Supplementary Material

Magnetic Vitrimer-Based Soft Robotics

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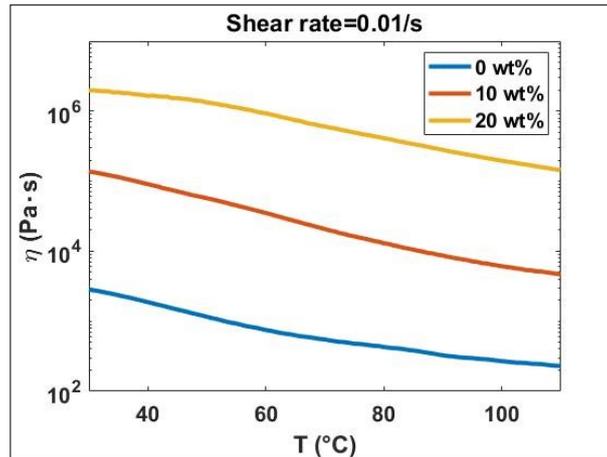
The PDF file includes:

Supplementary Figures S1-S6

Other supplementary material for this manuscript includes the following:
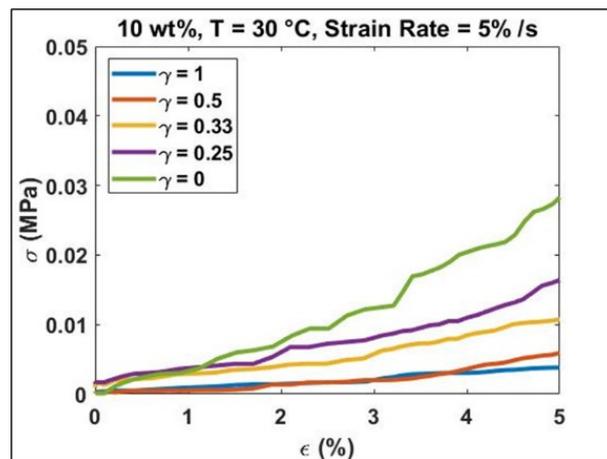
Video1_penetrate and shape morphing
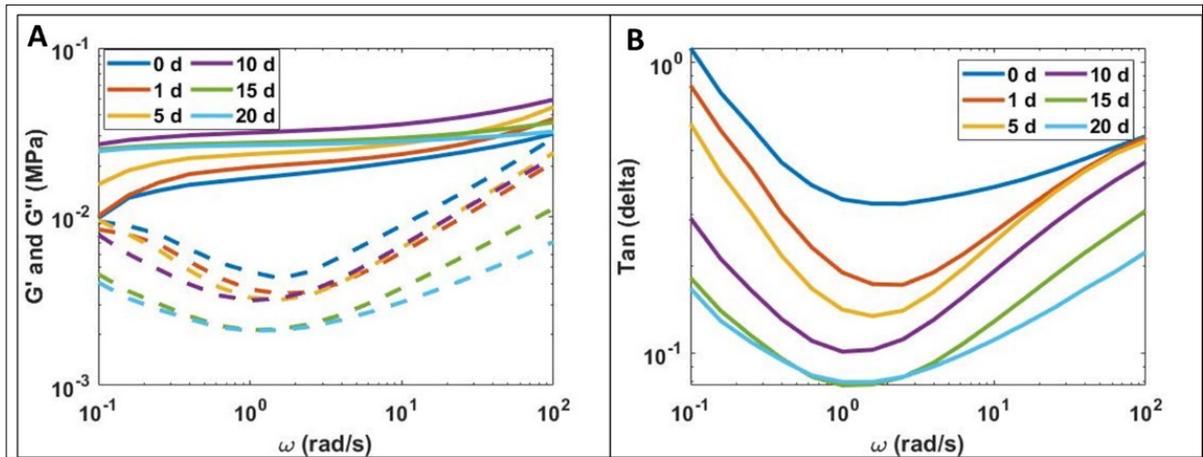
Video2_self heal

Video3_catch and release

Video4_weld-transfer-unweld

Figure S1. Viscosity (η) of MV with different magnetic particle loading as a function of temperature (T).


