Electronic supplementary Information

One-step synthesis of a robust, ultrathin, stretchable antifogging copolymer film

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Movie S1. Stretchable characteristic of synthesized pH8V1 copolymer via iCVD

Movie S2. Anti-fogging test in stretched test

Movie S3. Self-cleaning performance of pH8V1 film deposited slide glass.

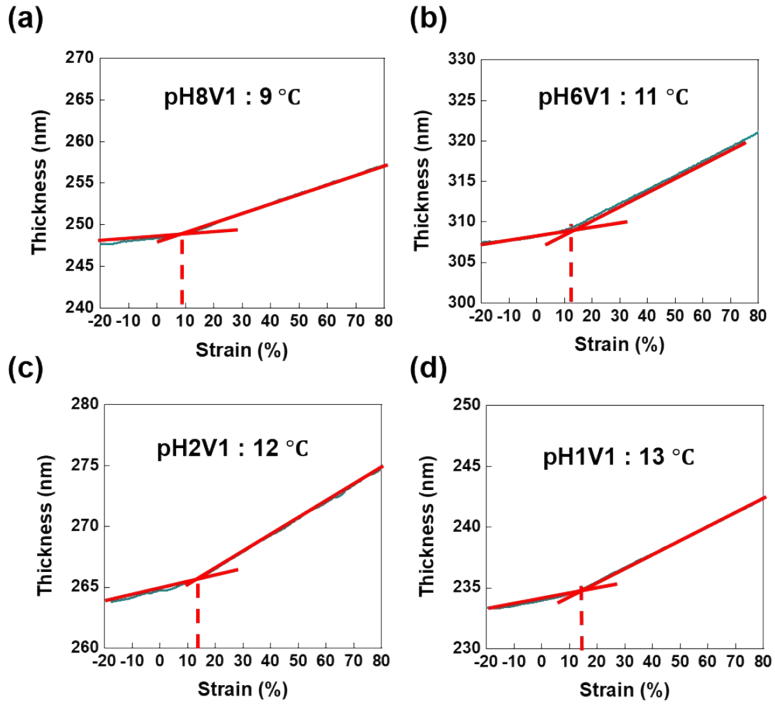


Figure S1. Ellipsometry measurements of pH8V1, pH6V1, pH2V1, pH1V1 for measuring the T_g of the copolymer film

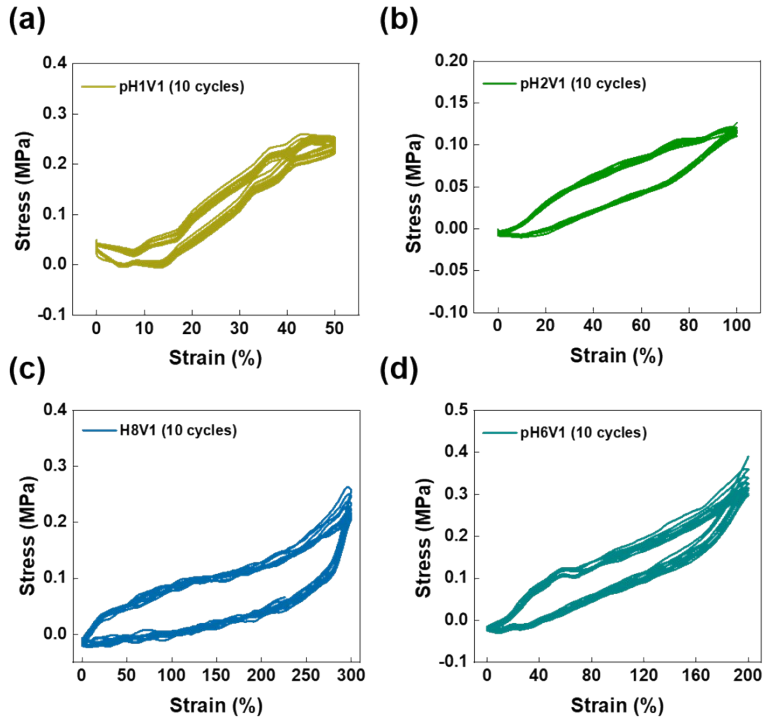


Figure S2. Cyclic S-S curve (a) pH1V1, (b) pH2V1, (c) pH6V1, (d) pH8V1 .

