

Supporting Information

Alternating Poly(lactic acid)/Poly(ethylene-*co*-butylene) Supramolecular Multiblock Copolymers With Tunable Shape Memory and Self-Healing Property

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Measurement of transmission electron microscopy

Transmission electron microscopy (TEM) images were acquired on a JEM-1230 TEM instrument (JEOL, Tokyo, Japan) operated at an accelerating voltage of 80 kV. The sample was cryo-microtomed at $-90\text{ }^{\circ}\text{C}$ on a Leica EM UC7 ultramicrotome (Leica, Germany) and exposed to OsO_4 vapors for 1 h at room temperature before measurement.

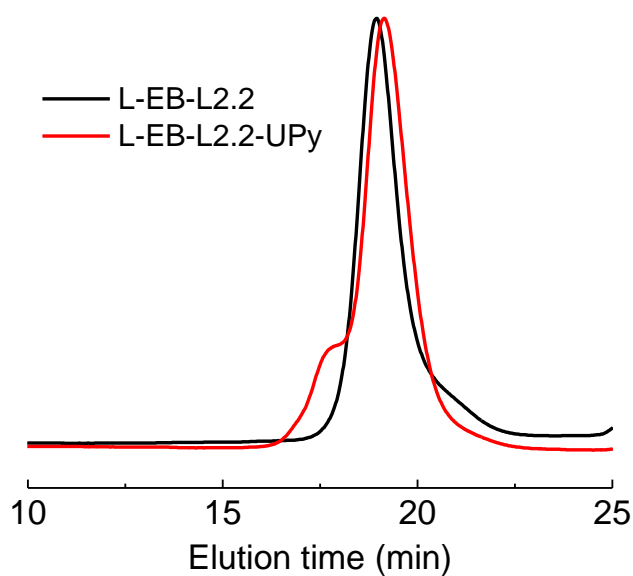


Fig. S1 GPC traces of PLA-PEB-PLA triblock oligomer and its UPy-bonded SMP.

L-EB-L2.2: $M_n = 10.3\text{ kg/mol}$, PDI = 1.15; L-EB-L2.2-UPy: $M_n = 11.7\text{ kg/mol}$, PDI = 1.22.



L-EB-L0.6



L-EB-L0.6-UPy



L-EB-L1.4



L-EB-L1.4-UPy



DL-EB-DL2.3



DL-EB-DL2.3-UPy

Fig. S2 Representative images of PLA-PEB-PLA triblock oligomers and their UPy-bonded SMPs after solvent casting.

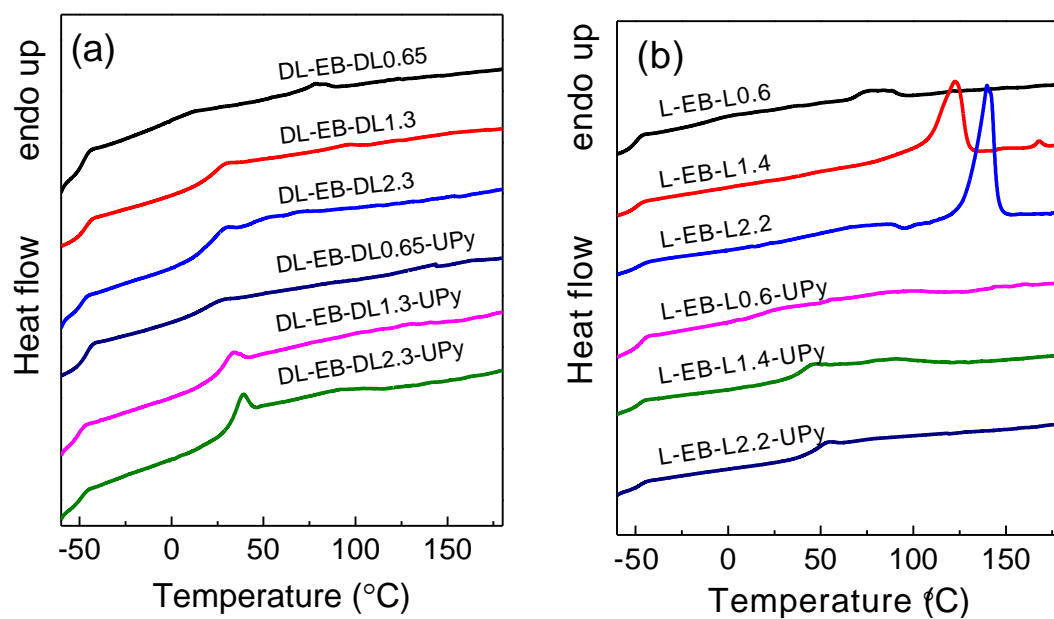


Fig. S3 DSC heating curves of solvent-cast PLA-PEB-PLA triblock oligomers and their UPy-bonded SMPs with (a) atactic PDLLA and (b) isotactic PLLA blocks.

