

## Supporting Information:

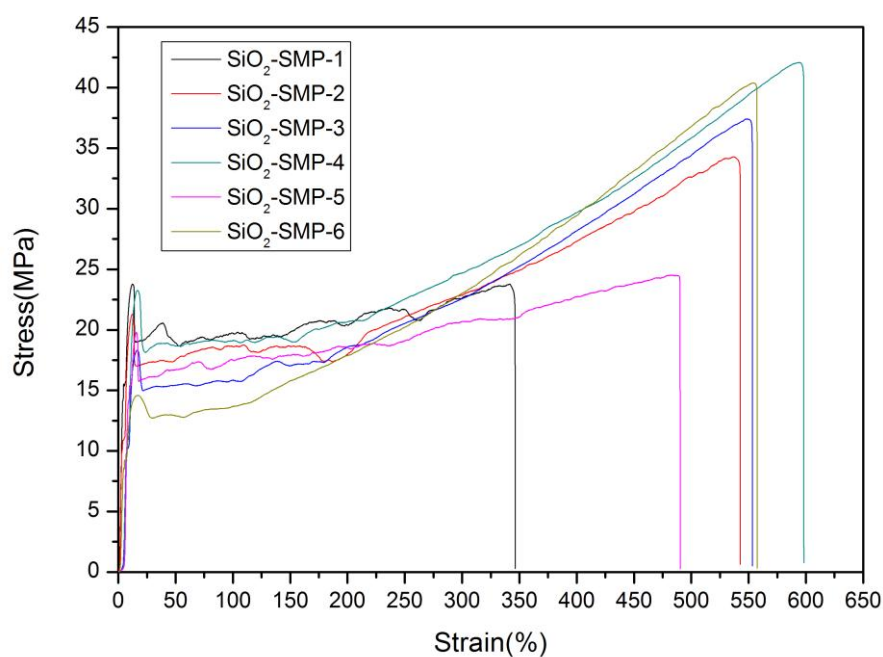


Fig.S1 Stress-strain curves of polymer network  $\text{SiO}_2$ -SMP with various compositions.

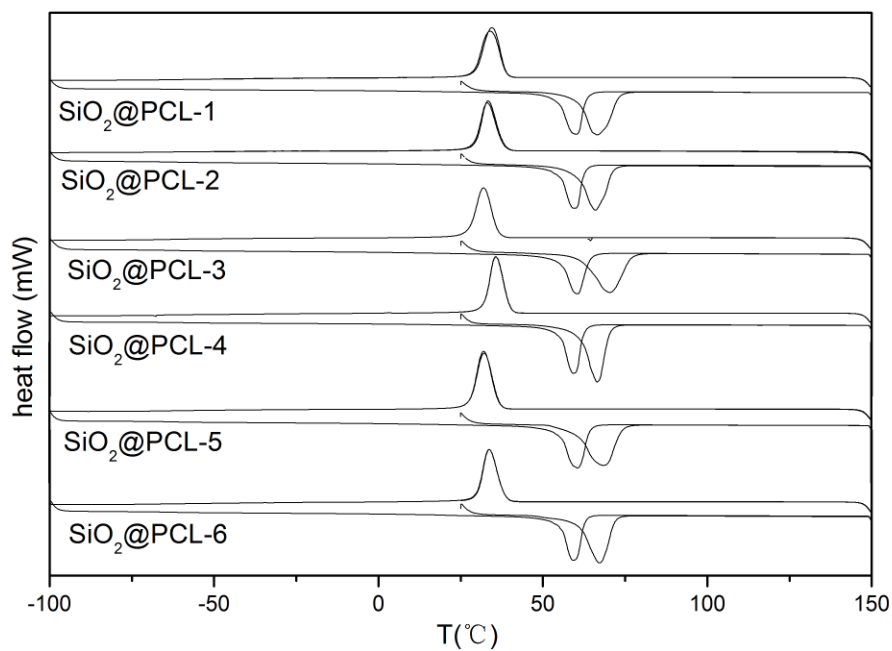


Fig.S2 DSC curves both first and second heating and cooling of  $\text{SiO}_2$ @PCL.

