Electronic Supplementary Material (ESI) for Soft Matter.

Supporting Information

Transparent Ionic Conductive Elastomers with High Mechanical Strength and Strong Tensile Properties for Strain Sensors.

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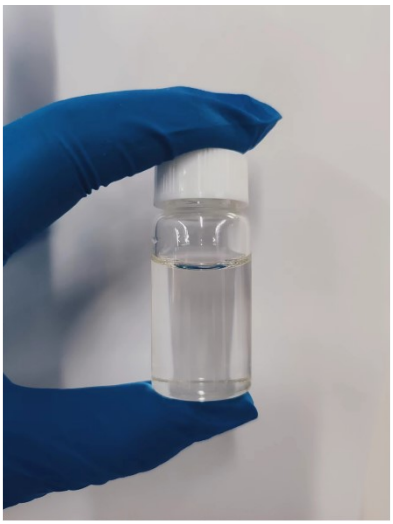

Fig. S1 Optical photograph of AA/ChCl-type PDES.

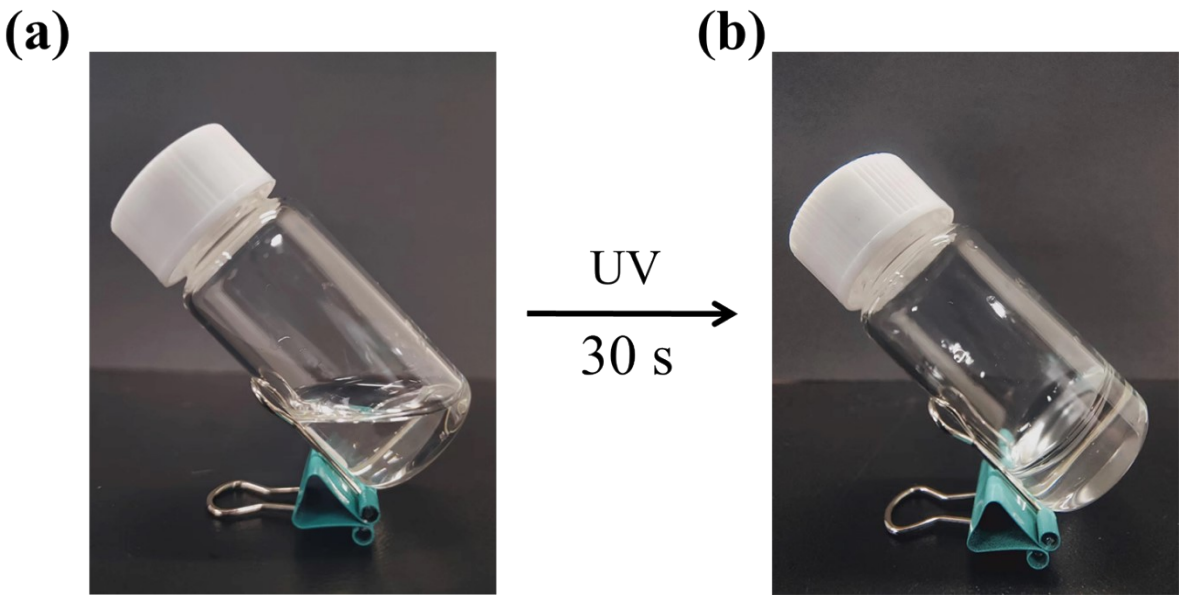

Fig. S2 Optical photographs of AA/ChCl-type PDES and DMA mixed solutions before (a) and after (b) polymerization.

