.2909	0.0060	0.0140	0.0077
	Water	0.0698	0.0081	3.06 x 10⁻³	0.0025
Scots pine	Non	0.0220	0.0110	0.0365	0.0092
	Multi-solvent	0.0110	0.0087	8.02 x 10⁻³	0.0164
	Water	0.0173	0.3157	9.91 x 10⁻³	0.0152

Table 9 P-values from posthoc Dunn, with Benjamini—Hofberg correction comparing cell wall moisture content and moisture concentration for non-extracted, water extracted and multi-solvent extracted beech and Scots pine.

			Non		Multi-solvent		Water	
			TT	TT _{evap}	TT	TT _{evap}	TT	TT _{evap}
Cell wall moisture content LFNMR	Beech	untr	0.0339	0.0240	0.2941	0.2941	0.2234	0.0700
		TT		0.3533		0.7654		0.4871
	Scots pine	untr	0.1057	0.0309	0.8726	0.0152	0.0313	0.0313
		TT		0.3657		0.0152		0.8273
Cell wall moisture content DSC	Beech	untr	0.0771	0.0012	0.0426	0.0056	0.0243	0.0112
		TT		0.0771		0.3580		0.6206
	Scots pine	untr	0.0195	0.0242	0.0200	0.0140	0.5565	0.3917
		TT		0.8726		0.7237		0.5565
Moisture concentration	Beech	untr	0.0990	0.0034	0.1156	0.0112	0.0844	0.0021
		TT		0.1573		0.2579		0.1376
	Scots pine	untr	0.0426	0.0426	0.0058	0.0884	0.0159	0.0159
		TT		0.9436		0.1988		0.9470
Moisture content	Beech	untr	0.1791	0.0027	0.1156	0.1791	0.1039	0.0016
		TT		0.0716		0.0056		0.0990
	Scots pine	untr	0.0133	0.9436	0.0231	0.9432	0.0120	0.1778
		TT		0.0133		0.0231		0.2069

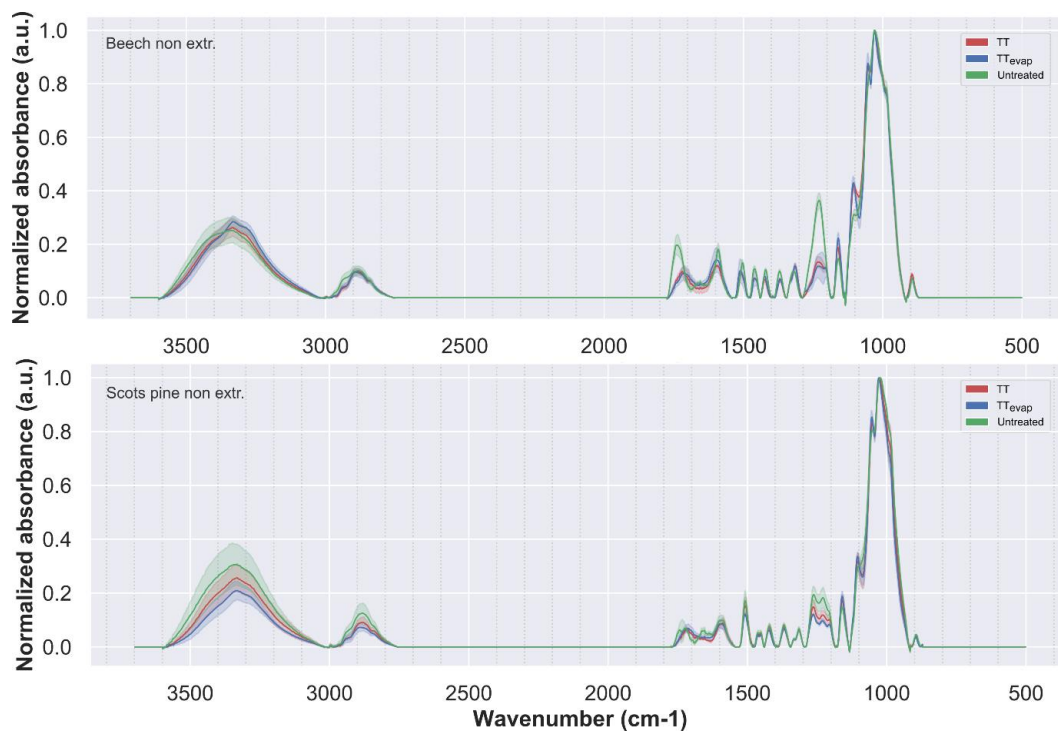


Fig. S1 Mean ATR-FTIR spectra for multi-solvent extracted beech and Scots pine. TT = thermally modified wood

