Supporting information

Superior actuation performance and healability achieved in a transparent, highly stretchy dielectric elastomer film

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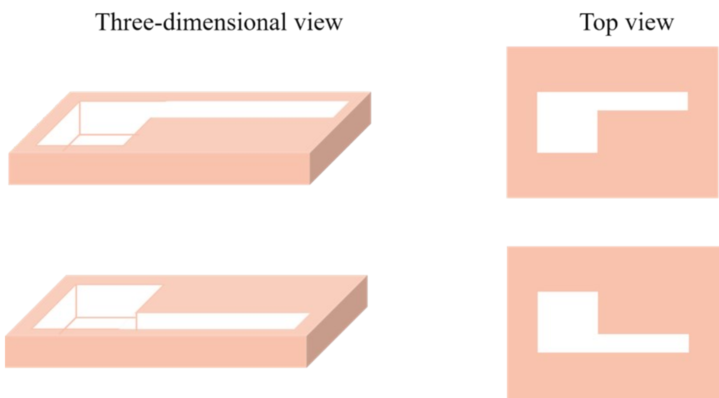

Fig. S1 Schematic diagram of the coating mask.

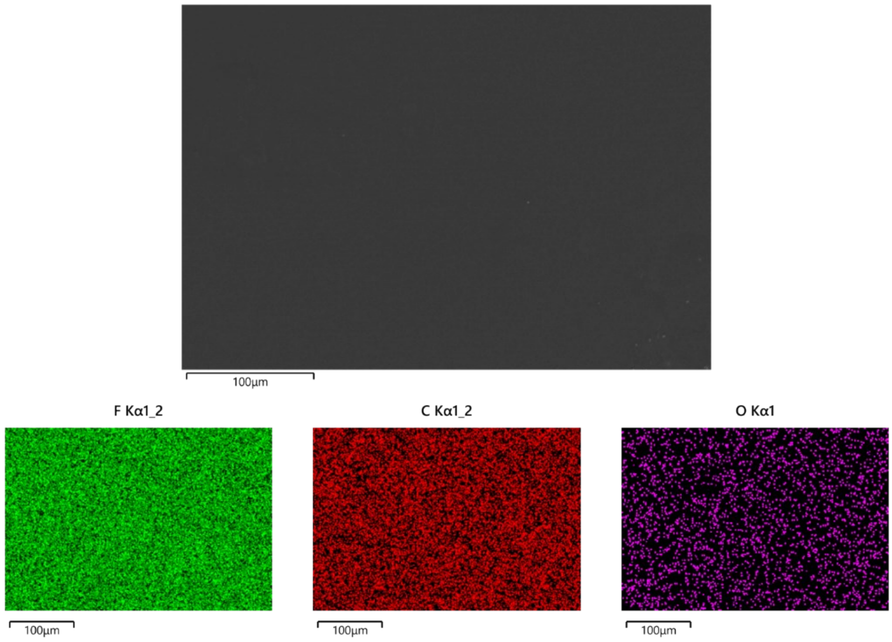

Fig. S2 SEM image and corresponding EDS mappings of P(VDF-HFP)-15-DBP.

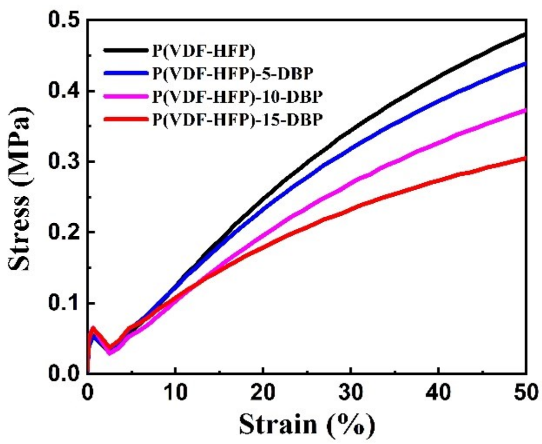

Fig. S3 Tensile tests of the polymer materials ranging from 0% to 50%.

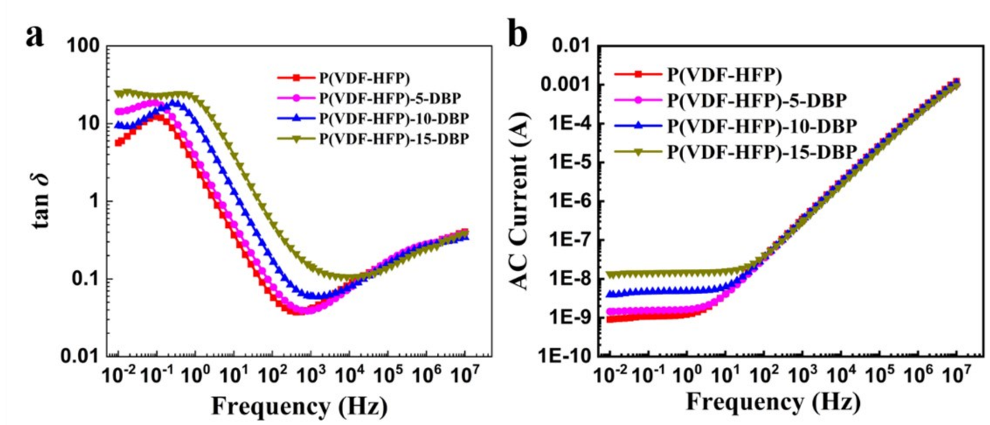

Fig. S4 (a) tan δ and (b) AC current as a function of frequency for DBP/P(VDF-HFP) films.

Table S1. Comparison of electromechanical performance between the as-prepared elastomer of this work and the state-of-the-art DE composites.

Sample	ε_r' (10^3 Hz)	Y (MPa)	β (MPa^{-1}, 10^3 Hz)	E_b ($MV\cdot m^{-1}$)	Self-healing	Ref.
M3M-SBS	7.5	2.4	3.1	39.6	YES	[S1]
Thioacetic modified PDMS ($B_{2\%}$)	4.7	0.12	39.2	16.5	NO	[S2]
ec-SBAS (-2)	4.8	0.74	6.5	154	NO	[S3]
DOP/mTiO2/NR (50 phr)	4.0	0.49	25.5	40.0	NO	[S4]
EMIMTFSI-PDMS	3.7	1.0	3.7	-	NO	[S5]
Fe-Hpdca-PDMS	6.4	0.54	11.9	18.8	YES	[S6]
VHB 4910	4.7	0.23	20.4	17	NO	[S7]
DBP/P(VDF-HFP) (10 wt%)	**10.9**	**0.9**	**11.7**	**48.2**	**YES**	**This work**

Video S1 Actuated tests of P(VDF-HFP) under different electric fields (0, 20, 25 and 30 MV/m).

Video S2 Actuated tests of P(VDF-HFP)-10-DBP under different electric fields (0, 20, 25 and 30 MV/m).

References

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