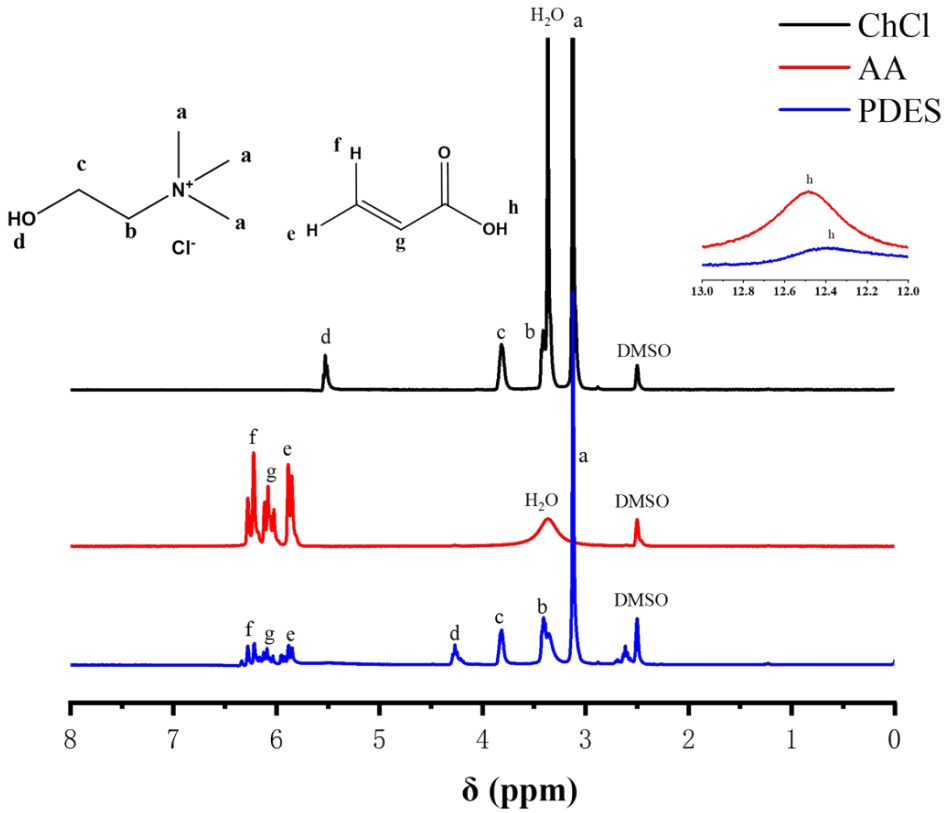

Fig. S3 ^{1}H NMR spectrum of AA, ChCl and AA/ChCl type PDES in DMSO-d6.

