Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Stretchable and Self-Healable Organosilicon Conductive Nanocomposite for Reliable and Sensitive Strain Sensor

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Table S1 The properties of PDMS-Zn^{2+}, PDMS/2wt%MWCNTs-Zn^{2+}, PDMS/4wt%MWCNTs-Zn^{2+}, PDMS/6wt%MWCNTs-Zn^{2+}, PDMS/8wt%MWCNTs-Zn^{2+} and PDMS/10wt%MWCNTs-Zn^{2+}.

	Stress at break (MPa)	Elongation at break (%)	Young's modulus (MPa)	Tg (℃)
PDMS-Zn^{2+}	**0.93±0.16**	**549±36**	**0.30±0.06**	**-114.10**
PDMS/2wt%MWCNTs-Zn^{2+}	**1.19±0.21**	**433±29**	**0.49±0.07**	**-113.98**
PDMS/4wt%MWCNTs-Zn^{2+}	**1.86±0.27**	**313±26**	**1.19±0.12**	**-113.87**
PDMS/6wt%MWCNTs-Zn^{2+}	**1.94±0.29**	**258±21**	**1.47±0.14**	**-113.44**
PDMS/8wt%MWCNTs-Zn^{2+}	**2.71±0.46**	**203±20**	**2.74±0.21**	**-113.22**
PDMS/10wt%MWCNTs-Zn^{2+}	**4.39±0.63**	**169±16**	**5.07±0.29**	**-112.62**

Figure S1 The digital picture and corresponding Zeta potential of PDMS/10wt%MWCNTs-Zn^{2+} suspension (placed for three days).

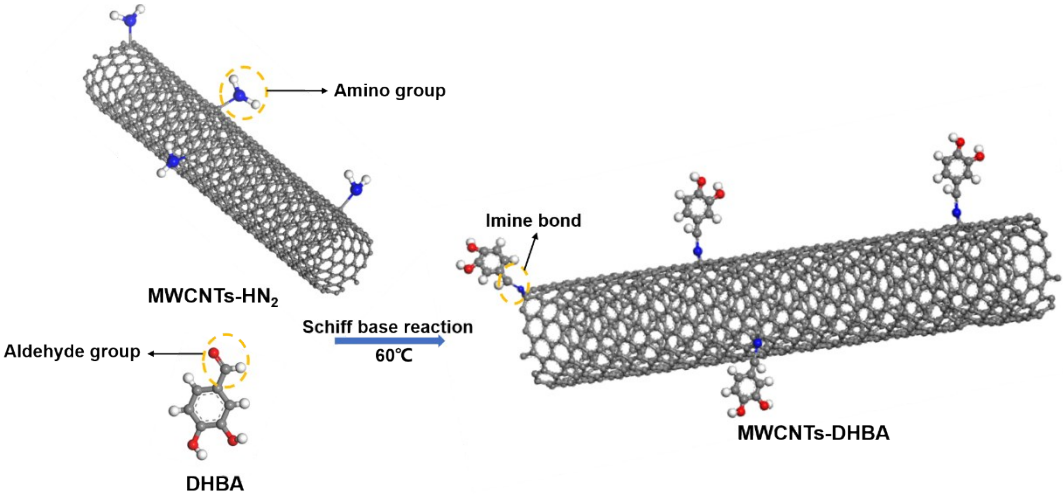

Figure S2 Preparation route of MWCNTs-DHBA.