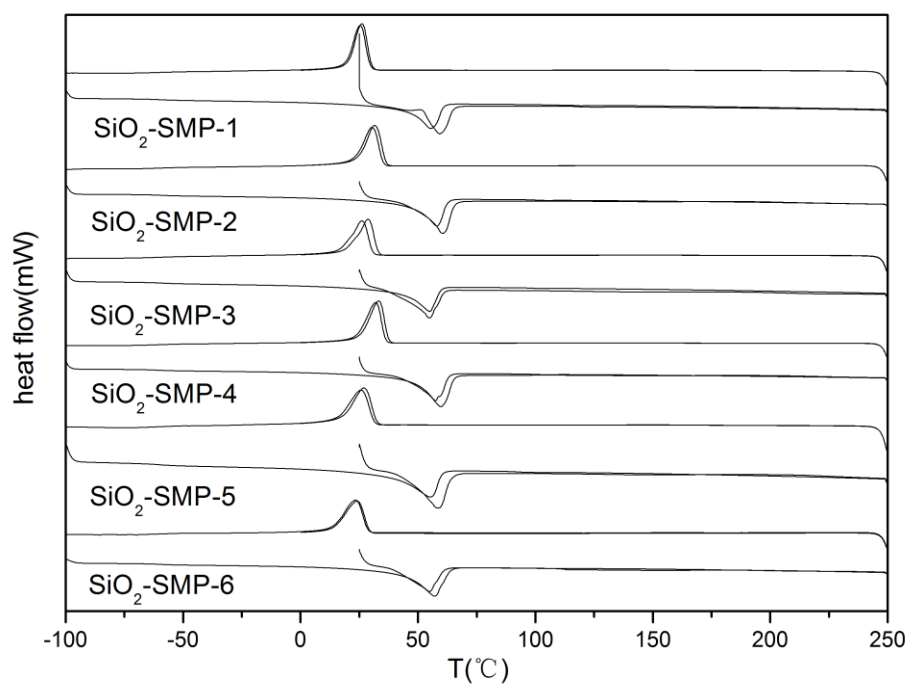


Fig.S3 DSC curves both first and second heating and cooling of SiO<sub>2</sub>-SMP.

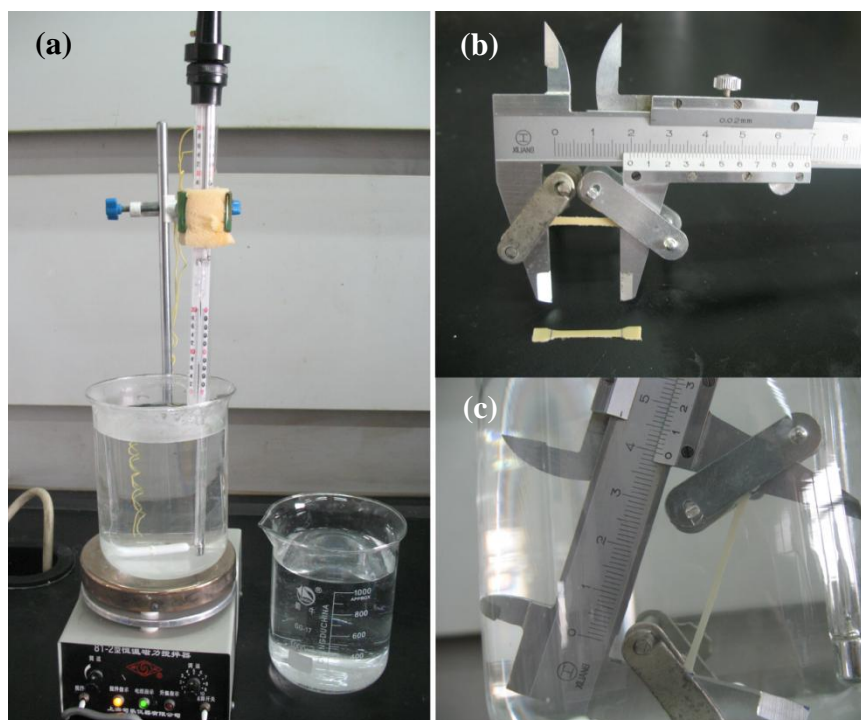


Fig. S4 The photographs of homemade equipment for cycle thermal tensile test;  
(a) two temperature water bath; (b) the clamp for elongate and measure the elongation;  
(c) the sample in strain in the water bath.

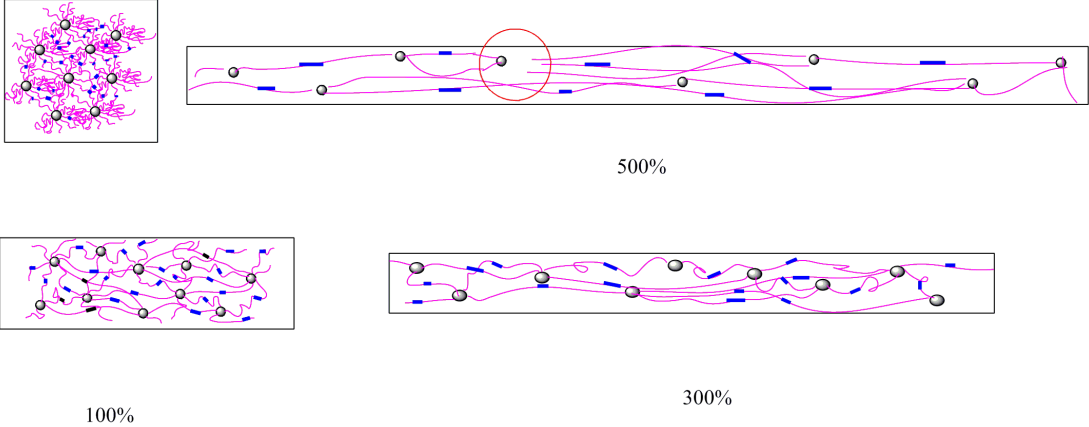


Fig. S5 Schematic representation of the tensile mechanism.