Electronic Supplementary Material (ESI) for Polymer Chemistry.

Ultrafast Diffusion-Controlled Thiol-Ene Based Crosslinking of Silicone Elastomers with Tailored Mechanical Properties for Biomedical Applications

Electronic Supplementary Information

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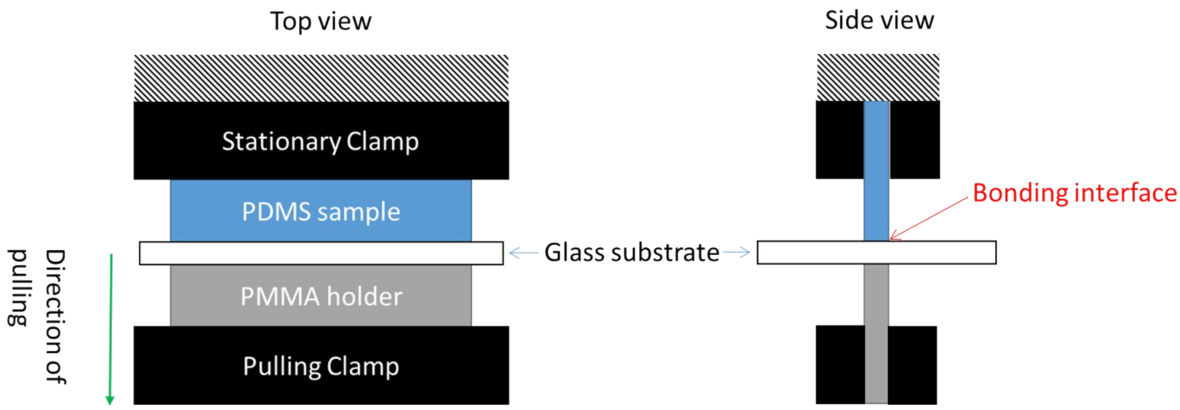
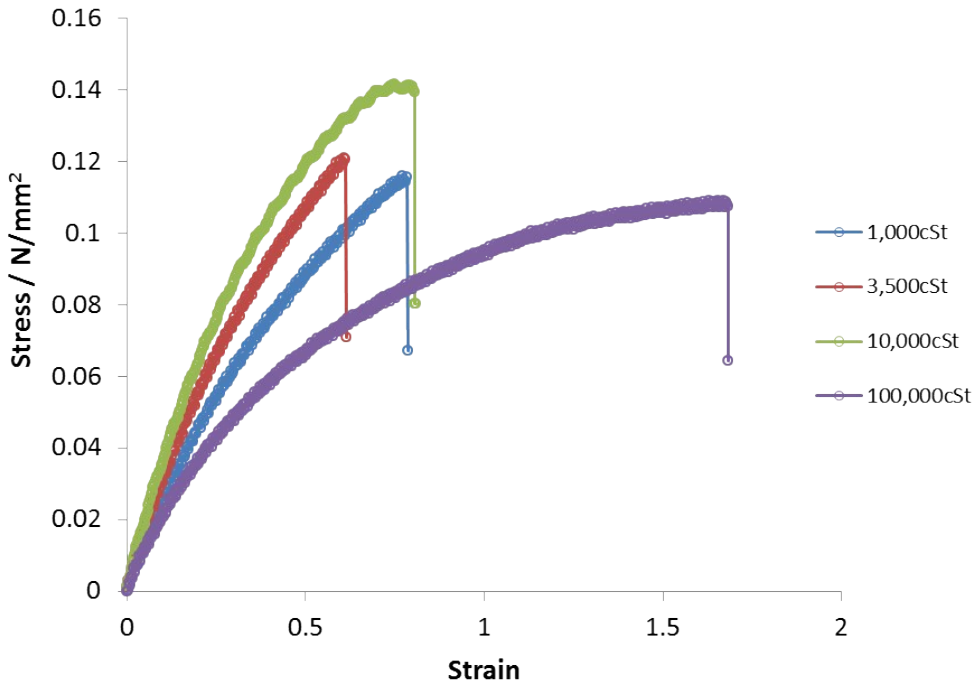
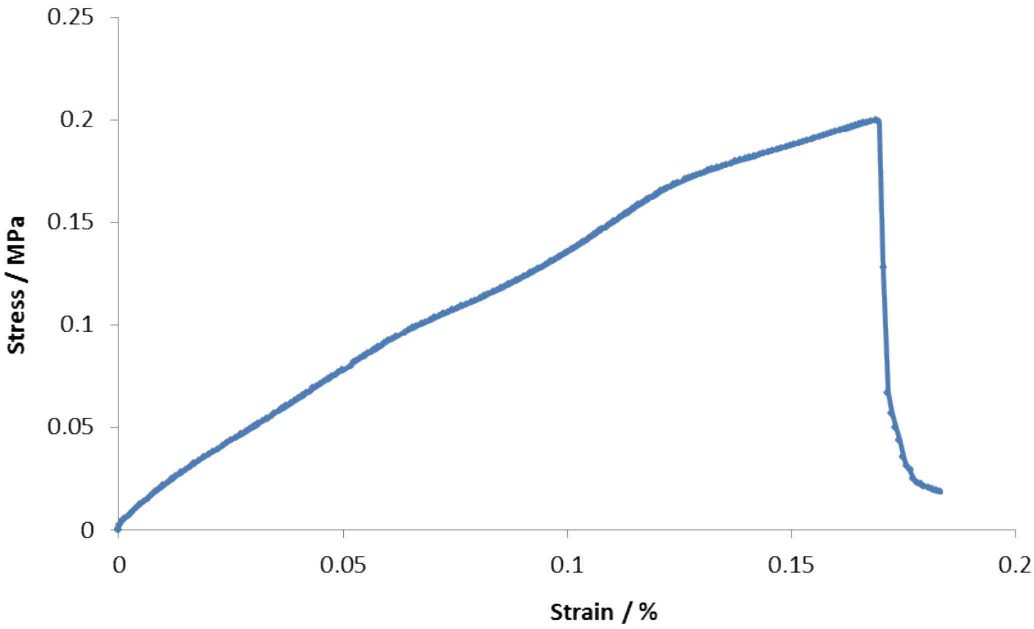


Supplementary Figure S1. The schematic presentation of the clamping of PDMS-Glass bonding structure on the Deben Microtester 200N tensile rig in SEM chamber. A small piece of PMMA was glued to one side of glass slide to allow the setup to be clamped in the rig.



Supplementary Figure S2. Stress–strain curves obtained from the tensile mechanical measurement using an Instron frame equipped with a 5 N load cell. The measurement was conducted at room temperature at a constant strain rate of 1 mm/mm/minute. The UV curable resins were formulated from different viscosities of cross-linker (see legends), with alkene:thiol ratio of 1:2, and DMPA as photoinitiator (thiol:photoinitiator molar ratio of 1:0.1)



Supplementary Figure S3. Stress –strain curve obtained from the Deben Microtester during the tensile test. The cross-linked PDMS substrate was cured at 94mW/cm^2 from the resin formulated from alkene:thiol ratio of 1:2 and vinyl-PDMS of 10,000cSt. Tensile tests were performed at a rate of 1 mm/min *in situ* with SEM microscopy.

See file: SupplementaryVideo1.mp4

Supplementary Video 1. SEM imaging of the cohesive failure of a glass/thiol-ene PDMS interface. A micro-patterned PDMS sample was bonded to an acrylate-functionalised glass slide and mounted in a tensile-testing set up. SEM imaging was carried out whilst applying a stretching rate of 1 mm/min. The speed of the video has been increased 8 times compared to the real stretching rate.