

Electronic Supplementary Information (ESI)

Intelligent Rubber with Tailored Properties for Self-healing and Shape Memory

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Movie S1. Shape-memory behavior of SPB-6% film. In the movie, a permanent spiral-like SPB-6% film was first deformed under heating at 60 °C, and was cooled to fix the temporary flat shape (not shown in the movie). Then the film was immersed in 60 °C hot water and recovered to its original spiral shape within several seconds.

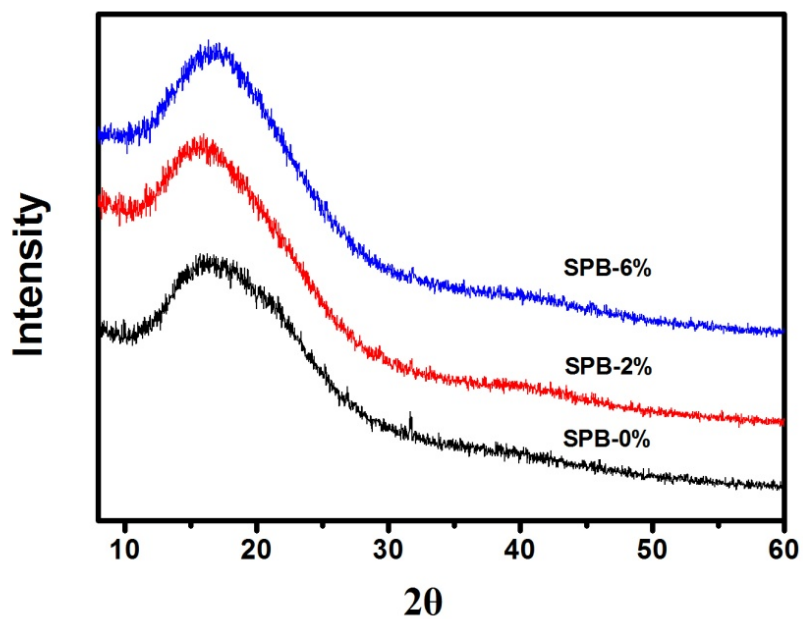


Fig. S1 WAXD patterns of the polymers SPB-0%, SPB-2% and SPB-6%.

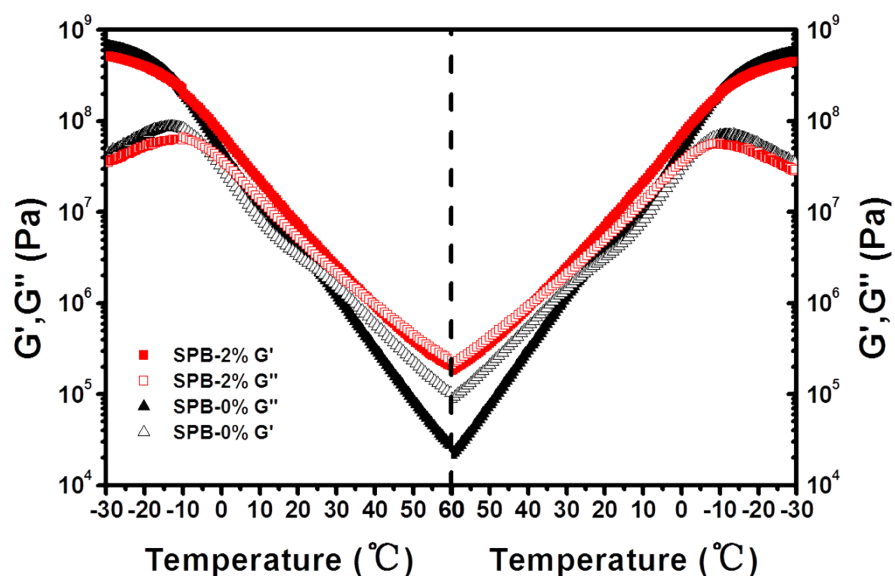


Fig. S2 G' and G'' of SPB-0% and SPB-2% during heating-cooling cycle between -30 and 60 °C, measured at $\omega = 10$ rad/s, $\gamma = 0.03$ % from -30 to -10 °C and $\gamma = 0.1$ % from -10 to 60 °C

