Supplementary Information

Experimental Section

Materials. Stretchable spandex fabrics were obtained from Chao Fan Bu Ye Company. Pyrrole and naphthalene-2,6-disulfonic acid disodium salt (Na_2NDS) were obtained from J&K Scientific. Ferric chloride hexahydrate ($FeCl_3 \cdot 6H_2O$) was purchased from Sinopharm Chemical Reagent Co., Ltd. Ammonium persulfate, acrylamide, lithium chloride, N, N′-methylenebisacrylamide and N, N, N′, N′-tetramethylethylenediamine were purchased from Sigma-Aldrich. Silicones (Ecoflex 00-30) were purchased from Smooth-On Inc. Transition metal-doped ZnS phosphors were produced by Global Tungsten & Powders Corp.

Characterization. The structures were characterized by scanning electron microscopy (Hitachi FE-SEM S-4800 operated at 1 kV). Transmittance spectra were recorded by a Shimadzu UV-2550 spectrophotometer. The electrical properties were tested by a Keithley 2400 source meter. Resistance of the hydrogel film under stretching was measured by a Keithley 2410 source meter with a square pulse function at 1 kHz. The light intensity of the stretchable light-emitting fabric was measured by a Photoresearch PR-680 under an alternating current waveform using a high-voltage amplifier (610 D; TREK Inc.) combined with a function generator (3312 A; Hewlett Packard). Capacitance was measured with a capacitance meter (830C; BK Precision). The stretching and pressing process of light-emitting fabric was conducted by an HY0350 Table-top Universal Testing Instrument.

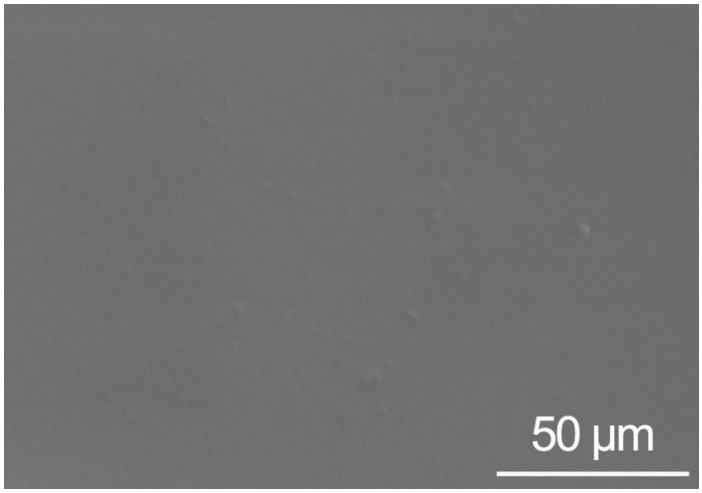

Fig. S1 SEM image of the light-emitting layer.