Figure S2. Zoom-in of Figure 3B, from which we calculated the secant modulus at 5% strain.

Figure S3. Viscoelastic properties of magnetic vitrimer stored for different period of times. A) Storage modulus (G', solid line), loss modulus (G'', dash line) and B) Tan(δ) of vitrimer varied as a function of angular frequency (ω) from 0.1 to 100 rad/s at a strain level of 1%, T = 30°C.

Figure S4. Dimensions of a spherical MV before and after passing through a narrow opening. Scale bar, 2 mm.
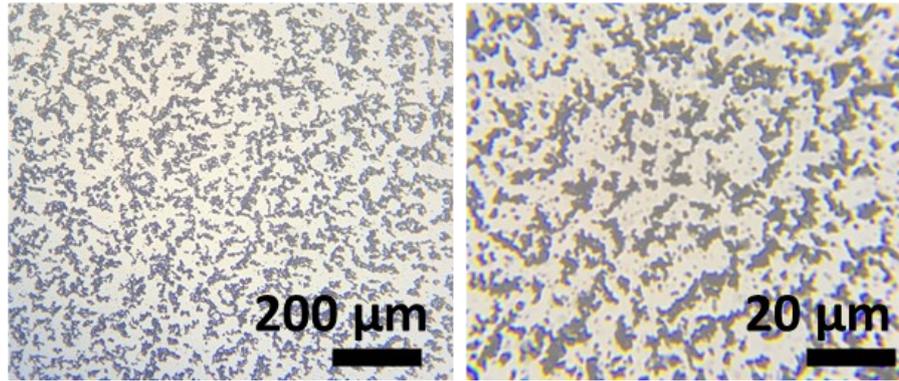
Figure S5. Microscopic images of MV mixed 10 wt% iron oxide particles. The images were taken from OMAX 40X-2000X optical microscope. The images show homogenous distribution of the iron oxide particles within the vitrimer polymer matrix.
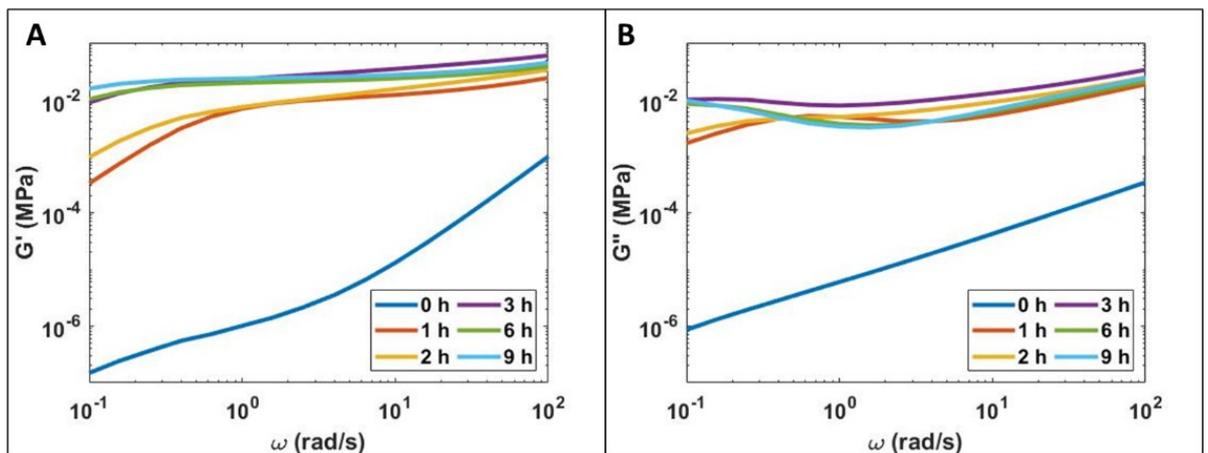
Figure S6. Rheological properties of magnetic vitrimer for different period of times of crosslinking. A) Storage modulus (G') and B) loss modulus (G'') of vitrimer varied as a function of angular frequency (ω) from 0.1 to 100 rad/s at a strain level of 1%, T = 30°C.