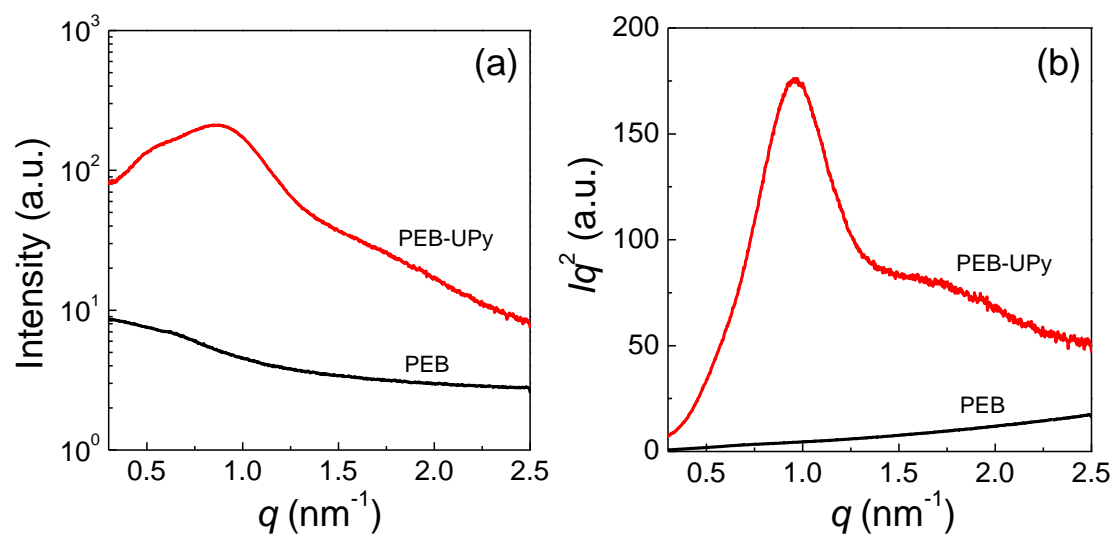


Fig. S4 (a) Original and (b) Lorenz-corrected SAXS profiles of PEB and its UPy-bonded SMP.

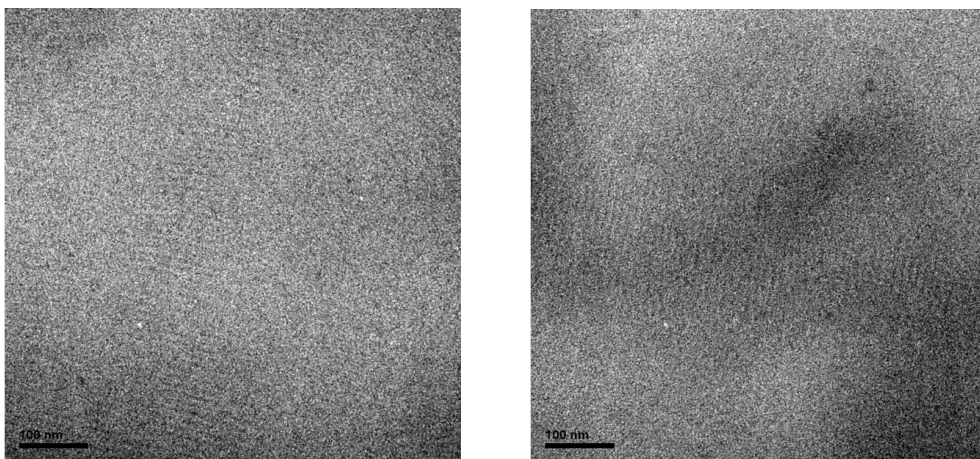


Fig. S5: TEM photographs of L-EB-L2.2-UPy SMP.

