

Hyperbranched Polymer with Dynamic Thiol-Aldehyde Crosslinking and its Application as a Self-Healable Bioadhesive

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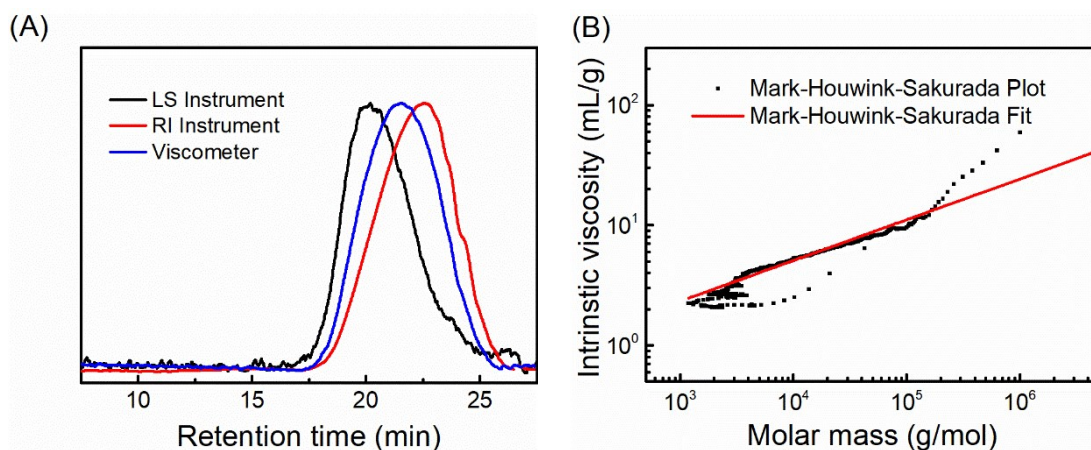


Figure S1: (A) The molecular weight distribution curves of P1 recorded by light scattering (LS) detector, refractive index (RI) and viscometer, respectively. (B) The Mark-Houwink-Sakurada plot and fit line of P1.

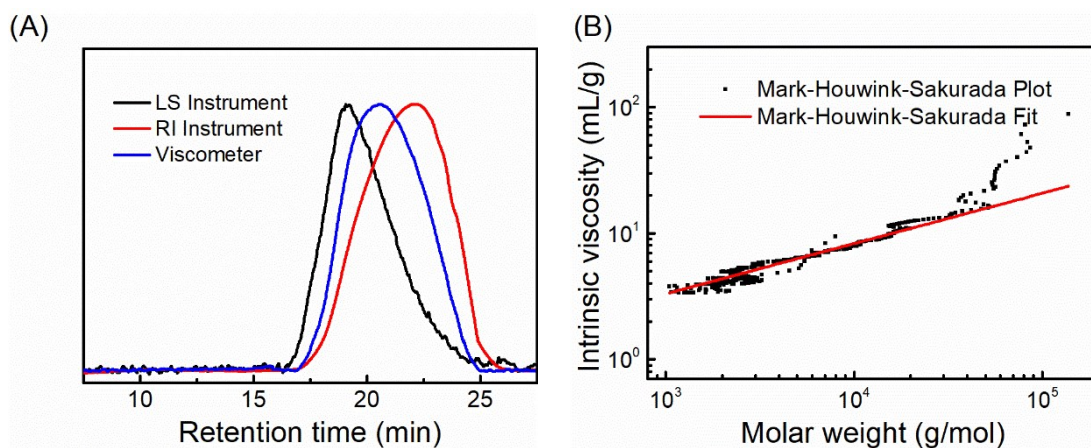


Figure S2: (A) The molecular weight distribution curves of P2 recorded by light scattering (LS) detector, refractive index (RI) and viscometer, respectively. (B) The Mark-Houwink-Sakurada plot and fit line of P2.