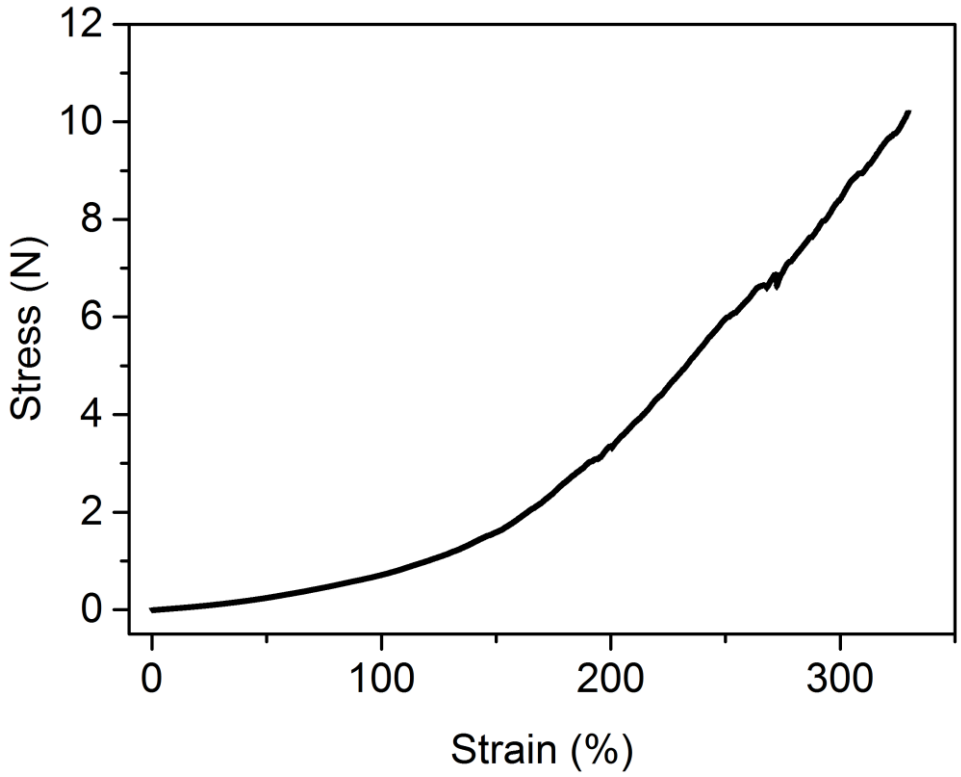

Fig. S2 Stress-strain curve of the conducting fabric (width of 4 mm and length of 13 mm).

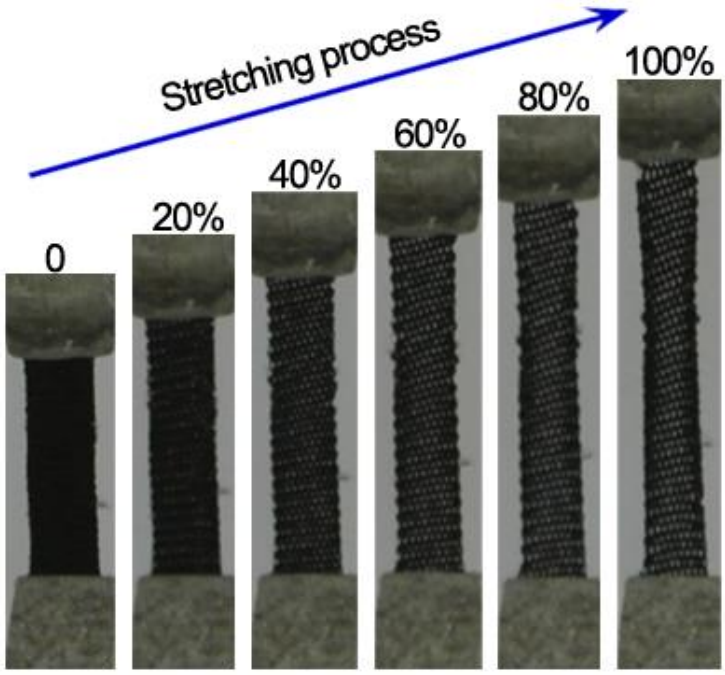

Fig. S3 Photographs of the conducting fabric at increasing strains from left to right.

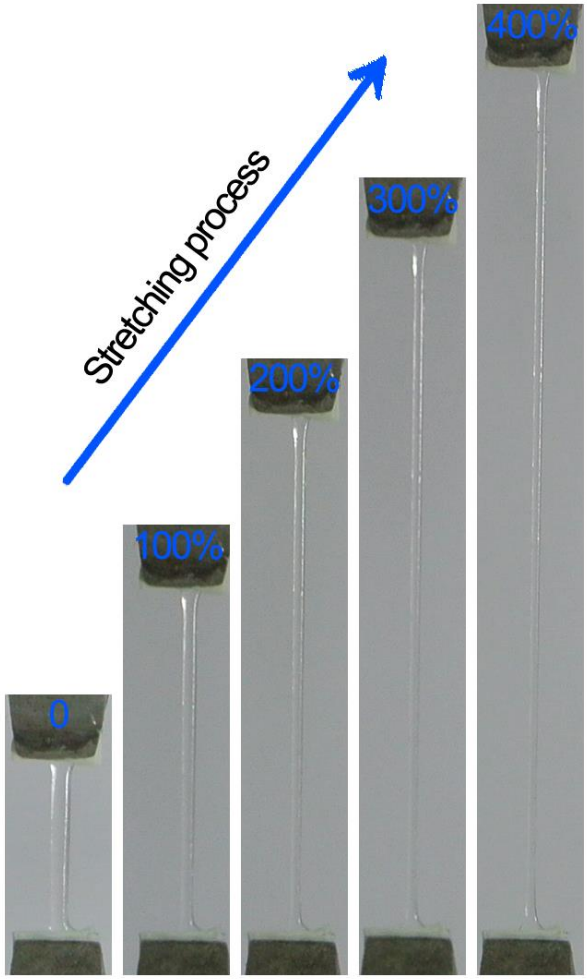

Fig. S4 Photographs of the hydrogel layer with the increasing strains from 0 to 400%.

