Supplementary Information

Tuning Metal-Ligand Crosslinking for Shape-Stable, Self-Healing Capacitive Pressure Sensors

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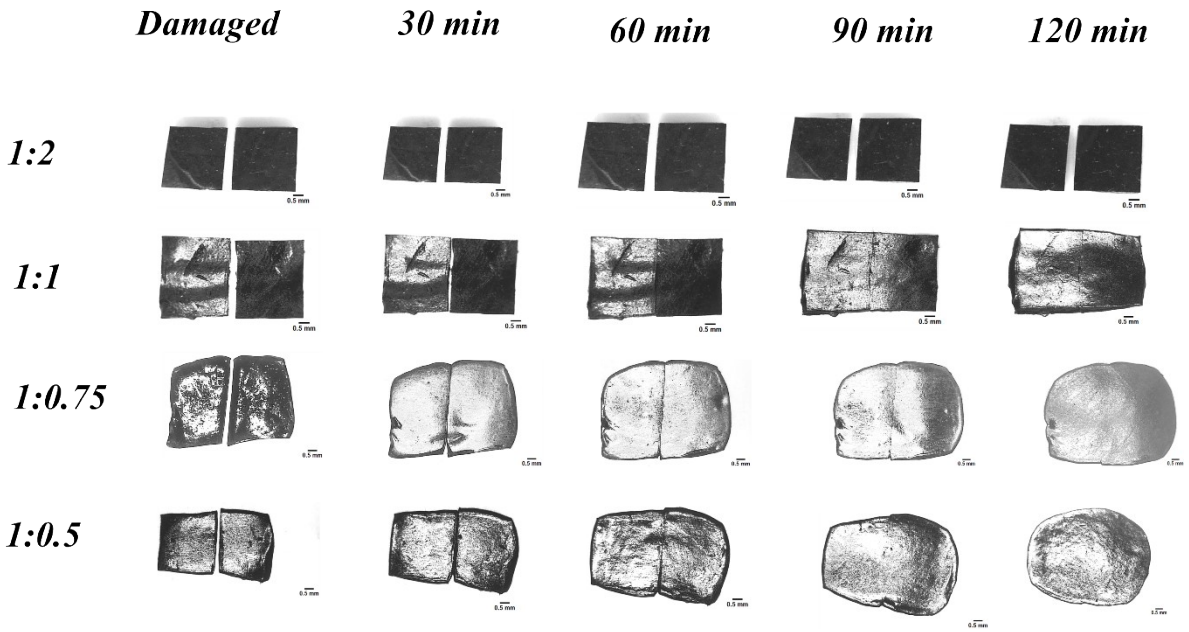

Figure S1. Optical images showing the healing behavior of samples with different crosslinking ratios (1:1, 1:0.75, and 1:0.5) at various healing times. Images were captured immediately after damage and after 30, 60, 90, and 120 minutes of healing at room temperature, illustrating the effect of crosslink density on healing efficiency. Scale bar is 0.5 mm.

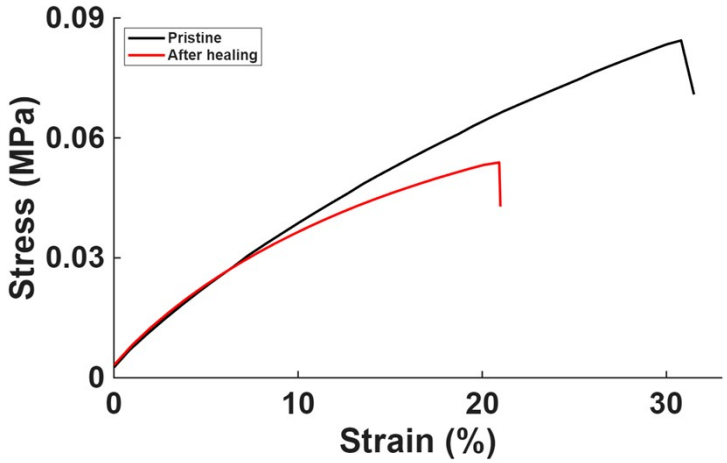

Figure S2. Tensile stress-strain characterization of the pristine and healed samples