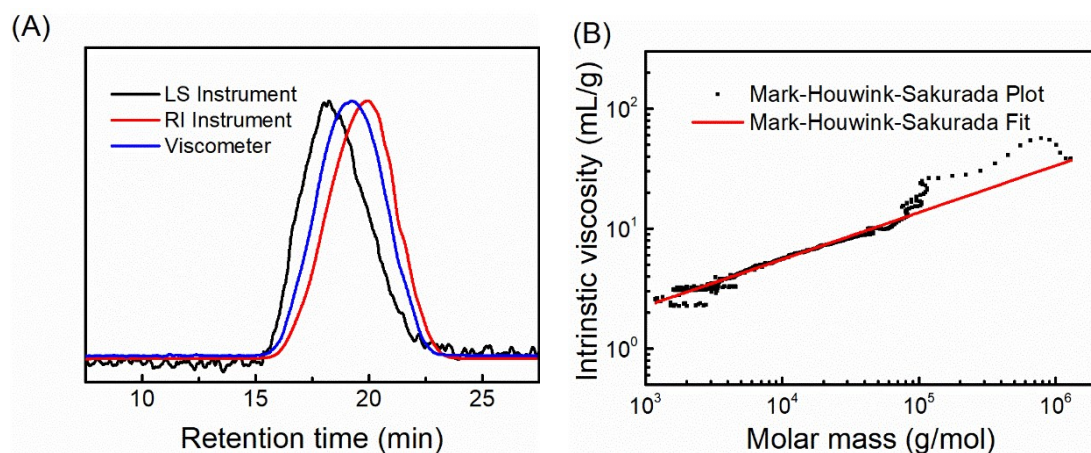


Figure S3: (A) The molecular weight distribution curves of P3 recorded by light scattering (LS) detector, refractive index (RI) and viscometer, respectively. (B) The

Mark-Houwink-Sakurada plot and fit line of P3.

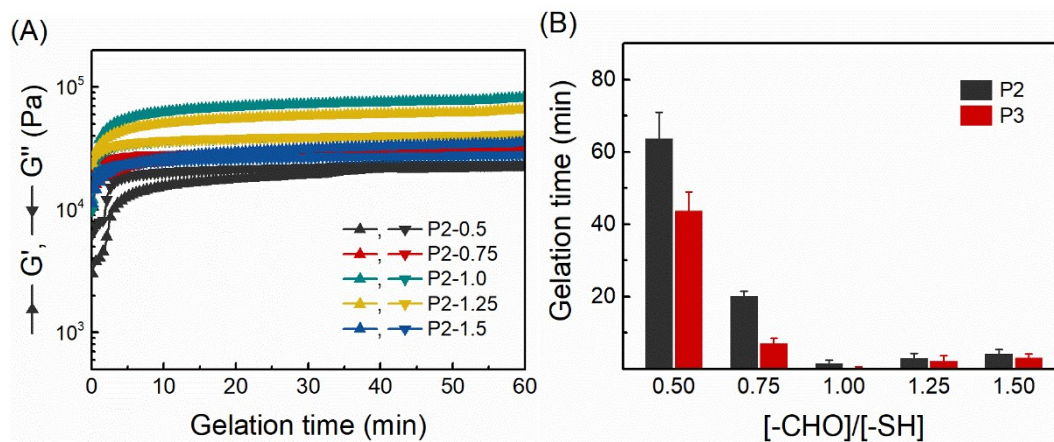


Figure S4: (A) Real time rheology profile of P2 adhesive with different PEGCHO content for the measurement of gelation time. (B) The summary of gelation time of P2 and P3 adhesive. P1 adhesive cannot reached gelation point within 2 h.

