Supplementary Information

Cellulose-based light management films with improved properties directly fabricated from green tea

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Table S1. The mass content of WPs in the green tea-based all-biomass light management composite films.

Sample	Content of WPs (%)
WPT0	0
WPT10	10
WPT20	20
WPT30	30
WPT40	40
WPT50	50

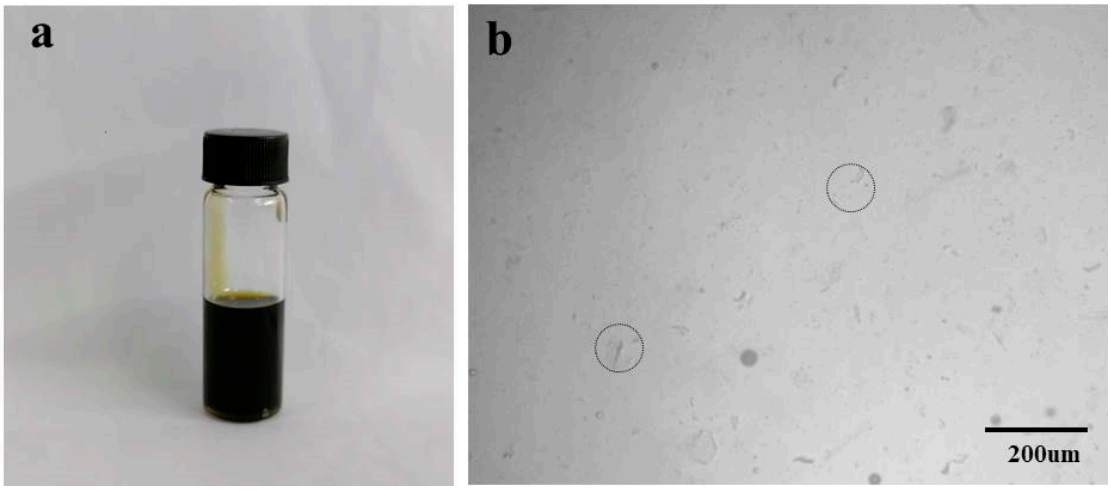

Figure S1. Digital picture (a) and POM micrograph (b) of green tea/AmimCl solution mixtures at 80 ℃ after 4 hrs.

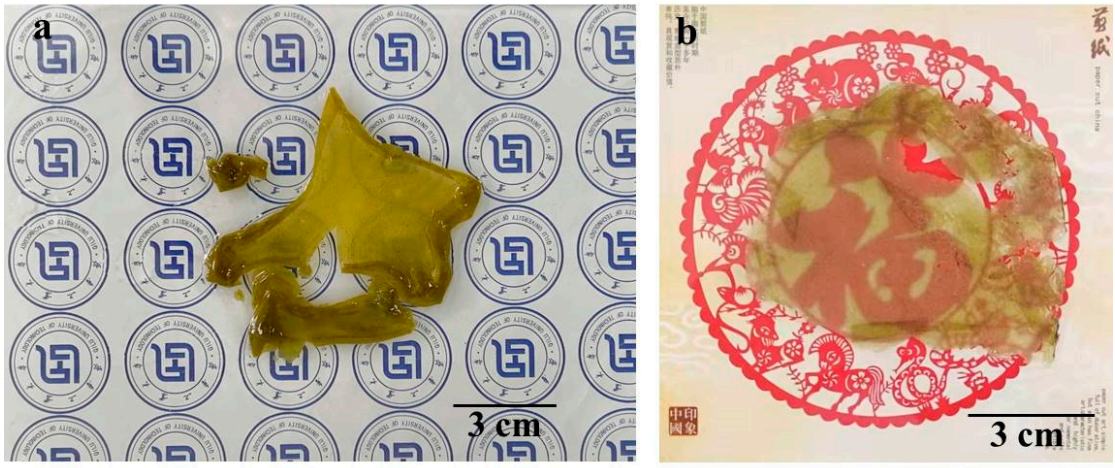

Figure S2. Optical photographs of hydrogels (a, Gel-WTP0) and film (b, WTP0) prepared directly from green tea.

Table S2. Light transmission values of WPs-film, WPT0, WPT10, WPT20, WPT30, WPT40 and WPT50.