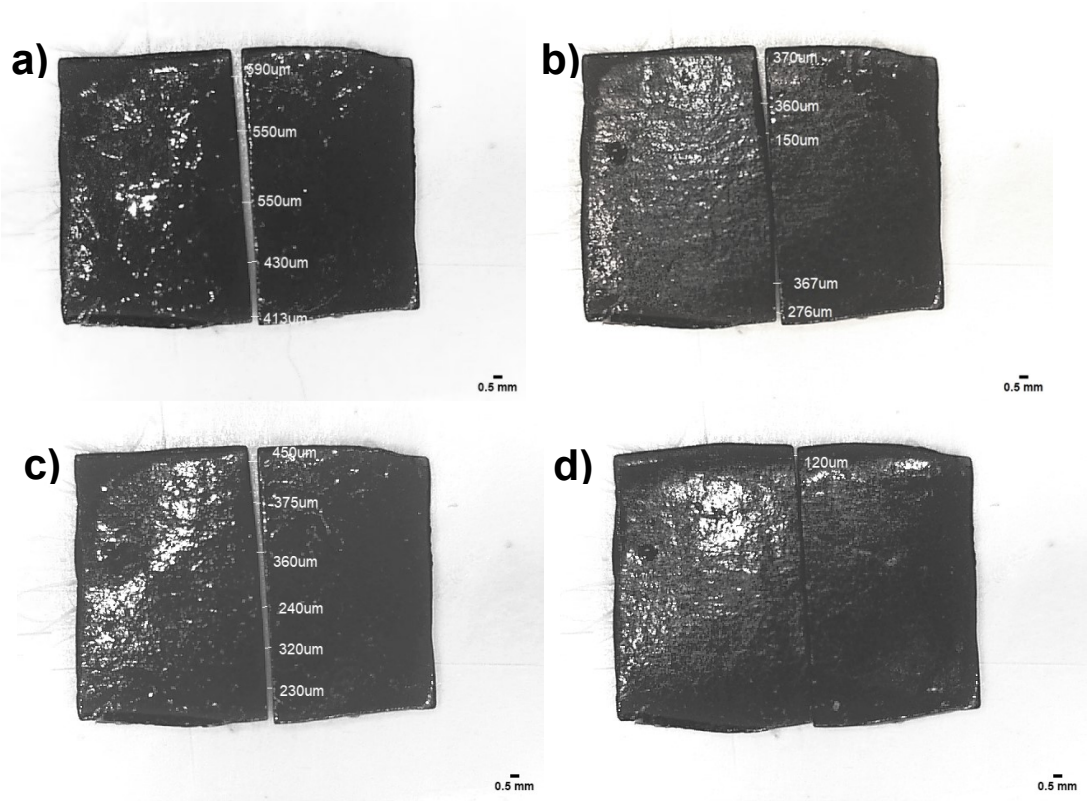

Figure S3. Optical images showing crack width measurements at different healing times.

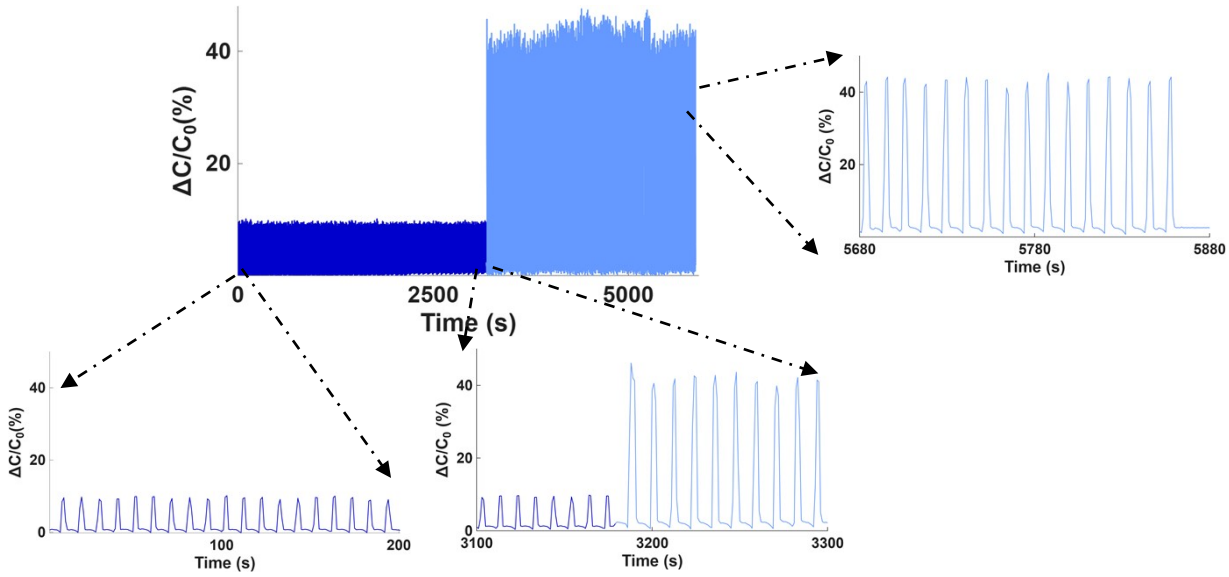

Figure S4. Relative capacitance change ($\Delta C/C_0$) of the self-healing polymer under cyclic loading at 60 kPa and 840 kPa, zoomed plot for the onset and conclusion of each pressure.