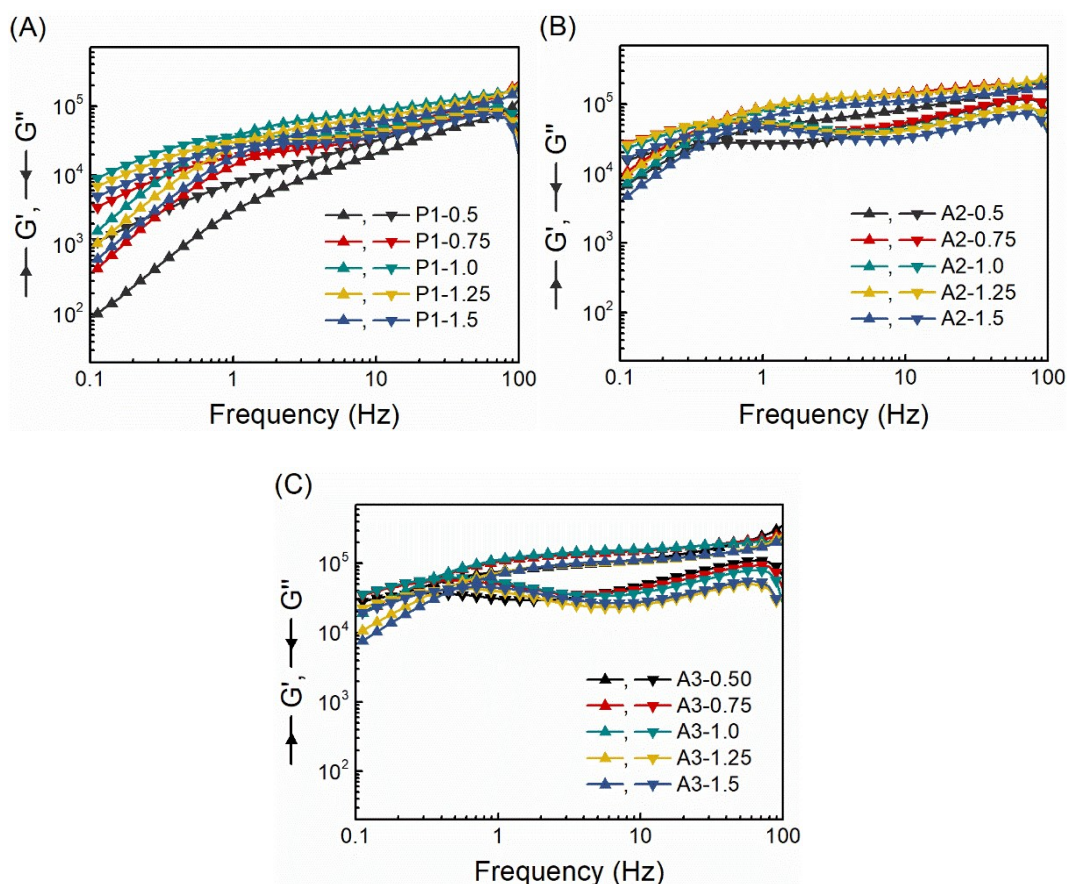


Figure S5: The frequency-sweep profile of HBPTE-PEGCHO adhesives with a curing time of 1 day at a constant strain of 1%. (A) P1 adhesive (B) P2 adhesive (C) P3 adhesive.

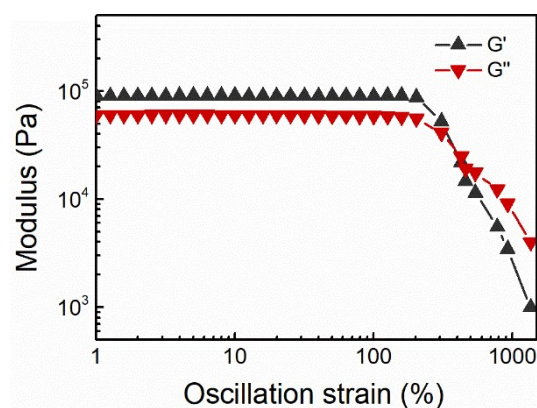


Figure S6: The strain amplitude sweep of P2-1.0 with a fixed frequency of 1 Hz and strain of 1% at 25°C.

