Electronic Supplementary Material (ESI) for RSC Advances.

A Novel Thermoplastic Shape Memory Polymer with Solid-State Plasticity Derived from Exchangeable Hydrogen Bonds

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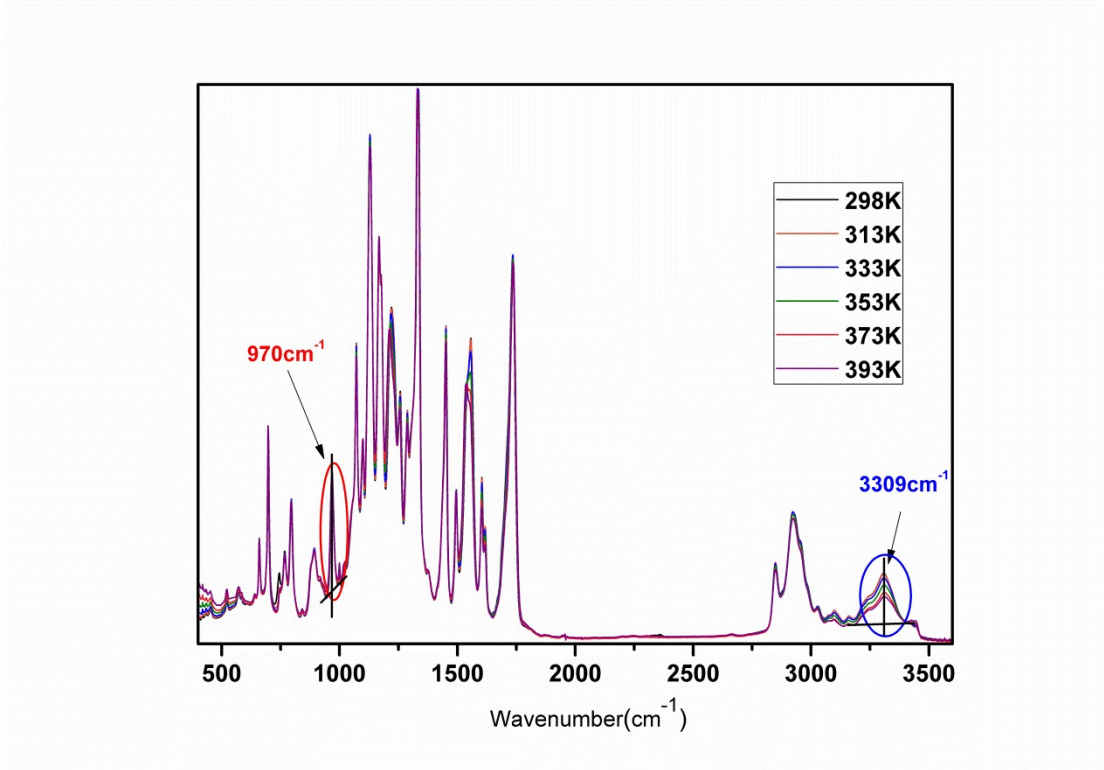

Figure S1. Full range variable temperature FTIR spectra of PBTP-30, molar ratio of N-H groups to the butadiene monomer units is calculate by the relative value ratio of peak height of hydrogen bonded N-H in 3309cm^{-1} and trans-1,4 polybutadiene characteristic peak located at 970cm^{-1}, the calculation value is 29mol%.

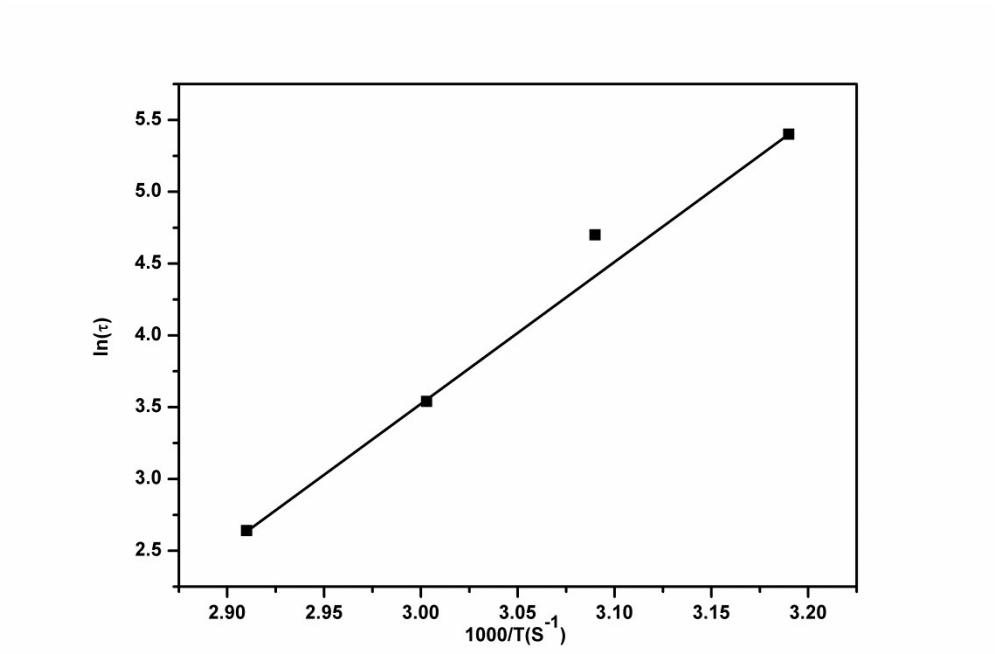

Figure S2. The ln (τ) variation as a function of 1/T, which followed a simple Arrhenius law:

$$\tau(T) = \tau_0 exp\frac{E_a}{RT}$$

with τ the relaxation time (s), τ_0 a constant (s), E_a the activation energy (J • mol^{-1}), R the ideal gas constant (J • mol^{-1} •K^{-1}) and T the temperature (K). The activation energy E_a, as calculated from the slope (E_a/R), was 77.59 kJ • mol^{-1}.