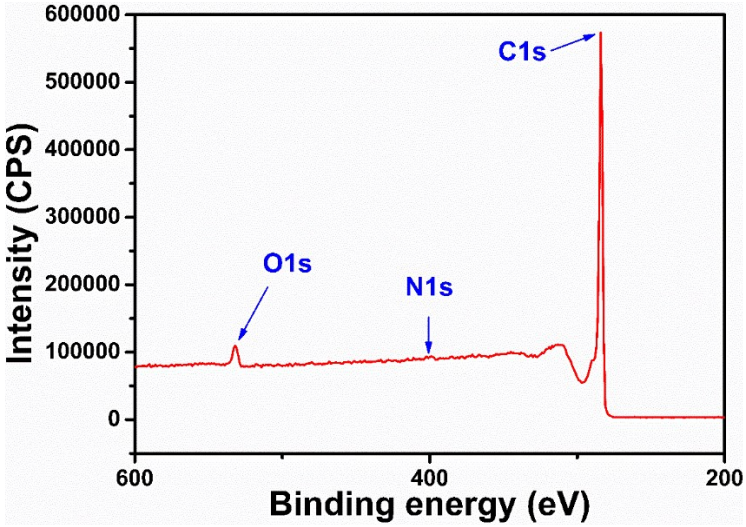

Figure S3 X-ray photoelectron spectra analyses of MWCNTs-DHBA: survey scan.

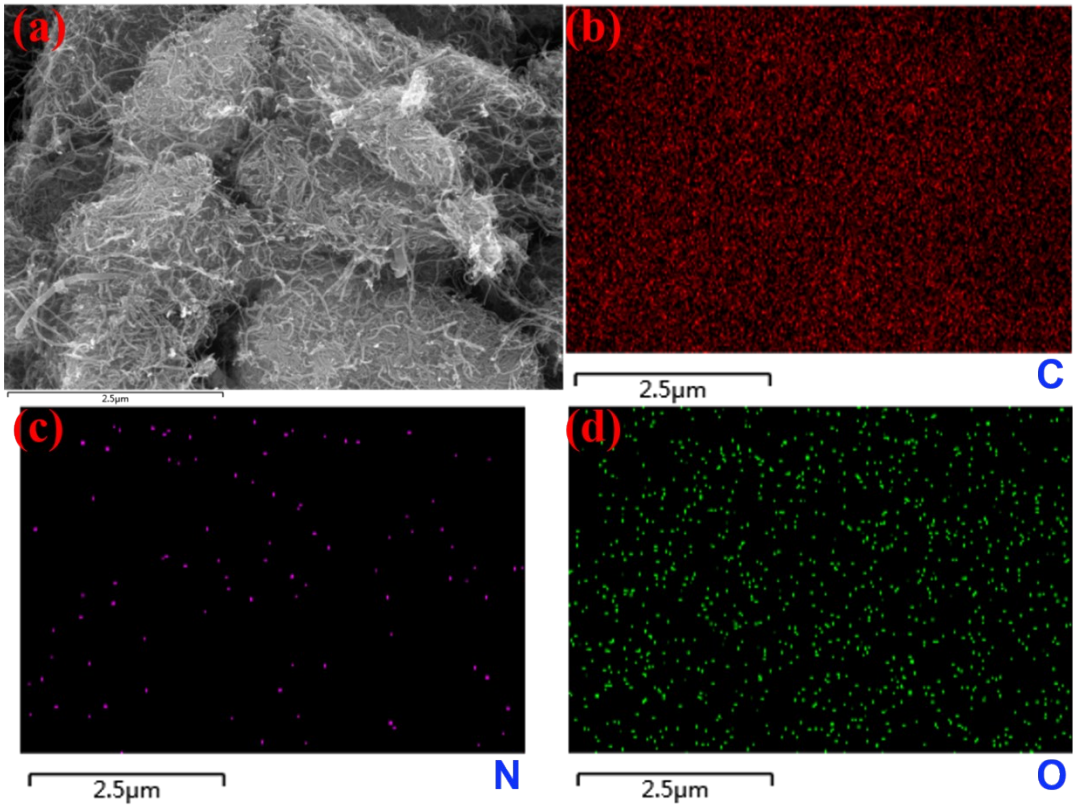

Figure S4 Energy dispersive X-ray spectrum (EDS) elemental maps of MWCNTs-DHBA, including C, N and O elements. The uniform distribution of O element illustrating the successful preparation of MWCNTs-DHBA.