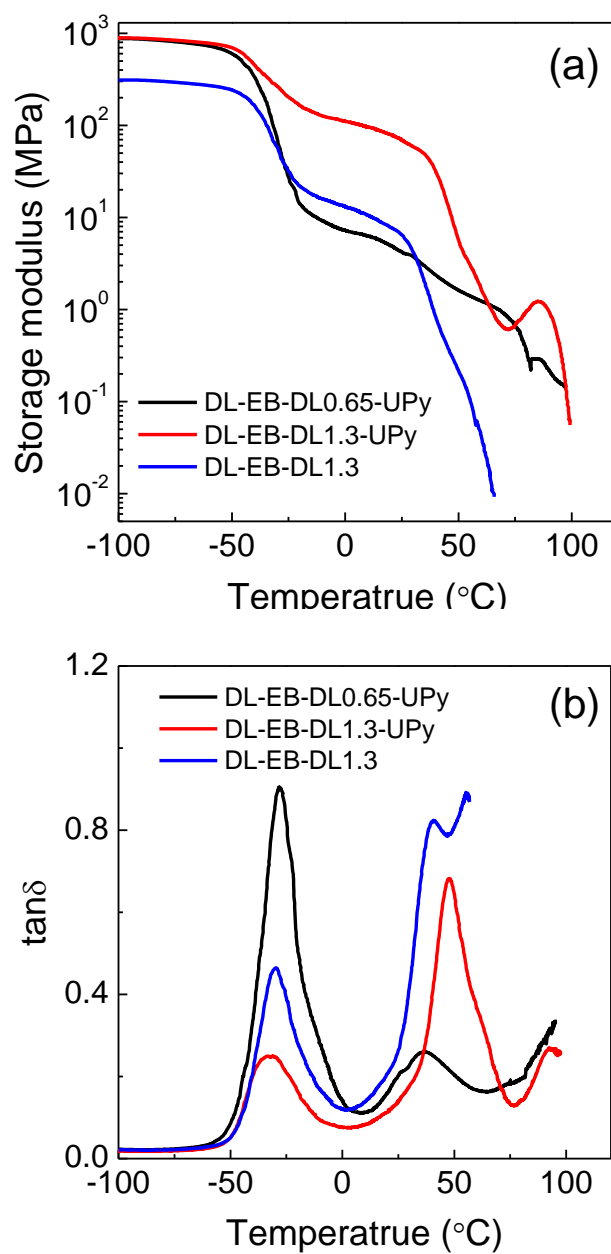


Fig. S6 Representative DMA curves of (a) storage modulus and (b) $\tan\delta$ as a function of temperature for PLA-PEB-PLA triblock oligomers and their UPy-bonded SMPs.

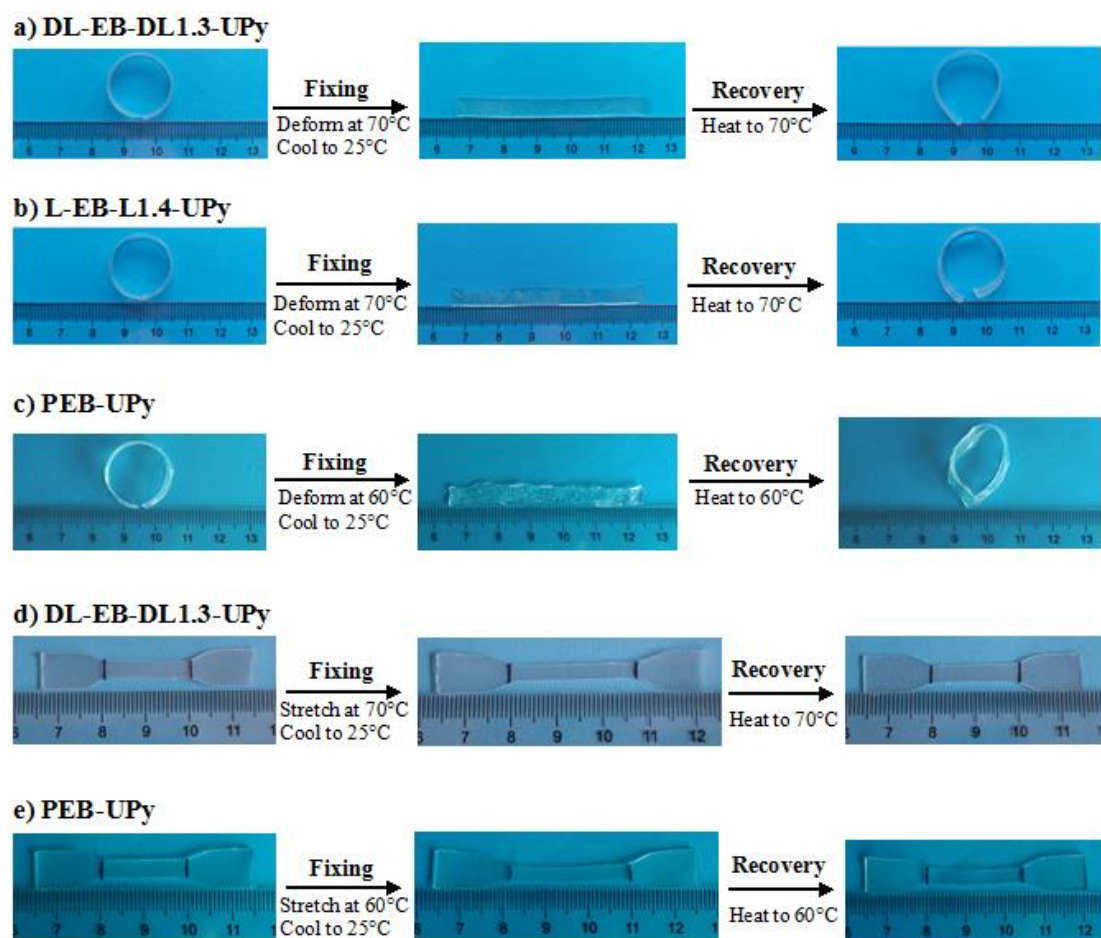
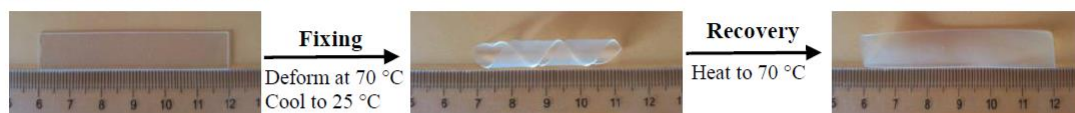
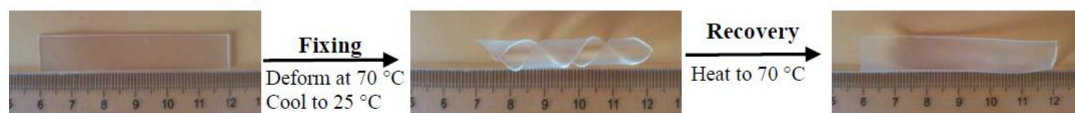


