Electronic Supplementary Information (ESI) available: [Basic properties of synthesized polyimides]

Table S1. Basic properties of the colorless polyimides

	η_{inh} [dL/g][a]	M_w [dalton][b]	M_n [dalton][c]	PDI[d]
PI Binder	0.32	62500	24600	2.54
PI Substrate	0.91[e]	-[f]	-	-

[a] The inherent viscosity were measured at a polymer concentration of 0.5 g/dL in DMAc at 30 °C; [b] Weight average molecular weight; [c] Number average molecular weight; [d] Polydispersity Index (M_w/M_n); [e] The viscosity of the poly(amic acid); [f] Polyimide with outstanding chemical resistance.

Table S2. Solubility behavior of colorless polyimides[a]

	NMP	DMAc	DMF	DMSO	*m*-Cresol	THF	$CHCl_3$
PI Binder	++	++	++	++	+	++	+−
PI Substrate	−	−	−	−	−	−	−

[a] Qualitative solubility tested with 10 mg of a sample in 1 mL of solvent. ++, soluble at room temperature; +, soluble on heating; +−, partially soluble or swelling; −, insoluble even on heating.

Table S3. Optical properties of colorless polyimides

	Color coordinate[a]			T [%][b]		λ_o [%][c]
	b*	a*	L*	450 nm	550 nm	
PI Binder	0.89	-0.05	94.46	90.2	90.8	276
PI Substrate	1.91	-0.19	93.94	83.8	86.1	371

[a] The CIE 1976 (L*, a*, b*) color space (or CIELAB); [b] Transmittance at 450 and 550 nm measured by UV-vis with the thickness of film about 20 μm; [c] Cutoff wavelength.

Table S4. Thermal properties of colorless polyimides

	T_g [°C][a]	CTE [ppm/°C][b]	T_d^5[°C][c]		R_{w800}[°C][d]
			N_2	Air	
PI Binder	347	81	480	460	22.8
PI Substrate	326	8	490	450	14.8

[a] Glass transition temperature measured by TMA with a constant applied load of 10 mN at a heating rate of 10 °C/min by film/fiber mode in nitrogen; [b] The coefficient of linear thermal expansion data determined over 50~200 °C range by TMA; [c] Temperature at which 5 % weight loss of decomposition recorded by TGA at a heating rate of 20 °C/min and gas flow rate of 20 cm^3/min; [d] Residual weight percentages at 800 °C under nitrogen, also called as char yield.

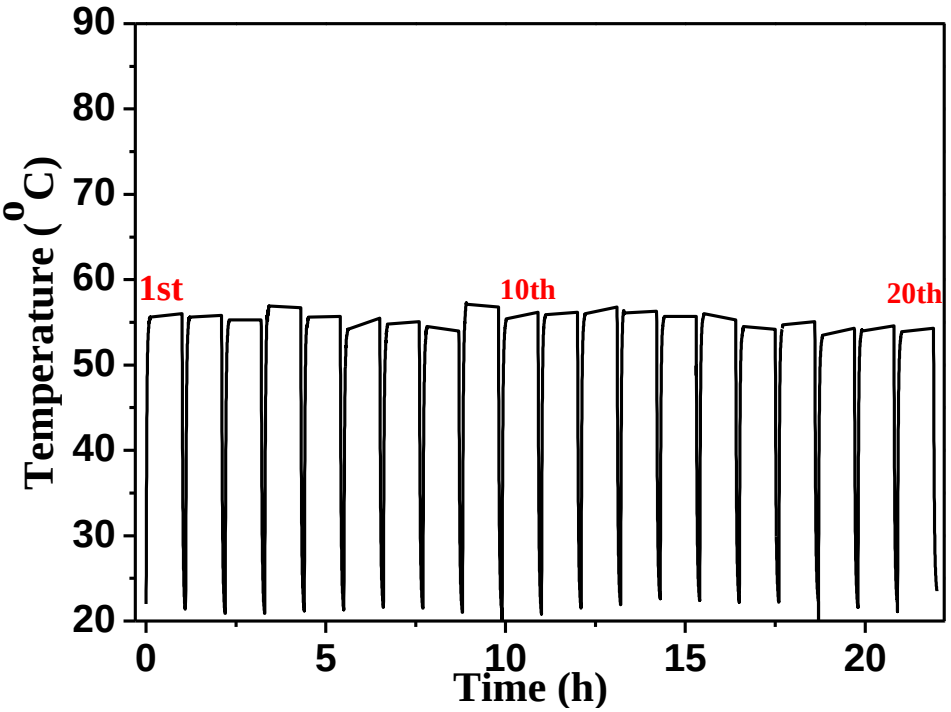

Fig. S1 The cycling performance test of AgNWs/PI defogging devices by turning on and off (4V) alternatively for 20 cycles (concentration of AgNWs: 320 mg/m^2).

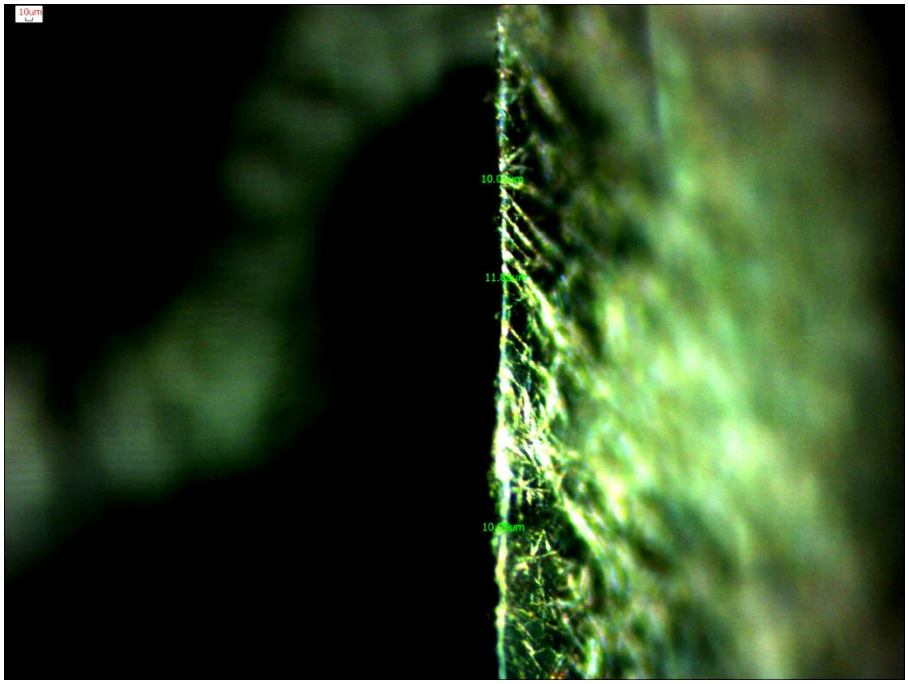

Fig. S2 The cross-section morphology of AgNWs/PI observed by optical microscopy.