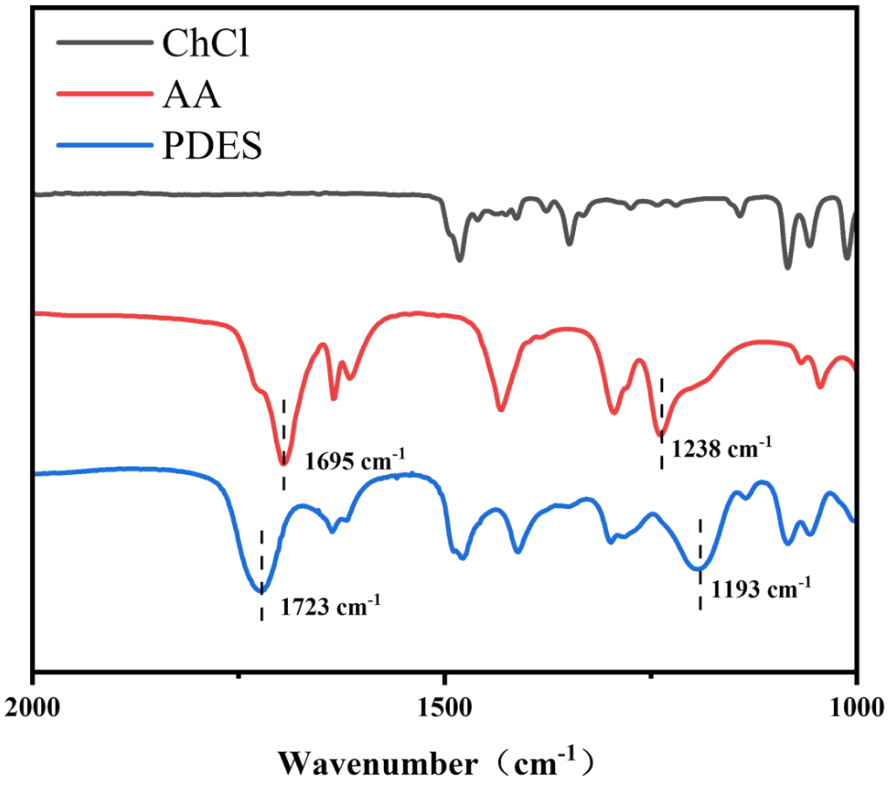

Fig. S4 The FTIR spectroscopy of AA, ChCl and AA/ChCl type PDES.

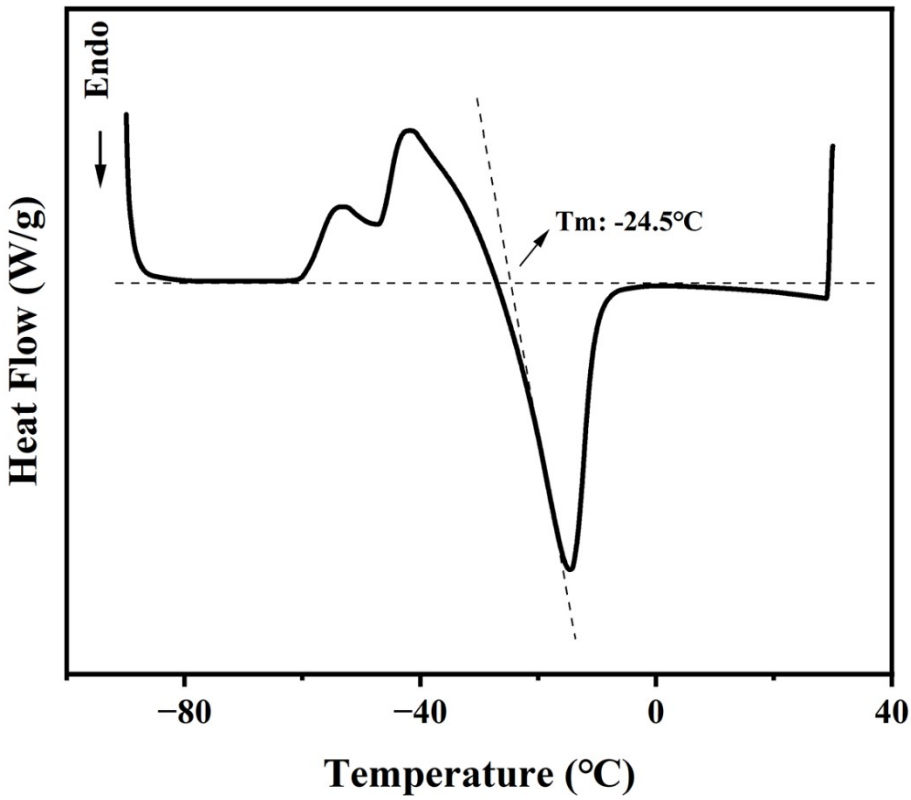

Fig. S5 Differential scanning calorimetry (DSC) curves of AA/ChCl type PDES.