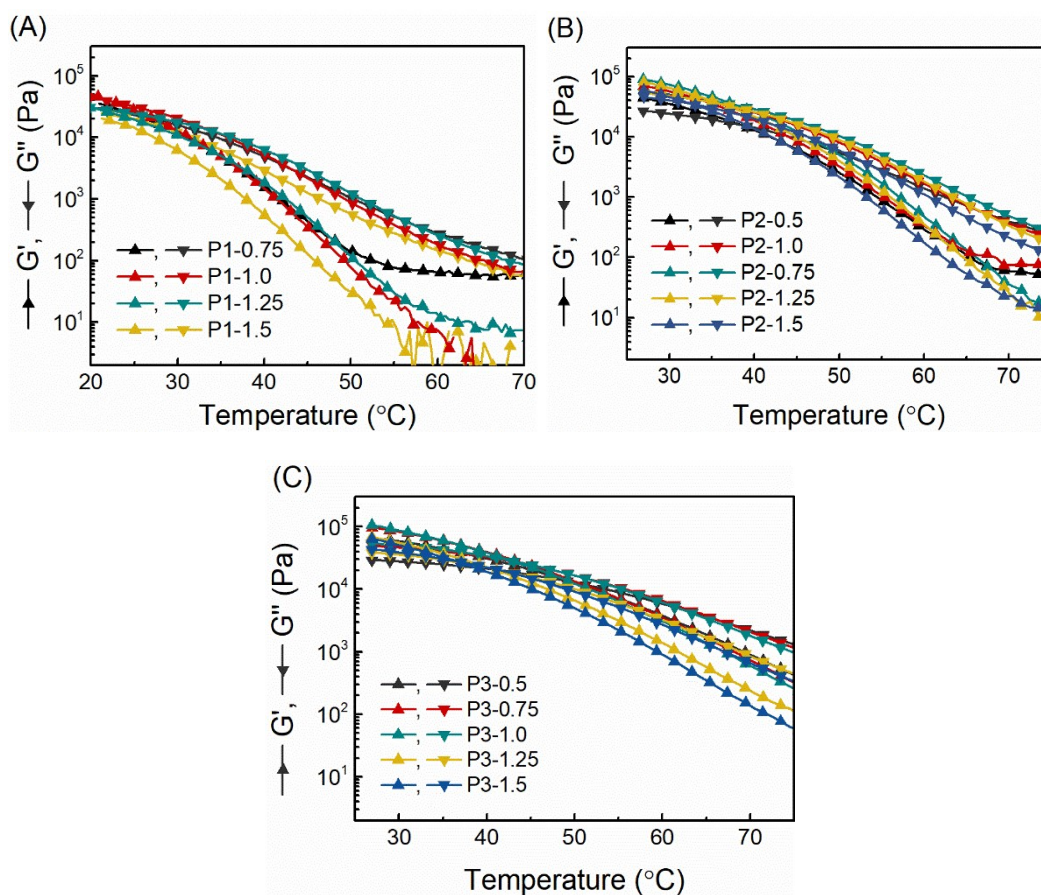


Figure S7: The temperature-sweep profile of HBPTE-PEGCHO adhesives at a fixed strain of 1% and a fixed frequency of 1Hz. (A) P1 adhesive (B) P2 adhesive (C) P3 adhesive.