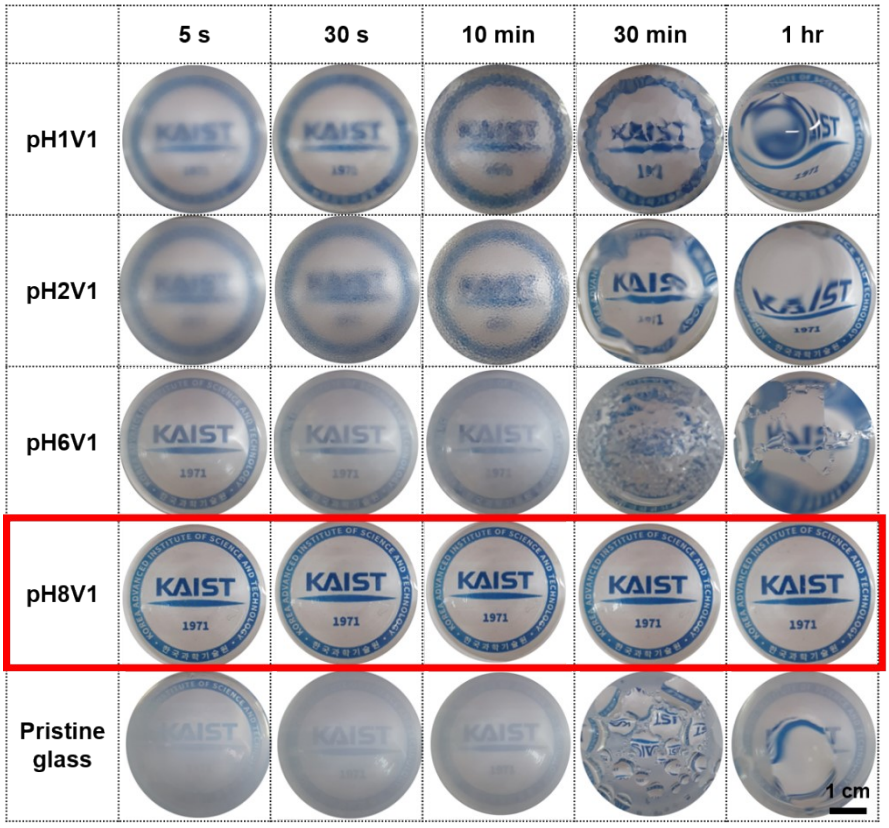


Figure S3. Comparison of antifogging performance of pHV series during 1 hr

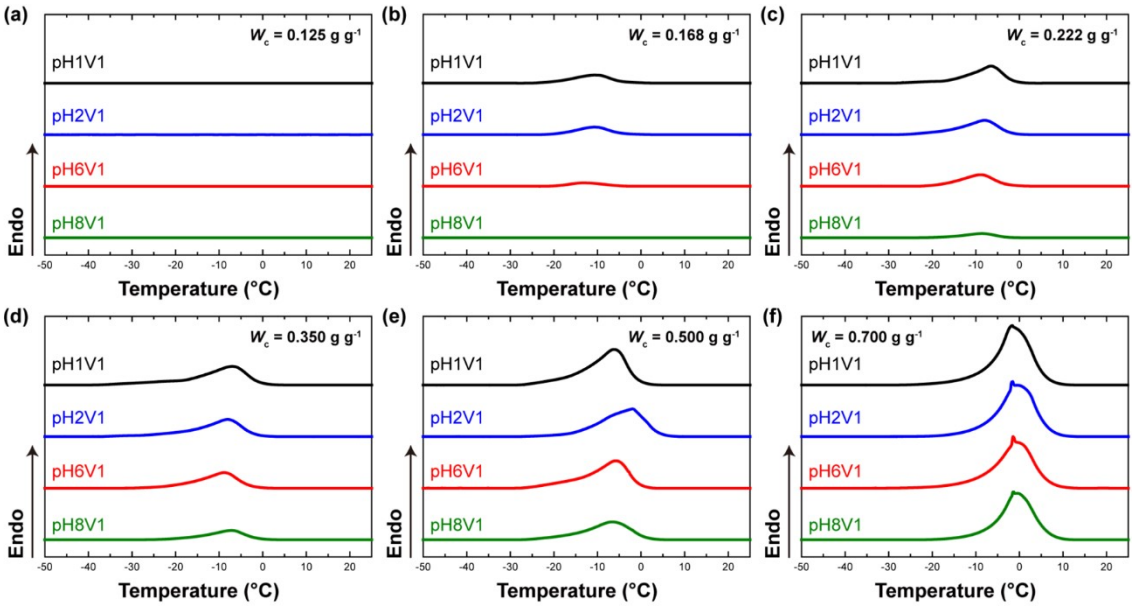


Figure S4. DSC analysis for measurement of water absorption.

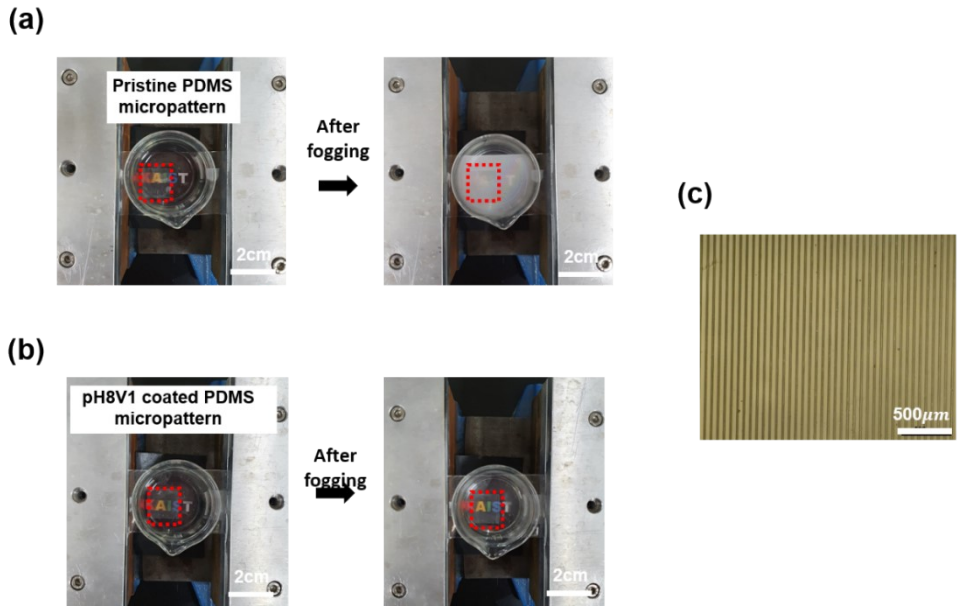


Figure S5. Optical photographs with (a) bare PDMS micropattern and (b) pH8V1 deposited PDMS micropattern placed 3 cm away from water heated to 80°C, at ambient conditions (25°C, 22%RH) before and after 50% stretching. The camera was fixed at the same position and pictures were taken at 5 s (c) Optical microscope image of the pH8V1 deposited PDMS micropattern