Samples	Light transmission (%)						
	200 nm	300 nm	400 nm	500 nm	600 nm	700 nm	800 nm
WPs-film	20.16±0.18	75.79±0.15	88.06±0.17	90.34±0.18	91.02±0.14	91.32±0.11	91.49±0.12
WPT0	0.37±0.01	2.37±0.02	10.25±0.05	54.78±0.09	67.65±0.07	68.60±0.09	86.66±0.12
WPT10	0.20±0.01	3.85±0.04	14.17±0.06	60.63±0.08	71.10±0.06	72.60±0.08	86.56±0.11
WPT20	0.49±0.03	5.26±0.05	24.05±0.05	63.09±0.07	71.18±0.06	72.63±0.08	83.95±0.10
WPT30	0.38±0.02	6.36±0.03	25.87±0.07	67.64±0.07	74.73±0.04	76.62±0.07	86.79±0.09
WPT40	0.44±0.02	5.57±0.02	28.96±0.06	69.86±0.08	77.13±0.07	79.91±0.09	87.39±0.08
WPT50	0.38±0.03	9.74±0.01	45.41±0.07	73.24±0.07	78.29±0.08	80.28±0.11	85.57±0.09

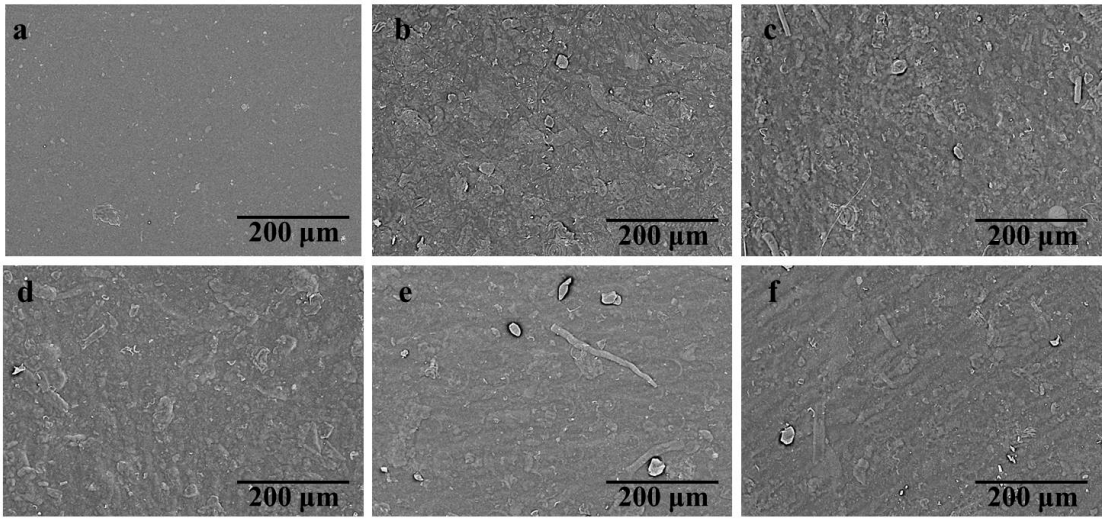

Figure S3. (a-f) The surfacial SEM micrographs of WPs-film, WPT10, WPT20, WPT30, WPT40 and WPT50.

Table. S3 The Thicknesses and Mechanical properties of WPT10, WPT20, WPT30, WPT40 and WPT50.

Sample	Thickness (μm)	Elongation (%)	Strength (MPa)
WPT10	21±0.7	10.89±1.38	5.91±0.95
WPT20	20±0.9	13.50±1.79	10.91±0.87
WPT30	21±0.8	14.10±2.03	26.18±1.02
WPT40	20±0.5	14.90±1.56	29.90±0.98
WPT50	20±0.4	16.70±1.37	35.92±0.76

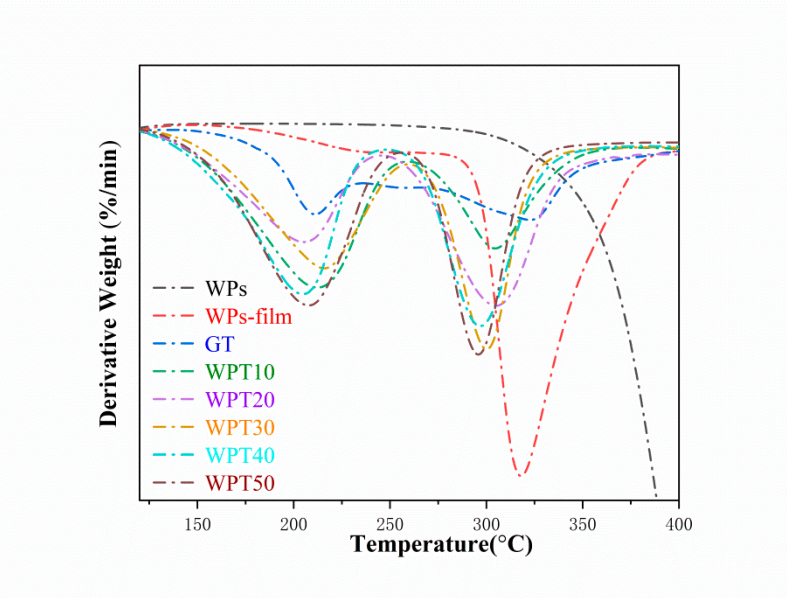

Figure S4. Differential thermogram curves (DTG) of WPs-film, WPT10, WPT20, WPT30, WPT40 and WPT50.