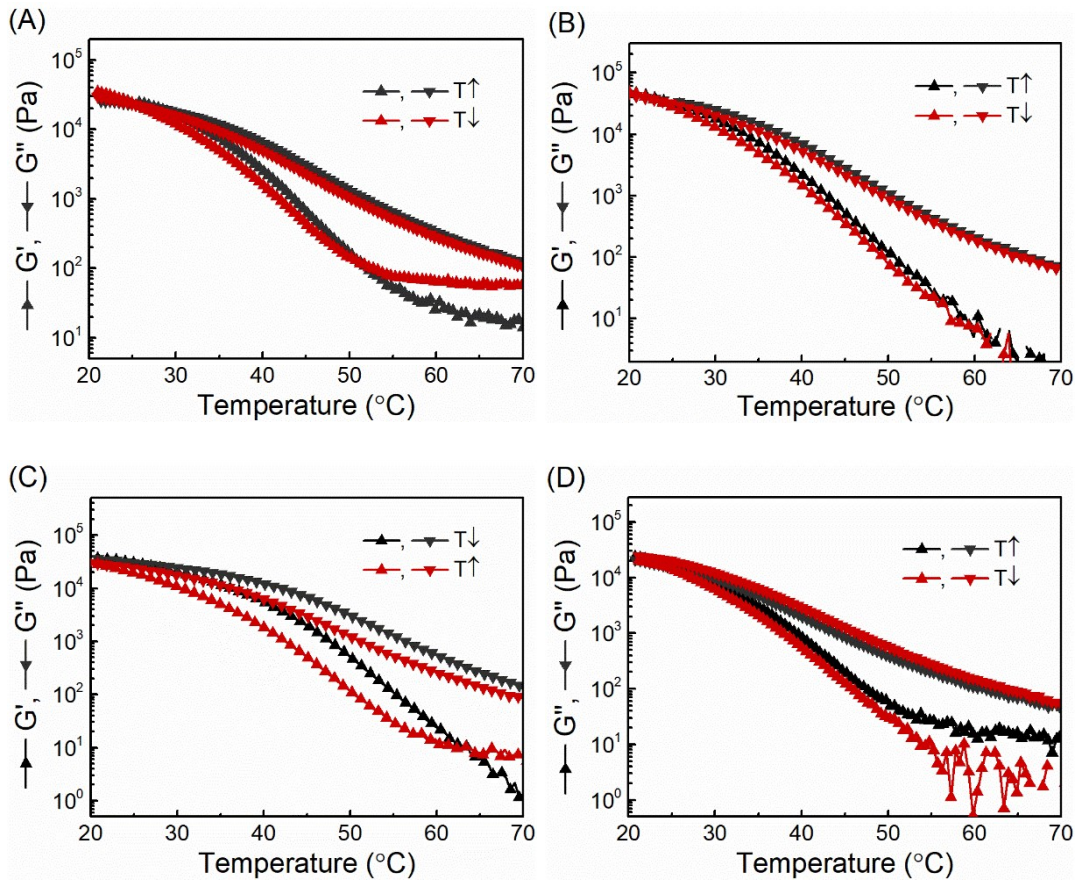


Figure S8: The temperature sweep rheology profile of P1 adhesive at a fixed strain of 1% and a fixed frequency of 1Hz. (A) P1-0.75, (B) P1-1.0, (C) P1-1.25 and (D) P1-1.5.