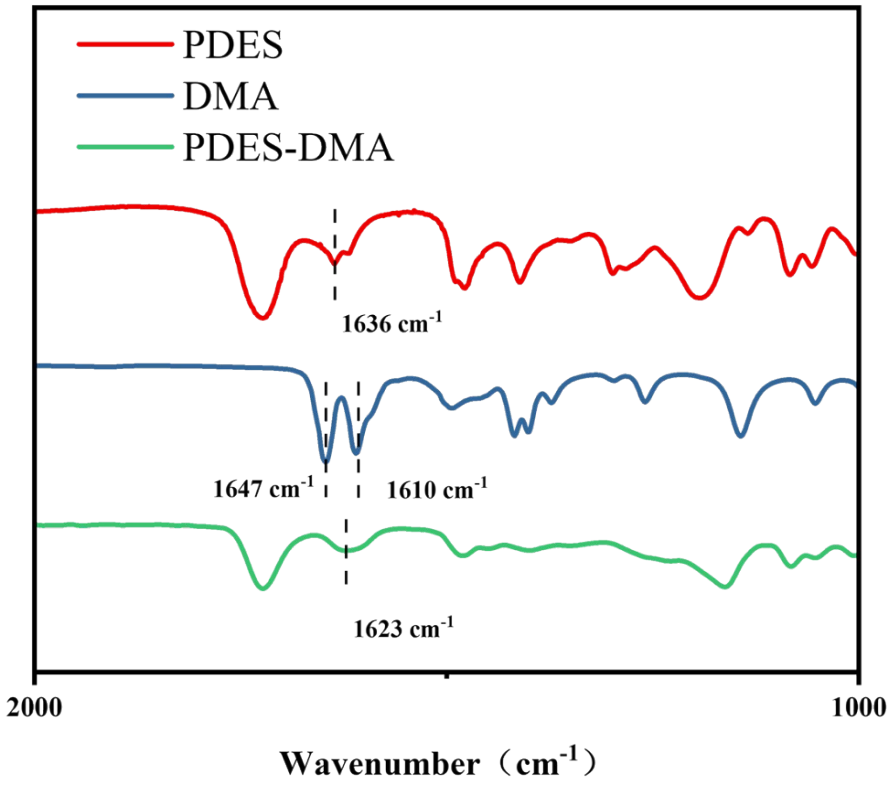

Fig. S6 The FTIR spectroscopy of AA/ChCl type PDES, DMA and PDES-DMA elastomer.

Table S1 Conductivity of some reported PDES-based ionic conductive elastomers.

Materials	Conductivity(S/m)	Ref.
AA/ChCl-PA	0.0084-0.078	[1]
ChCl/VAM/AA-CMCS	0.03-0.114	[2]
AA/ChCl-Ga^{3+}	0.06-0.26	[3]
ChCl/urea/MCCM/AA	0.00219	[4]
AA/ChCl-MA/ChCl	0.21-0.43	[5]
LA-AA/ChCl/Fe^{3+}	0.0014-0.0024	[6]
AA/ChCl	0.04-0.23	[7]
ChCl/AA-AMPS	0.002-0.007	[8]
ChCl/AA-IM	0.00032	[9]
PAA/ChCl/EG-Al^{3+}	0.047-0.084	[10]
AA/MAH/ChCl-EAN	0.0001-0.01	[11]
PDES-DMA	**0.02-0.04**	**This work**