Fig. S7 Shape memory properties of UPy-bonded PLA-PEB-PLA and PEB SMPs.

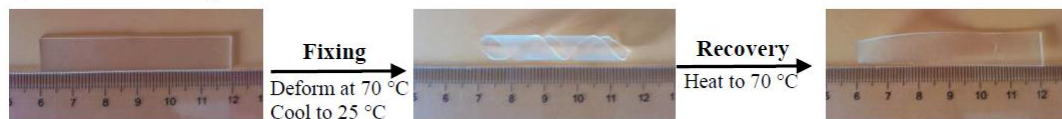
a) DL-EB-DL1.3-UPy



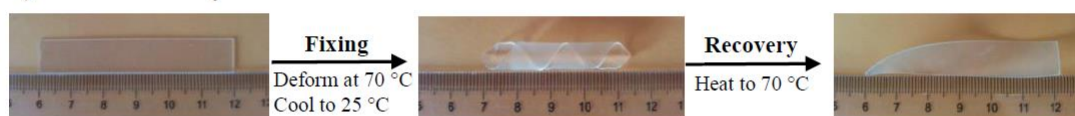
b) DL-EB-DL2.3-UPy



c) L-EB-L0.6-UPy



d) L-EB-L1.4-UPy



e) L-EB-L2.2-UPy

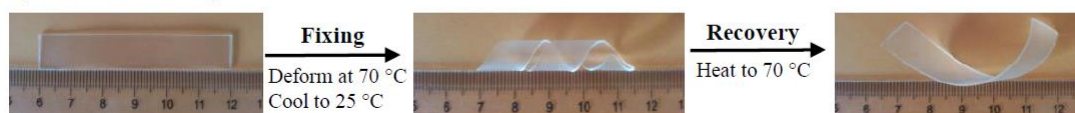


Fig. S8 Shape memory properties of UPy-bonded PLA-PEB-PLA SMPs.