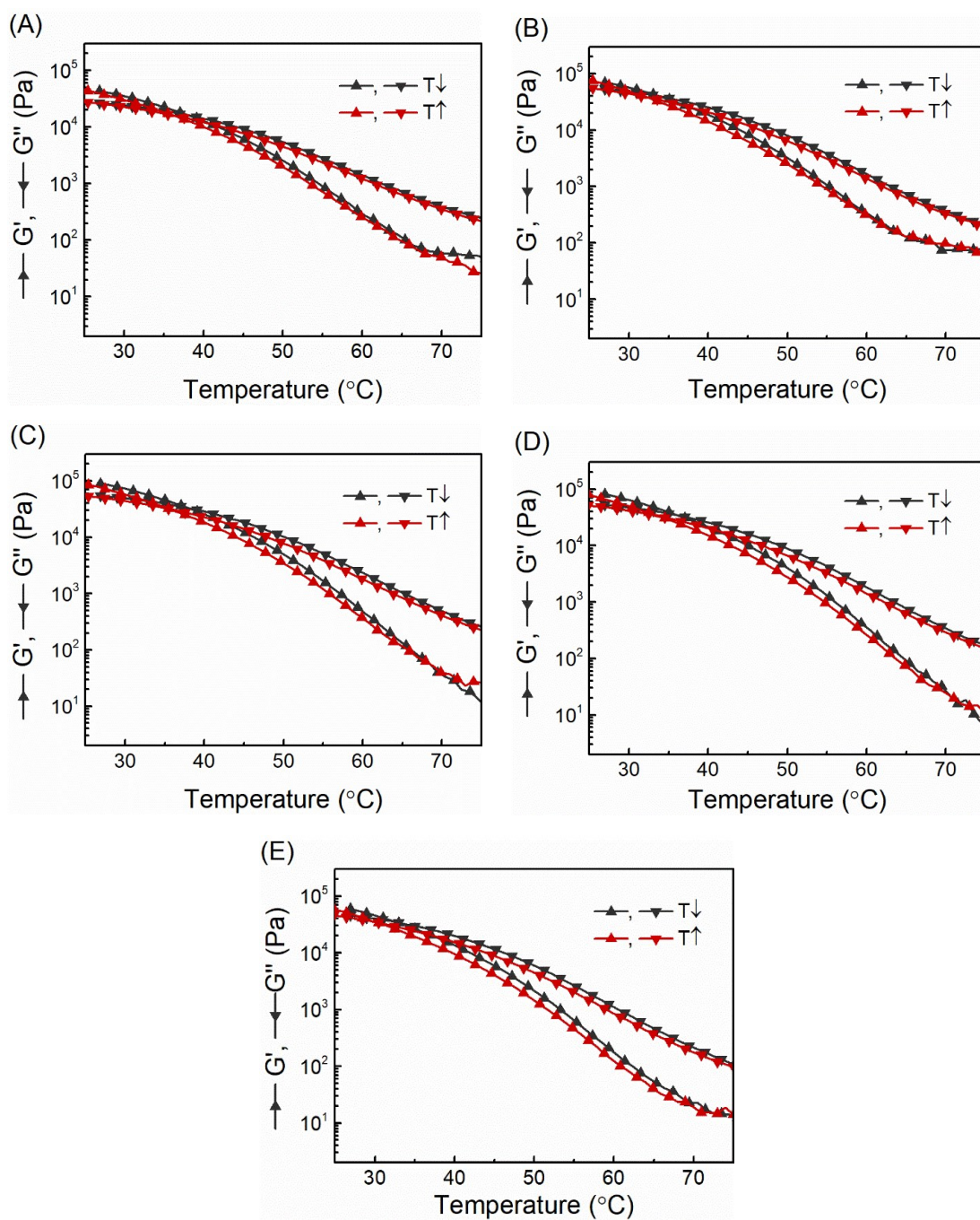


Figure S9: The temperature sweep rheology profile of P2 adhesive at a fixed strain of 1% and a fixed frequency of 1Hz. (A) P2-0.5, (B) P2-0.75, (C) P2-1.0, (D) P2-1.25 and (E) P2-1.5.