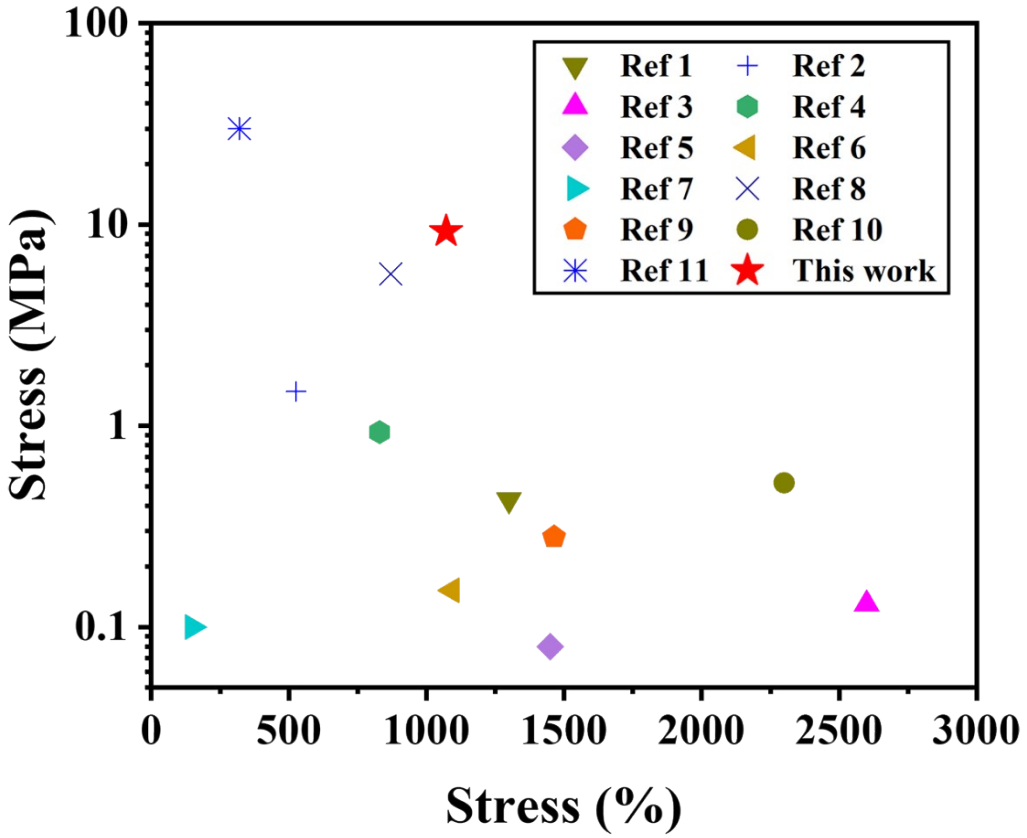

Fig. S7 Mechanical properties of some reported PDES-based ionic conductive elastomers and PDES-DMA elastomers.

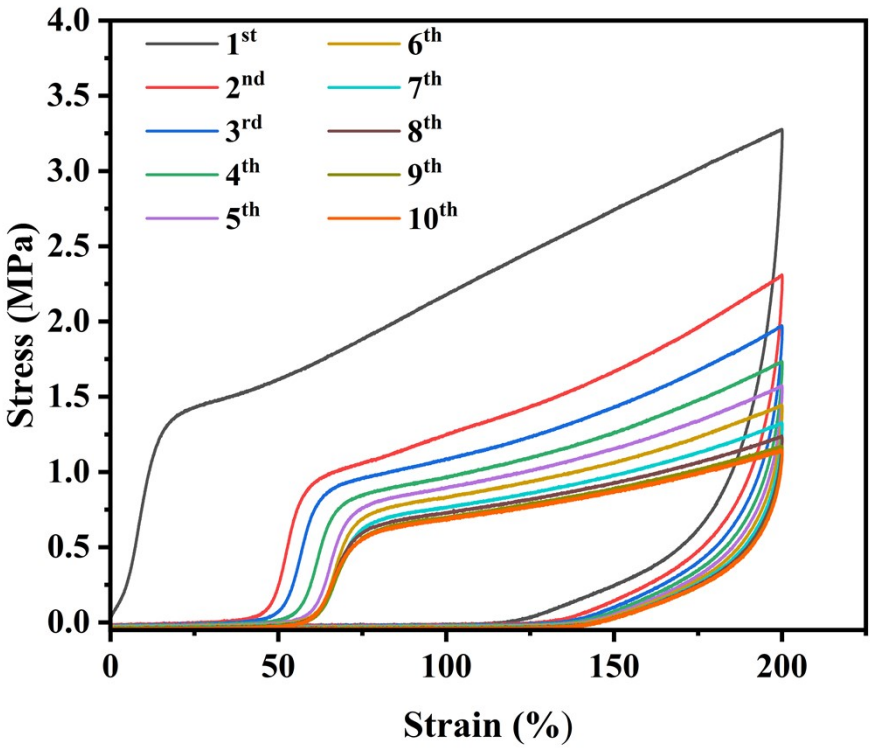

Fig. S8 Ten loading–unloading cycles of PDES-DMA elastomers at a strain of 200%.

