

## Supplementary Information

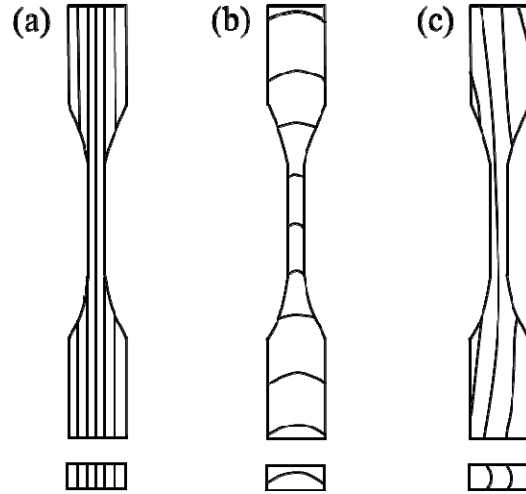
### **Orthotropic tension behavior of two typical Chinese plantation woods at wide relative humidity range**

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**Figure S1** Schematic of  $L$  (a),  $R$  (b) or  $T$  (c) specimens

**Table S1** Moisture content of poplar and Chinese fir

Wood species	Relative humidity (%)							
	0	11	33	58	75	85	94	100
Poplar	0.6A	2.0A	4.5A	7.8A	10.7A	13.4A	17.1A	22.1A
Chinese fir	0.6A	2.2A	5.0B	9.0B	12.8B	16.9B	21.6B	26.3B

The *same letter* in the *same column* indicates that there is no statistical difference in moisture content among RH level; *different letter* indicates significant differences at  $p < 0.05$

**Table S2** Relative humidity-dependent stiffness of poplar and Chinese fir

Relative humidity (%)	Poplar			Chinese fir		
	$E_L$ (GPa)	$E_R$ (GPa)	$E_T$ (GPa)	$E_L$ (GPa)	$E_R$ (GPa)	$E_T$ (GPa)
0	10.44A	1.15A	0.86A	8.21A	0.59A	0.50A
11	10.73B	1.09B	0.81B	8.46B	0.56A	0.46A
33	10.31A	1.05C	0.77C	8.19A	0.53B	0.43B
58	9.80C	1.01D	0.73D	7.70C	0.49C	0.39C
75	9.15D	0.96E	0.68E	7.12D	0.44D	0.33D
85	8.46E	0.90F	0.62F	6.56E	0.38E	0.27E
94	7.87F	0.83G	0.54G	5.97F	0.32F	0.23F
100	7.03G	0.75H	0.45H	5.25G	0.29F	0.20F

The *same letter* in the *same column* indicates that there is no statistical difference in stiffness among RH level; *different letter* indicates significant differences at  $p < 0.05$

**Table S3** Relative humidity-dependent strength of poplar and Chinese fir

Relative humidity (%)	Poplar			Chinese fir		
	$\sigma_L$ (MPa)	$\sigma_R$ (MPa)	$\sigma_T$ (MPa)	$\sigma_L$ (MPa)	$\sigma_R$ (MPa)	$\sigma_T$ (MPa)
0	82.48A	9.68A	4.58A	80.65A	5.20A	3.43A
11	89.65B	9.38B	4.53A	86.46B	5.04B	3.33B
33	94.13C	9.12C	4.44B	91.30C	4.85C	3.21C
58	99.78D	8.64D	4.36B	97.04D	4.58D	3.02D
75	101.33D	8.44D	4.15C	87.00B	4.31E	2.85E
85	93.26C	8.07E	3.98D	76.34E	4.04F	2.67F
94	78.65E	7.63F	3.89D	64.22F	3.72G	2.45G
100	64.32F	7.18G	3.65E	51.87G	3.39H	2.24H

The *same letter in the same column* indicates that there is no statistical difference in strength among RH level; *different letter* indicates significant differences at  $p < 0.05$