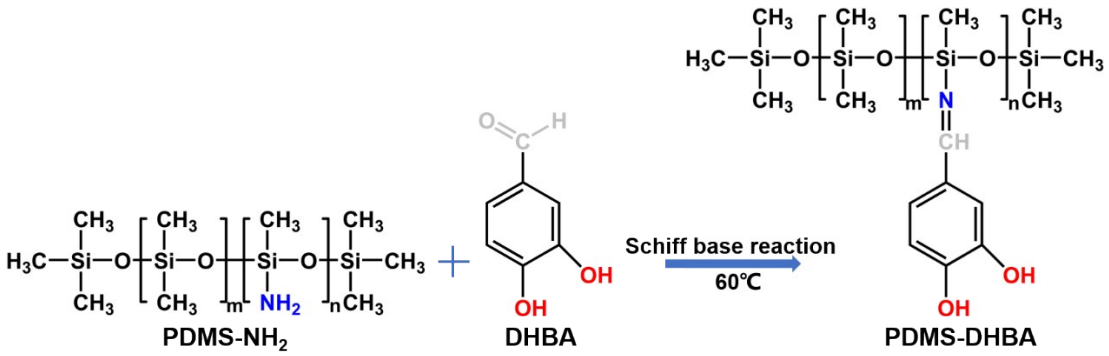

Figure S5 Preparation route of PDMS-DHBA.

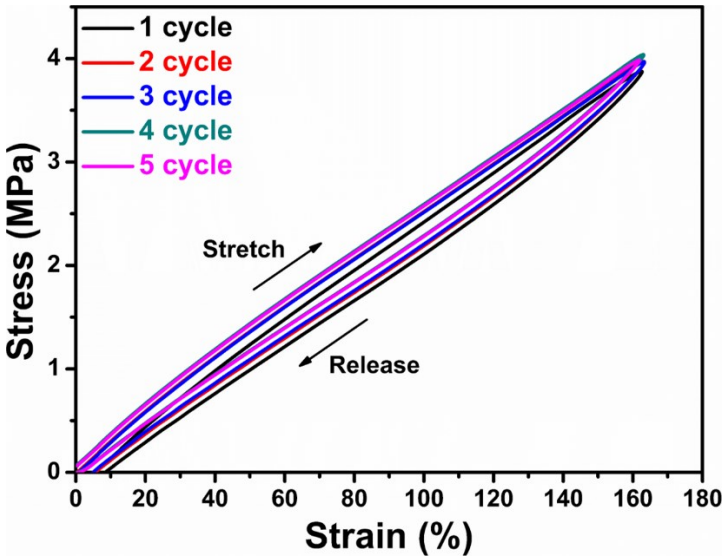

Figure S6 Cyclic stress-strain curves of PDMS/10wt%MWCNTs-Zn^{2+}.

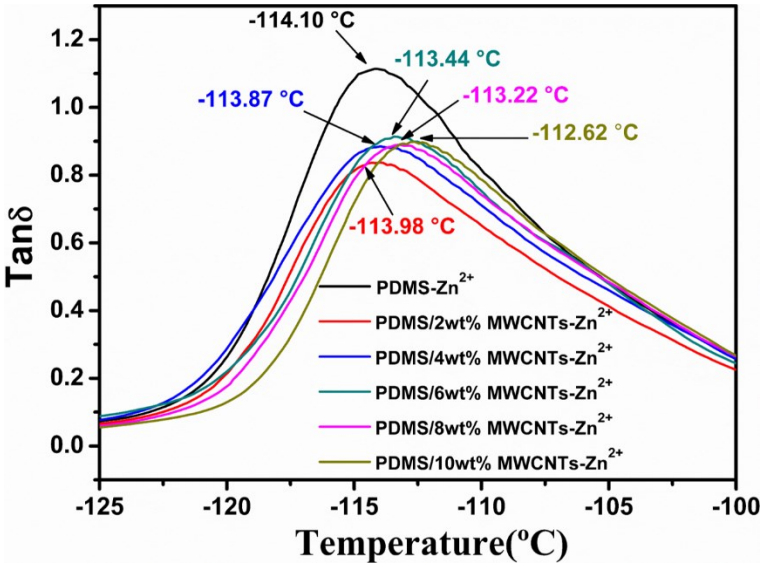

Figure S7 Tan δ curves of PDMS-Zn^{2+} and PDMS/MWCNTs-Zn^{2+} with different MWCNTs-DHBA mass ratios.