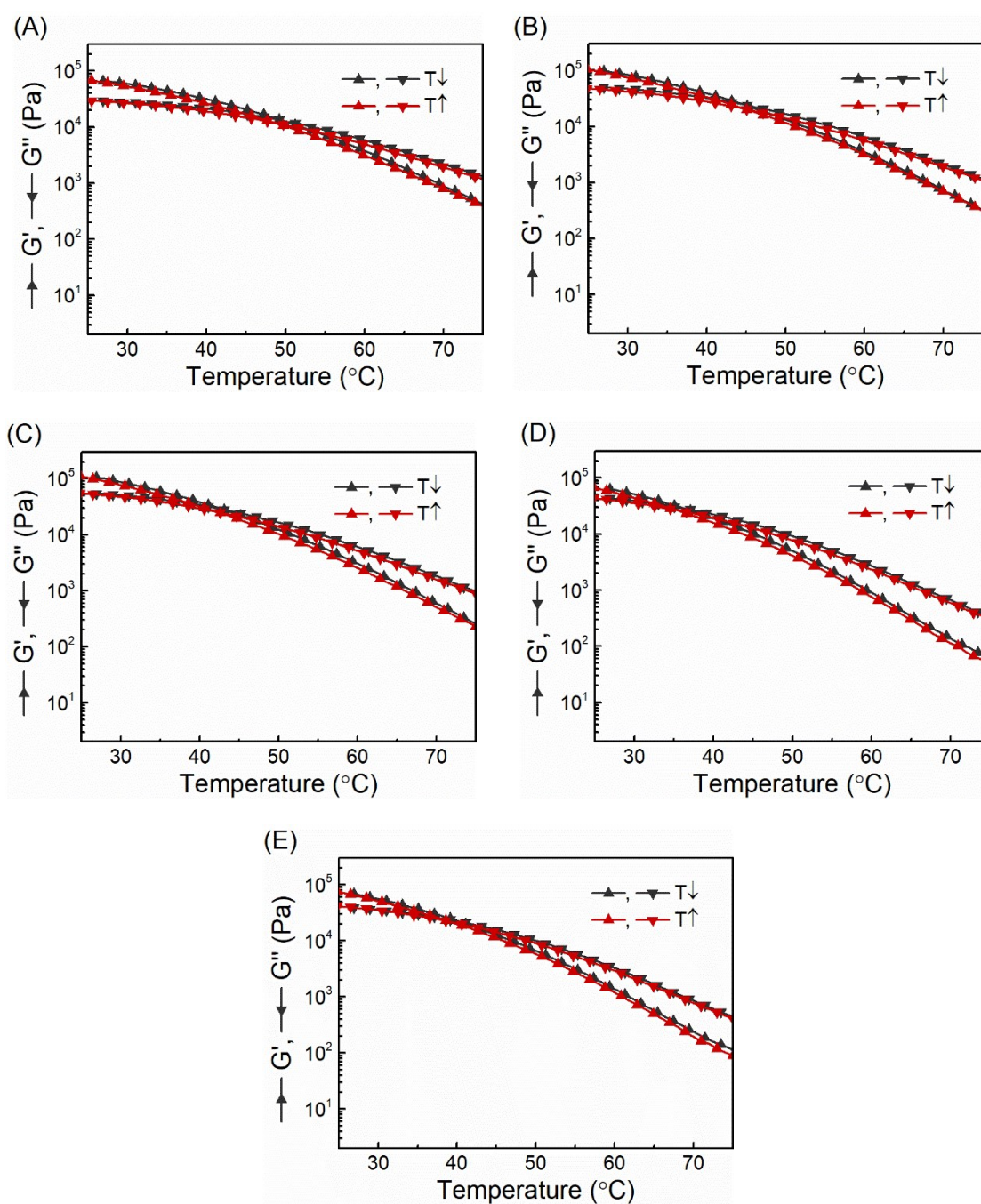


Figure S10: The temperature sweep rheology profile of P3 adhesive at a fixed strain of 1% and a fixed frequency of 1Hz. (A) P3-0.5, (B) P3-0.75, (C) P3-1.0, (D) P3-1.25 and (E) P3-1.5.

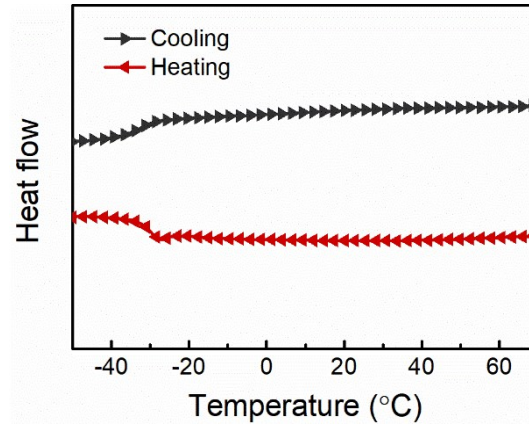


Figure S11: The DSC curves of P2-1.0 under heating and cooling process.

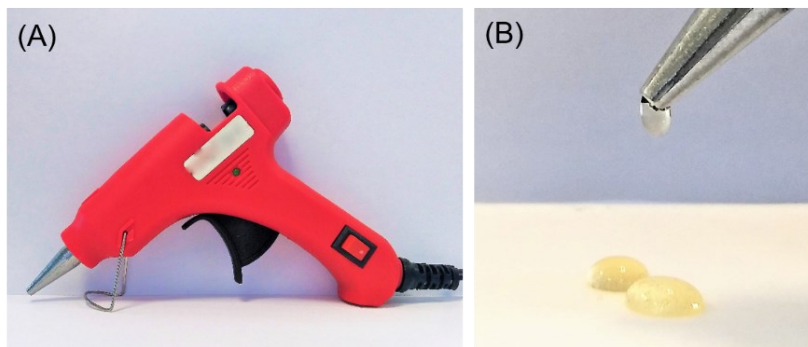


Figure S12: The photo image of hot-melt glue applicator (A) and injection of P2-1 adhesive.