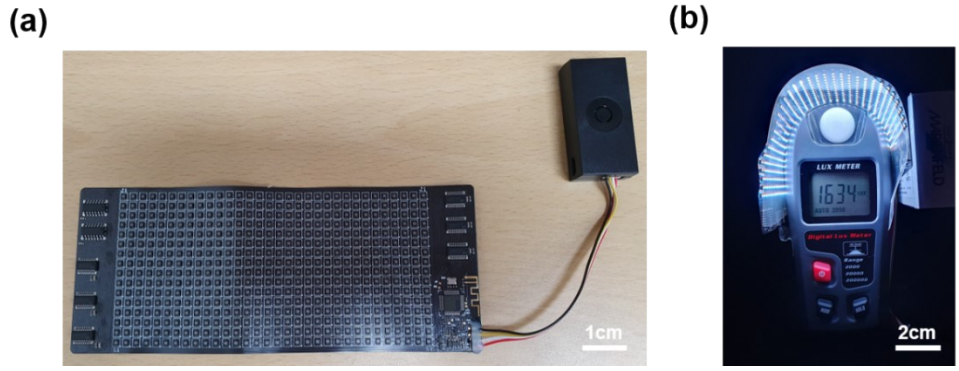


Figure S6. (a) Optical image of flexible LED display (b) Optical image of illuminometer and flexible LED display. The light intensity of the display was measured in a dark room. The experiment was carried out with the display wrapped around the illuminometer

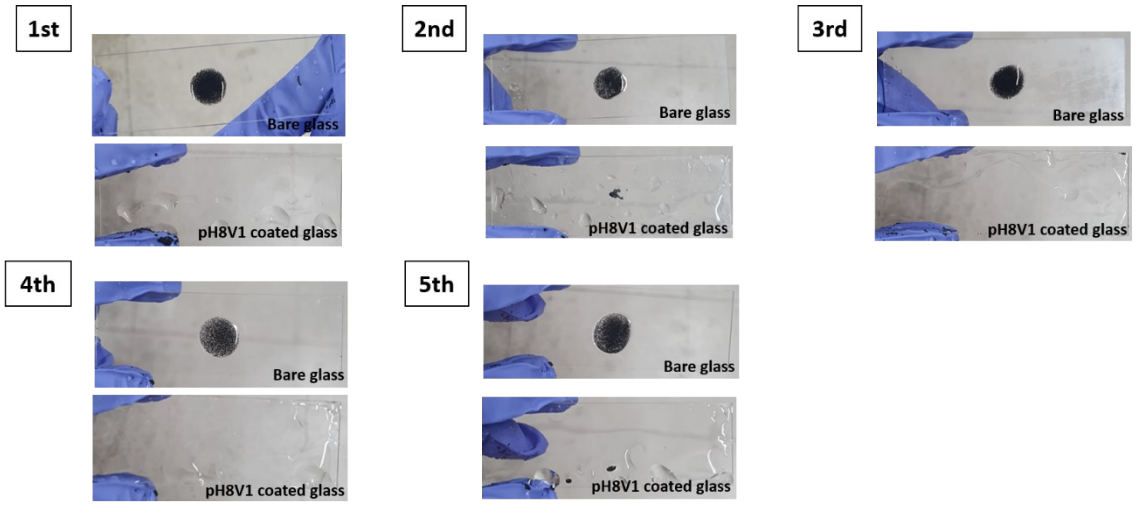
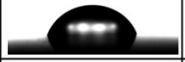
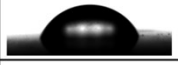
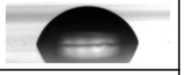


Figure S7. Self-cleaning property of bare slide glass (Top) and the pH8V1 coated slide glass (bottom) after washing with water. This repeats 5 times with the same samples. The contamination is a mixture of activated carbon and silicone oil.

	Si wafer	Glass	PEN	PET	PS
Before Coating					
	56°	30°	67°	65°	72°
After Coating					
	17°	9°	12°	11°	13°

* PEN : Polyethylene naphthalate
* PET : Polyethylene Terephthalate
* PS : Polystyrene

Figure S8. Deposited pHV films on any arbitrary surfaces (Glass, PEN and PET)