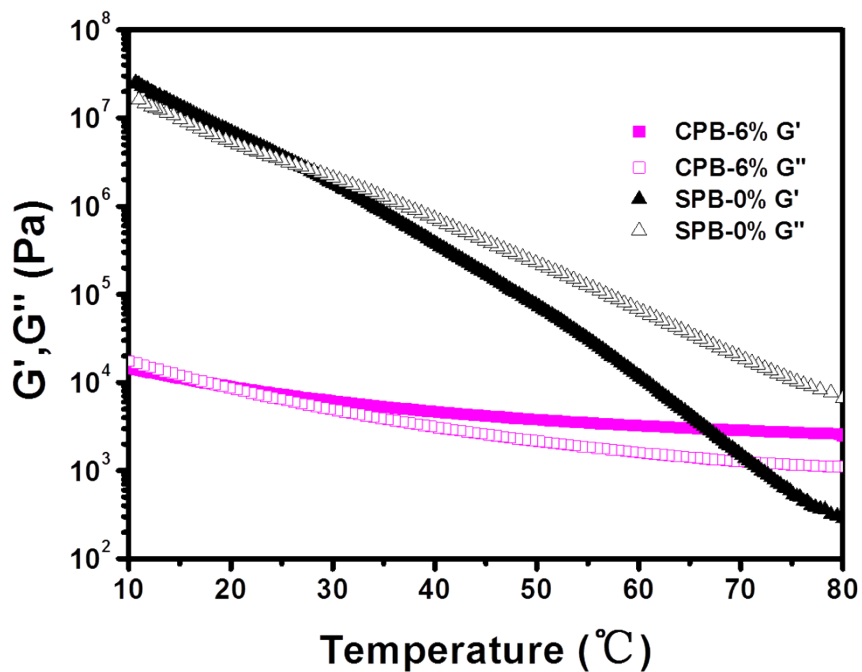


Fig. S3 Temperature sweep of covalently crosslinked sample CPB-6% and supramolecular polymer SPB-0% between 10 and 80 °C, measured at $\omega = 10$ rad/s , $\gamma = 1\%$ for CPB-6% and 0.1% for SPB-0%.

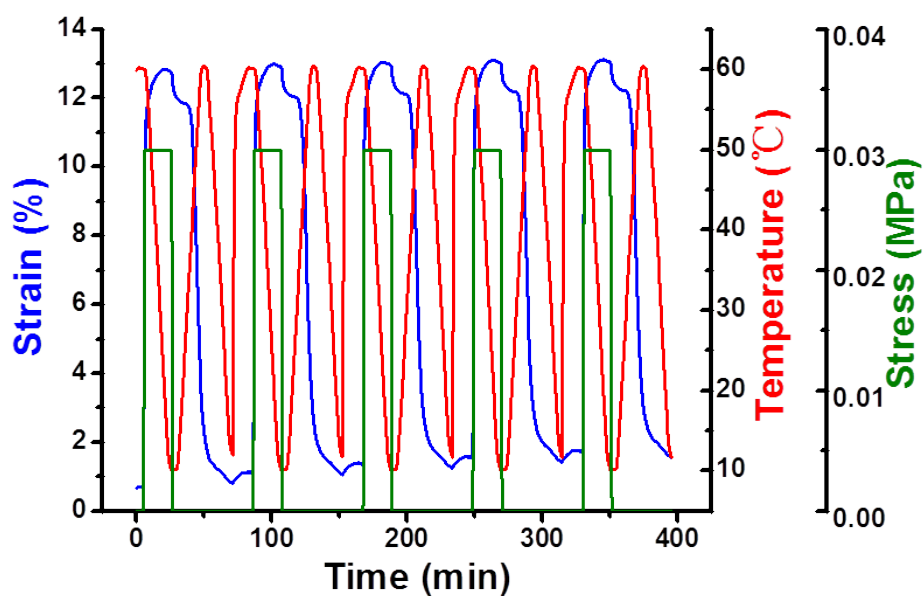


Fig. S4 Shape memory experiment for SPB-6% in five cycles.

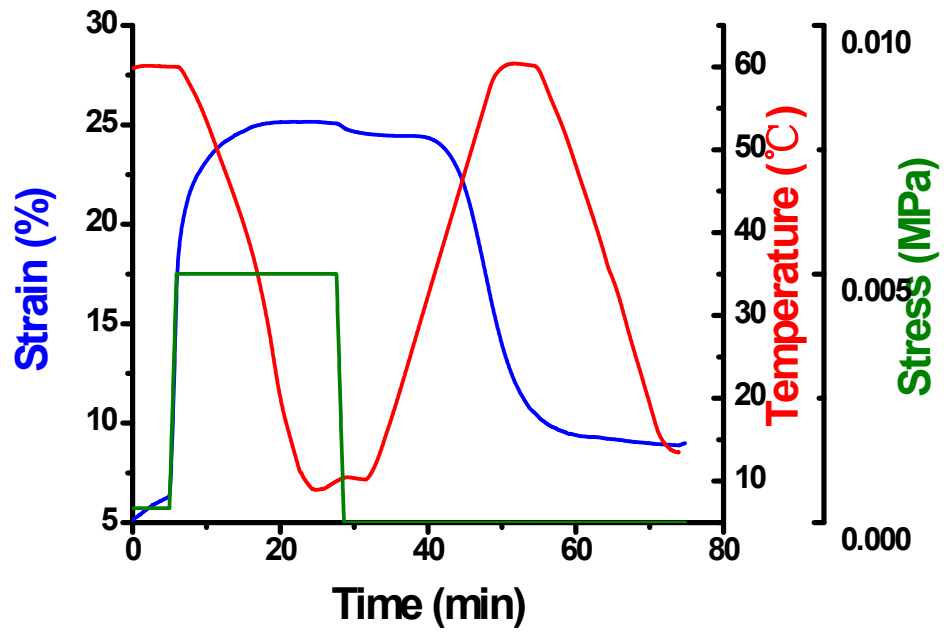


Fig. S5 Typical thermal one-way shape-memory cycle for SPB-2%.