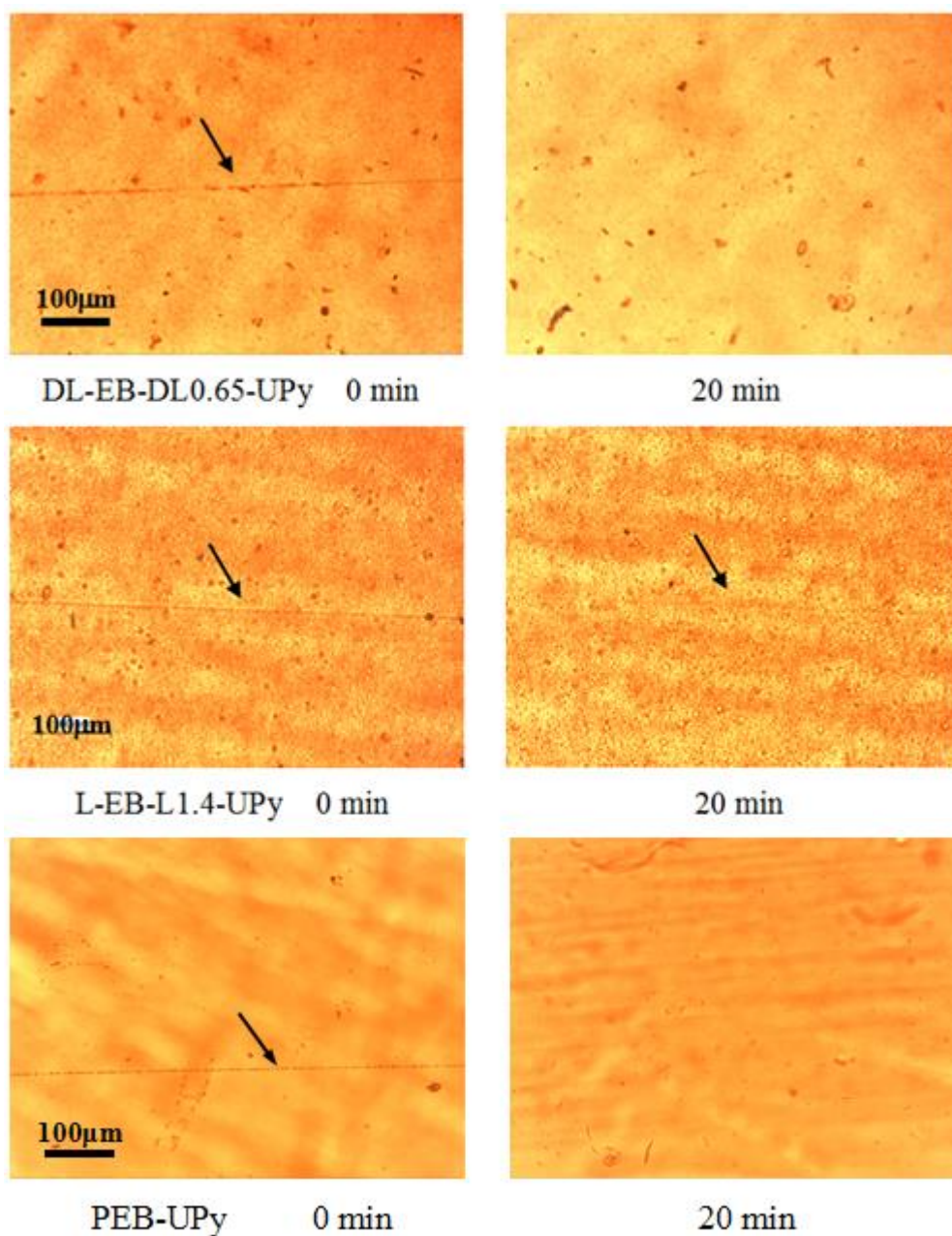


Fig. S9 Optical microscope images of deliberately damaged samples for UPy-bonded PLA-PEB-PLA and PEB after exposing UV light for 0 and 20 min.

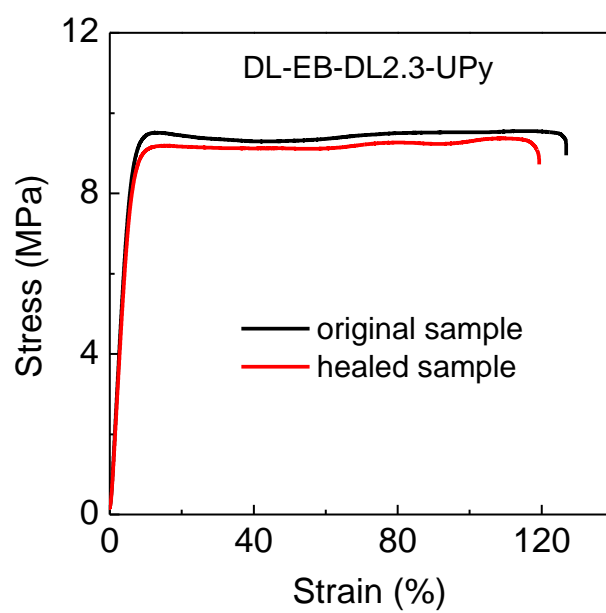


Fig. S10 Representative stress-strain curves of original and healed DL-EB-DL2.3-UPy SMP.