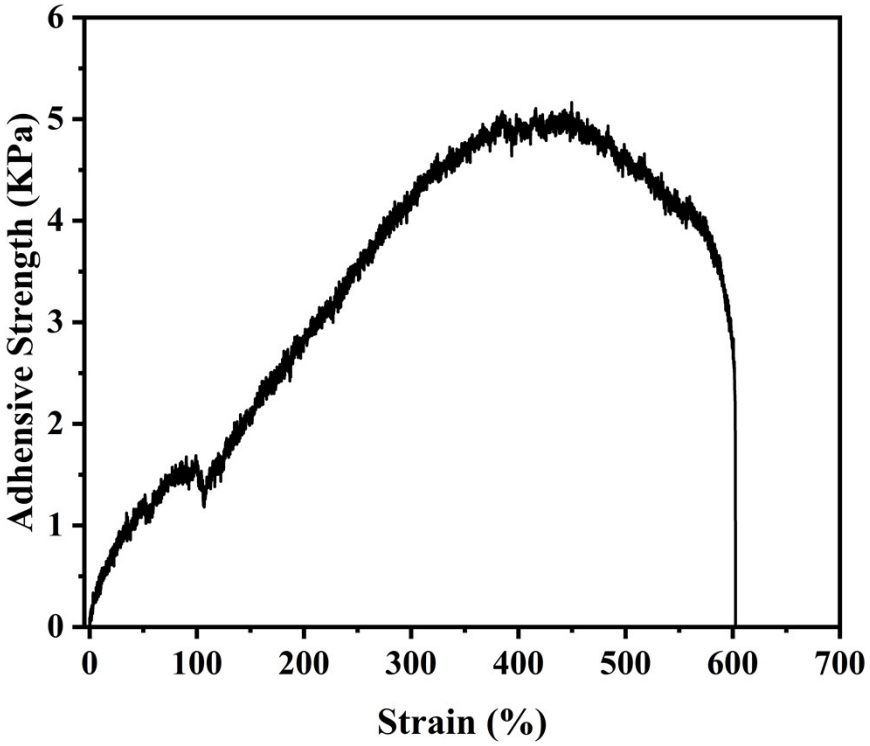

Fig. S9 Adhesion strength–strain curves of elastomers on skin substrates. (1.5 × 1.5 × 0.1 cm^3)