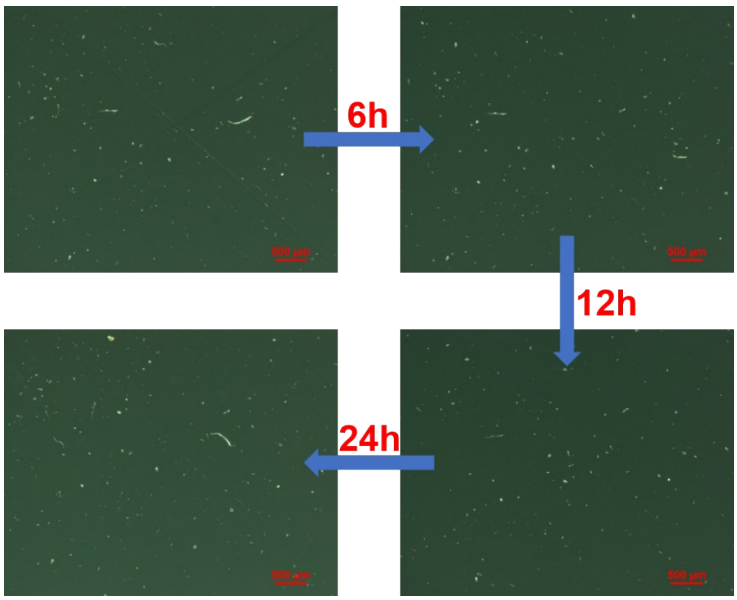

Figure S8 Stereomicroscope images of PDMS/10wt%MWCNTs-Zn^{2+} damaged and repaired samples at di□erent self-healing time.

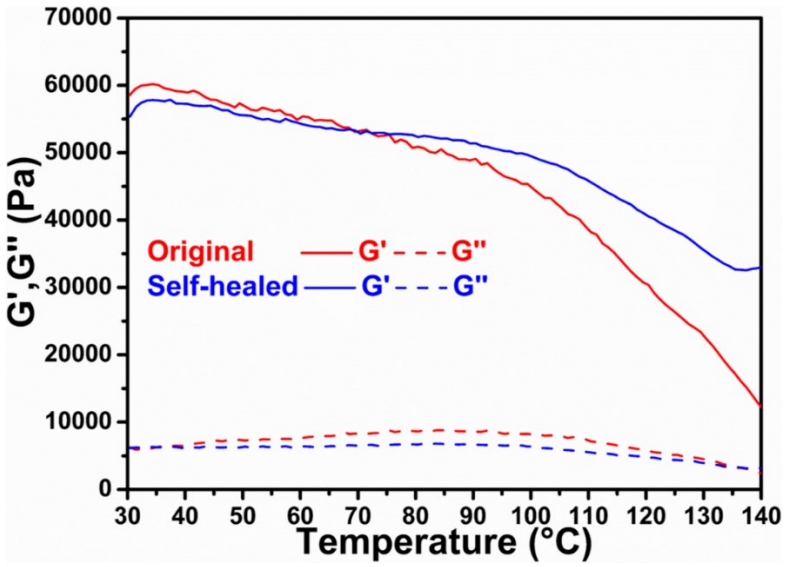

Figure S9 Temperature sweeps of PDMS/10wt%MWCNTs-Zn^{2+} before and after self-healing.

