

Preparation and properties of semi-interpenetrating networks combined by thermoplastic polyurethane and thermosetting elastomer

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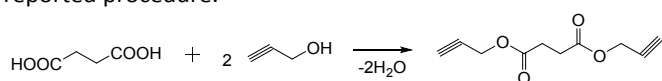
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Supplementary materials

Preparation of BPS

Aliphatic alkynes was synthesized by the esterification reaction of succinic acid with propargyl alcohol in toluene in the presence of toluene-4-sulfonic acid catalyst based on the reported procedure.¹



Scheme 1S. Synthesis route of BPS

In FTIR (Fig. 3), the peak at 3293 cm⁻¹ confirmed the presence of ≡CH, 2949 cm⁻¹ due to C-H stretching vibrations, 2139 cm⁻¹ due to triple bonded C-C and 1745 cm⁻¹ due to C=O in ester.

¹H NMR (Fig. 1S) shows chemical shifts at 4.74 ppm corresponding to proton of CH₂-O, 2.68 ppm due to -CH₂-CH₂-COO- and 2.47 ppm due to HC≡C-.

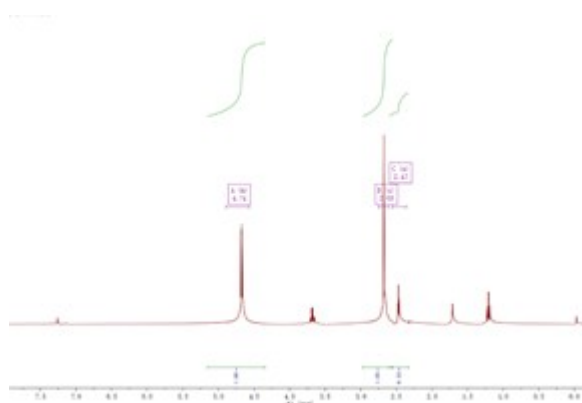


Fig. 1S ¹H NMR spectra of BPS.

References

1. T. Keicher, W. Kuglstatler, S. Eisele, T. Wetzel and H. Krause, *Propellants, Explos. Pyrotech.*, 2009, **34**, 210-217.

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Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/x0xx00000x