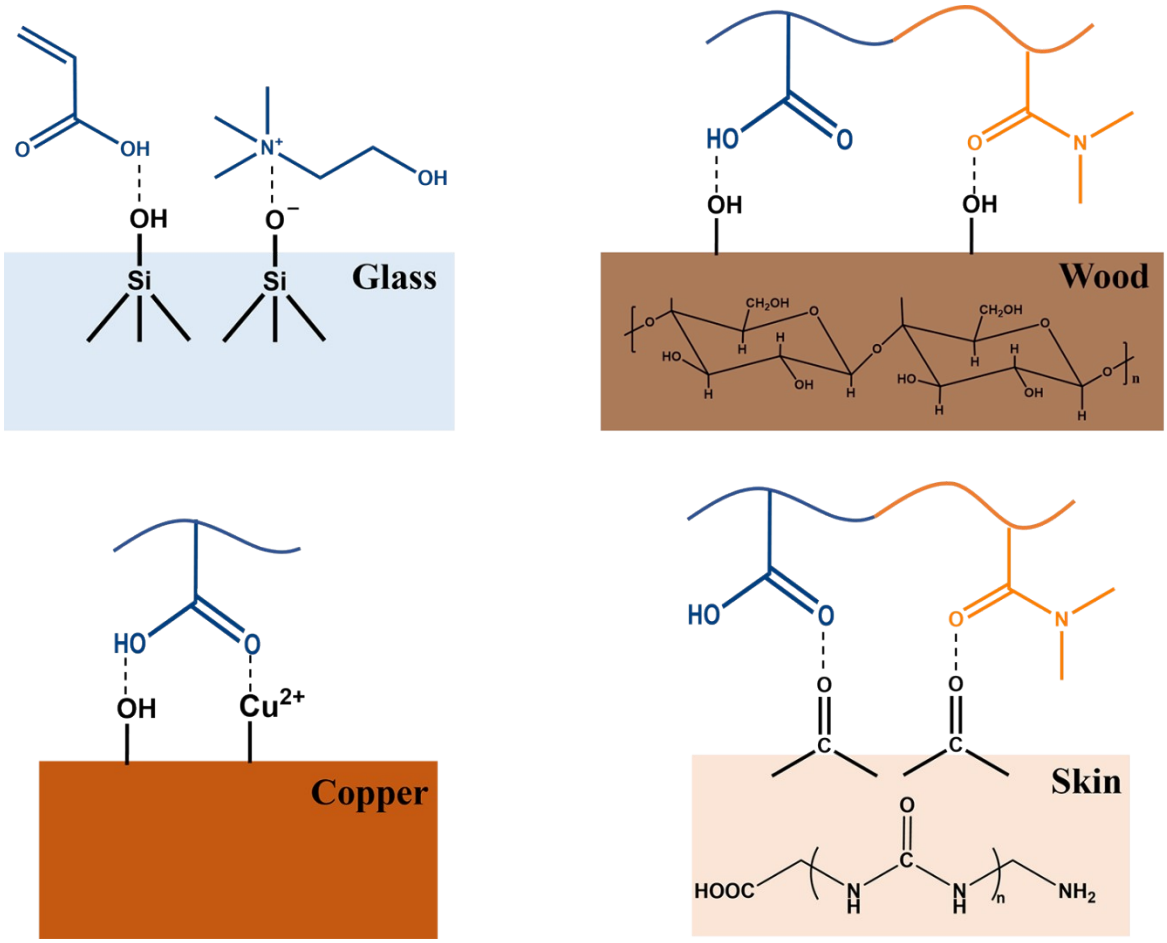

Fig. S10 Schematic diagram of possible interactions between PDES-DMA elastomers and different substrates.