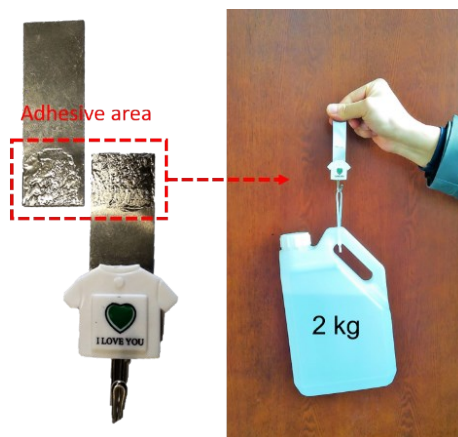


Figure S13: The P2-1 bonded stainless steel with a 2 cm × 2 cm adhesion area can lift a 2 kg weight.

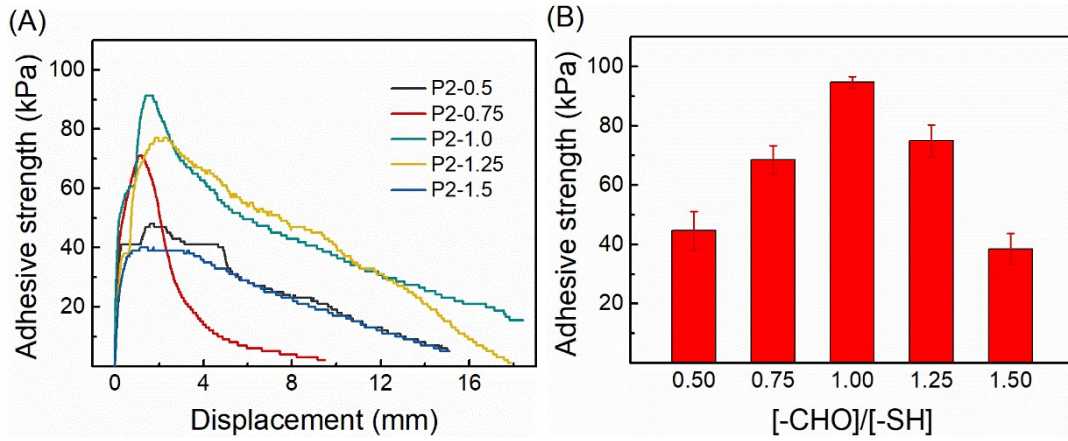


Figure S14: (A) Tensile-displacement curves and (B) adhesive strengths of P2 adhesive with varying PEGCHO content on stainless steel.

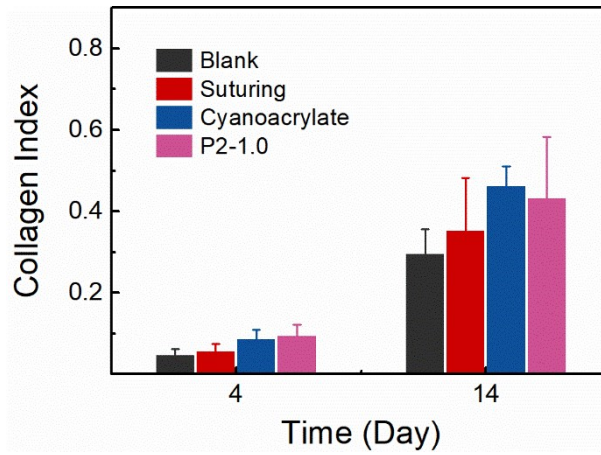


Figure S15: The relative collagen content of wounds treated with PBS (Blank), suture, cyanoacrylate glue and P2-1.0 during the wound healing process for 4 d and 14 d.