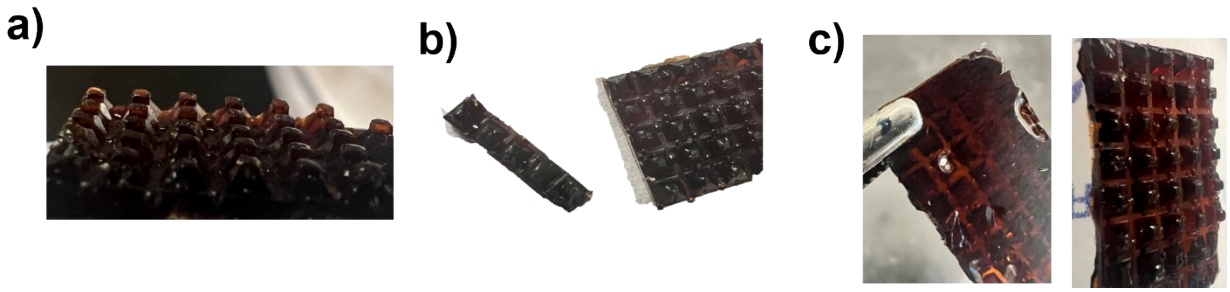

Figure S5. The MAP microstructure formed by inverse molding of PDMS- MAP- Ecoflex (a) pyramid structure, (b) cut, (c) after self-healing

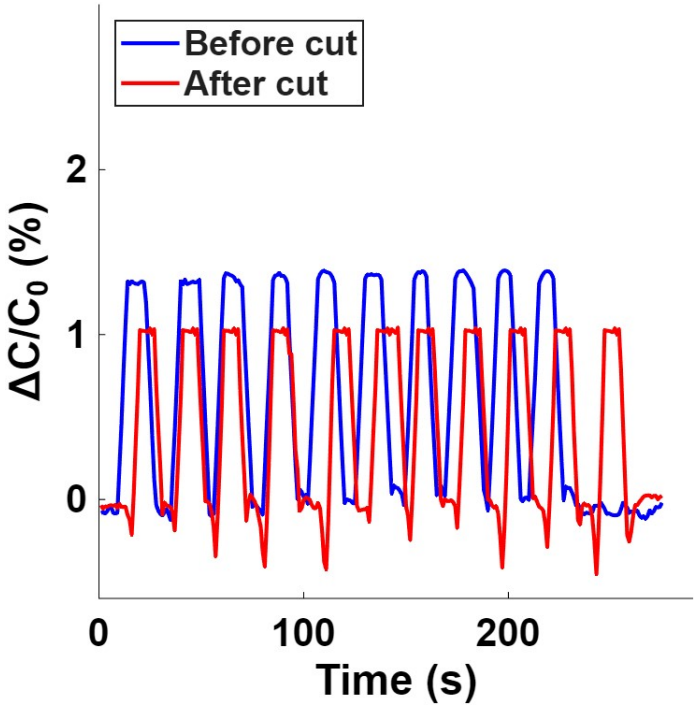

Figure S6. Relative change in capacitance for the self healing polymer with MAP microstructure before and after healing at less than 0.4 kPa.

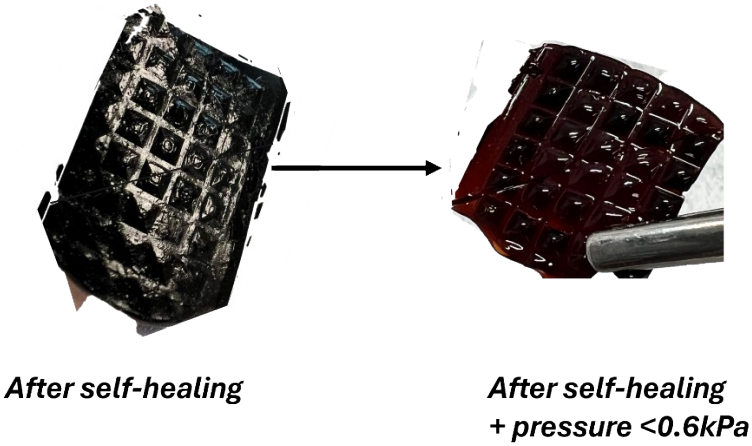

Figure S7. Microstructured self-healing dielectric materials after healing before pressure loading (left) and after healing and pressure below 0.6 kPa (right)