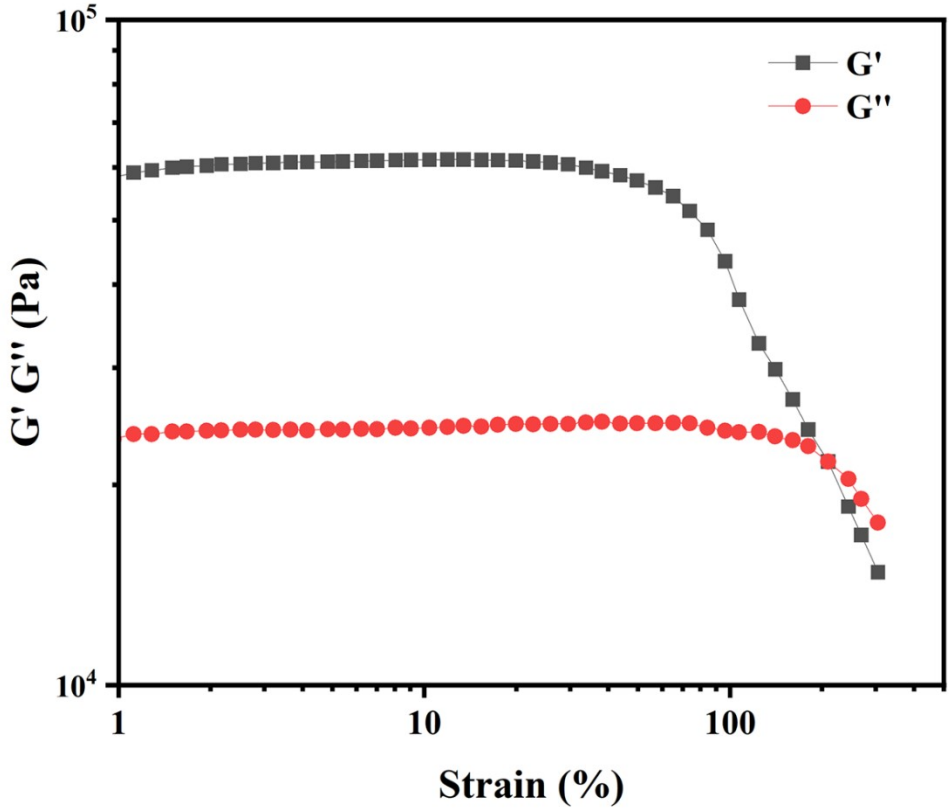

Fig. S11 Storage modulus G′ and loss modulus G″ of the PDES-DMA elastomer under different shear strains at 25 °C.

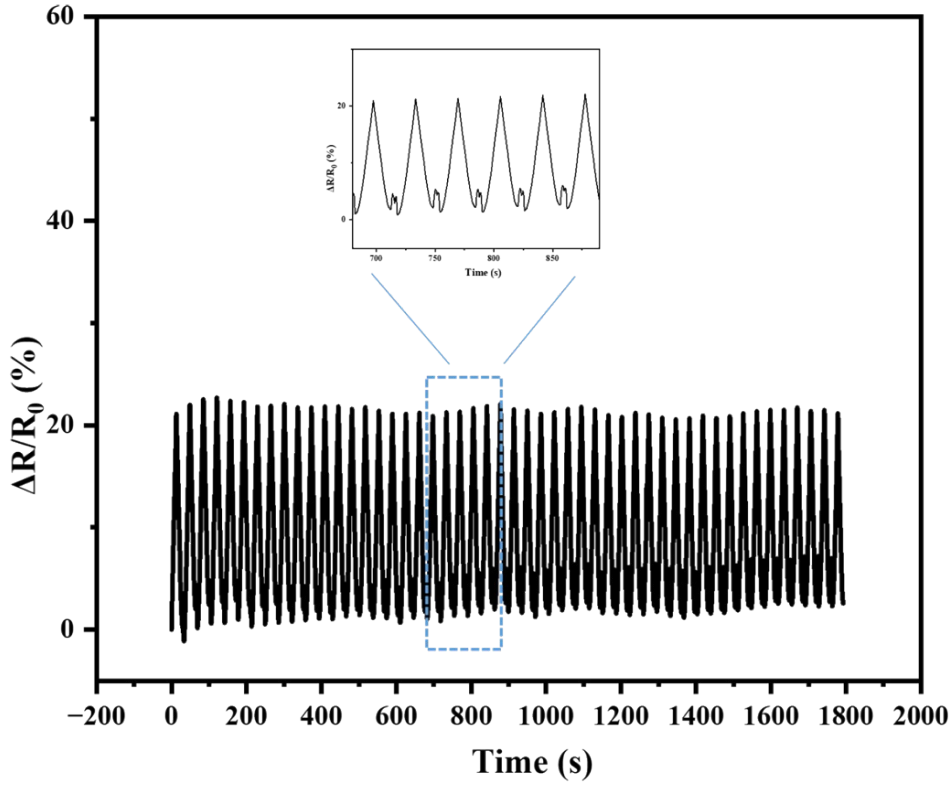

Fig. S12 The resistance changes of the PDES-DMA elastomer for 50 cycles at 50% strain

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