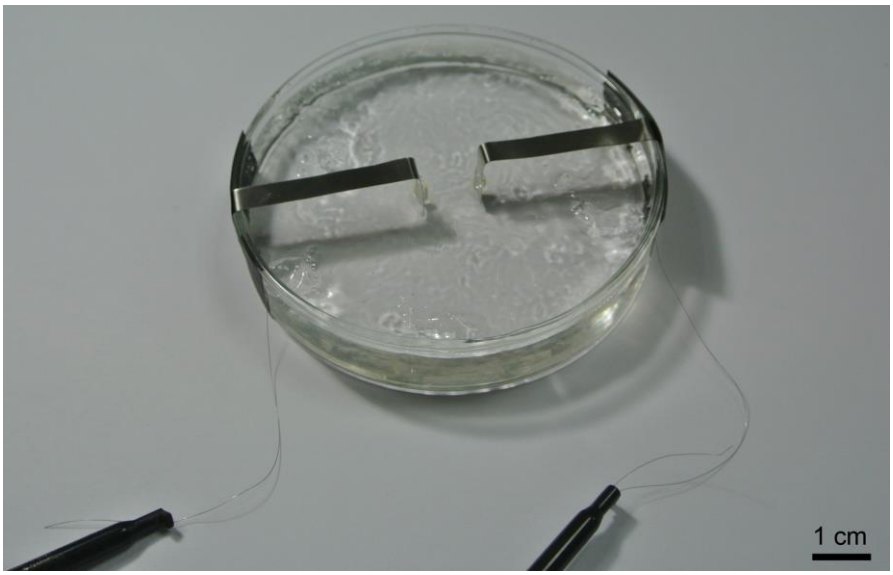

Fig. S5 Photograph of measuring the ionic conductivity of hydrogel film.

Fig. S6 Photograph of the light-emitting fabric being placed on a flower.

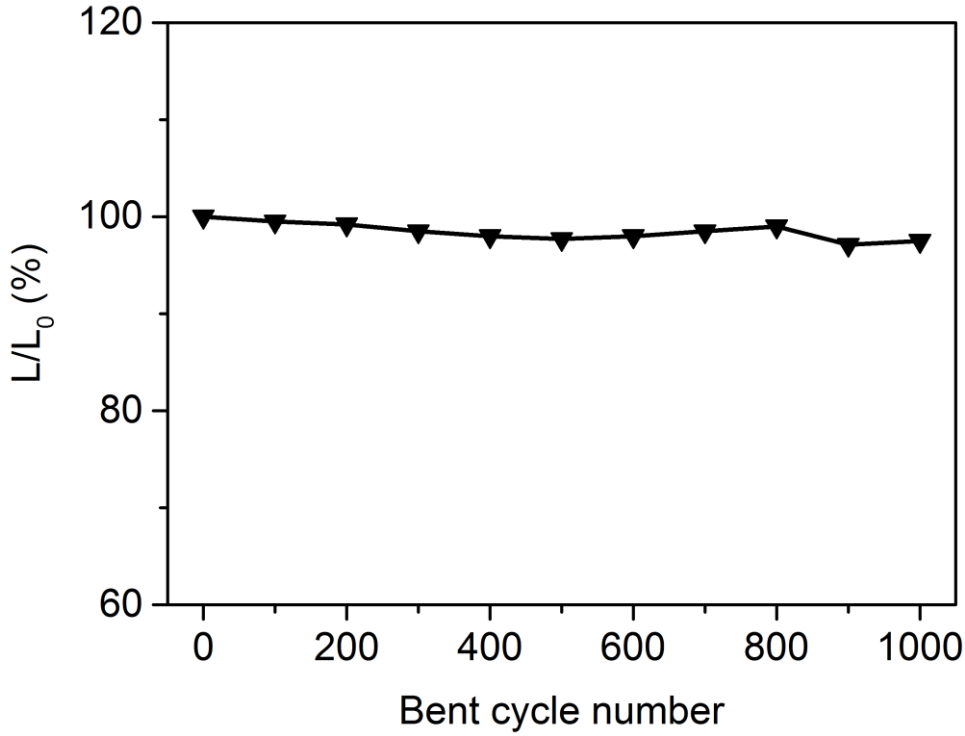

Fig. S7 Dependence of luminance of the light-emitting fabric on bent cycle number. L_0 and L correspond to the luminance intensities before and after bending, respectively.