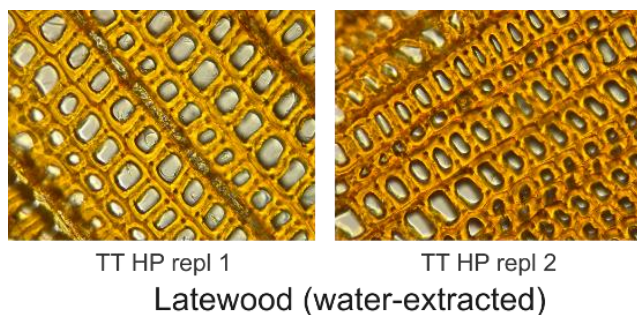


Fig. S2 Light microscopy images at 40x magnification of two replicates of TT Scots pine latewood (water-extracted), showing the variation in lumen size between replicates

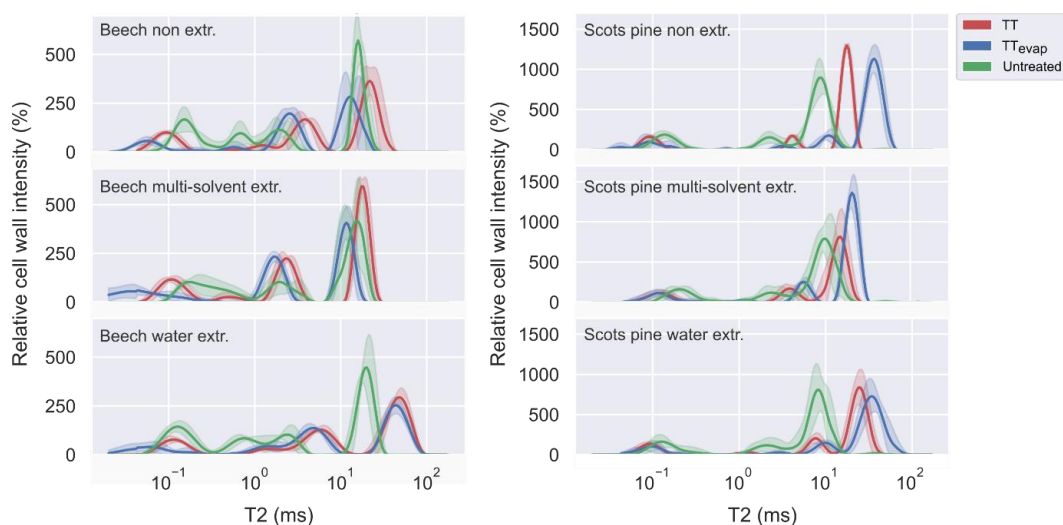


Fig. S3 Continuous T2 distribution for beech and Scots pine, plotted per extraction method

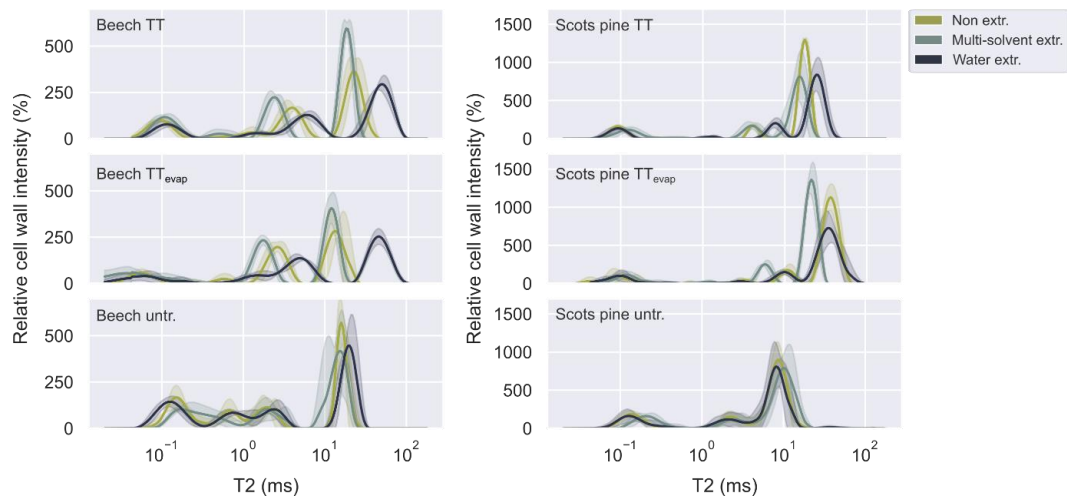


Fig. S4 Continuous T2 distribution for beech and Scots pine, plotted per treatment method

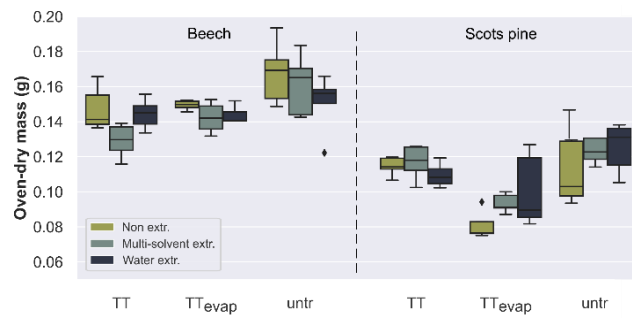


Fig. S5 Owendry weight (g) of LFNMR specimens