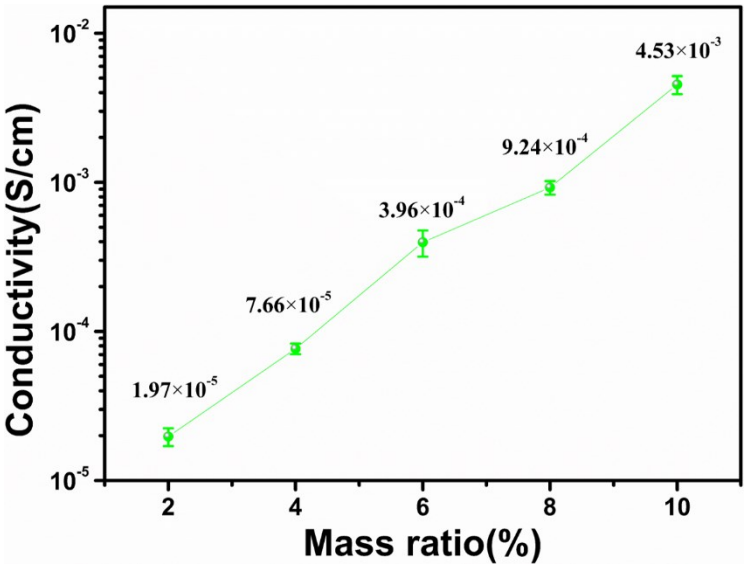

Figure S10 Conductivity of PDMS/MWCNTs-Zn^{2+} with different MWCNTs-DHBA contents.

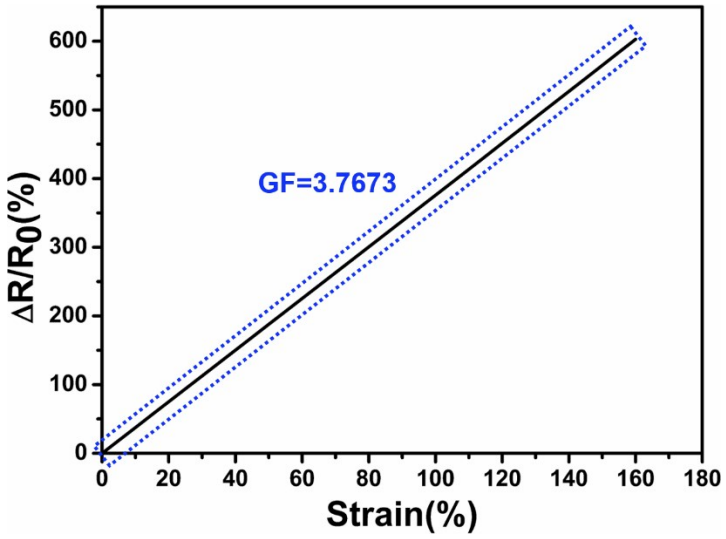

Figure S11 Relative resistance change ($\Delta R/R_0$) of PDMS/10wt%MWCNTs-Zn^{2+} during stretching process.

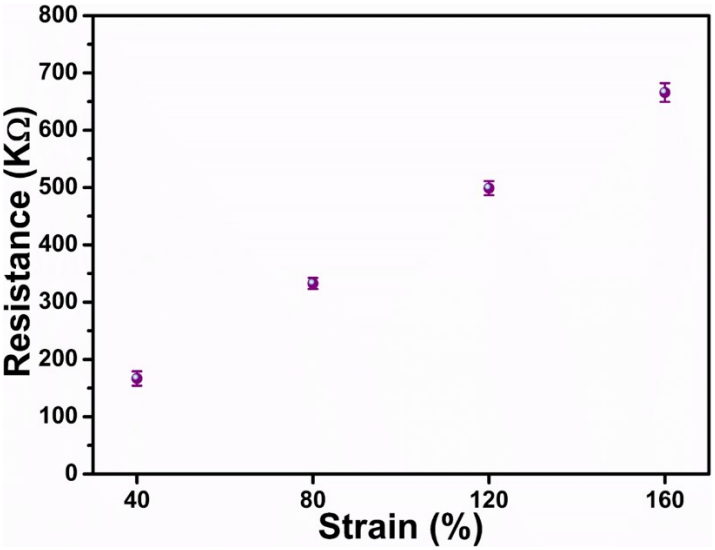

Figure S12 The corresponding resistance of the PDMS/10wt%MWCNTs-Zn^{2+} when it was stretched to 40%, 80%, 120% and 160% strain.