

**Supporting Information for:
Cooperative crosslinking in polyvinyl alcohol organogels**

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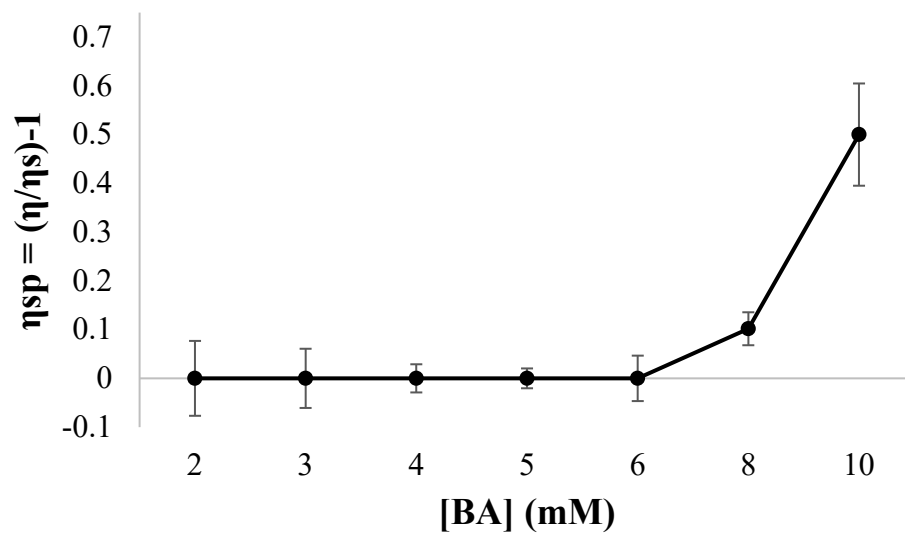


Figure S1. Change in kinematic viscosity of 0.5% PVA in DMSO as a function of [BA].

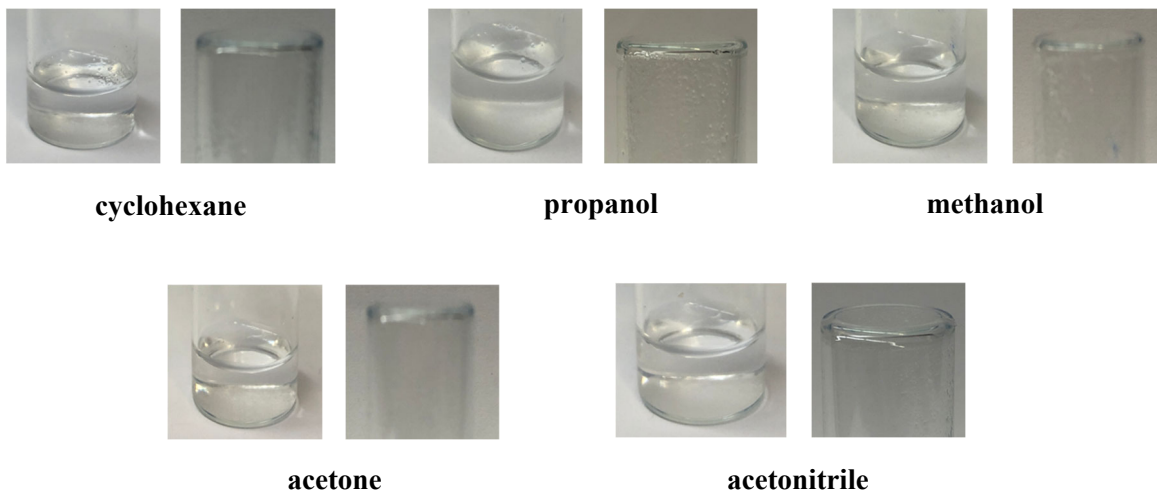


Figure S2. Vials and inverted vials of 5% **PVA** and 50 mM **BA** in various organic solvents. From left to right, starting at the top, the solvents are as follows: cyclohexane, propanol, methanol, acetone, and acetonitrile.

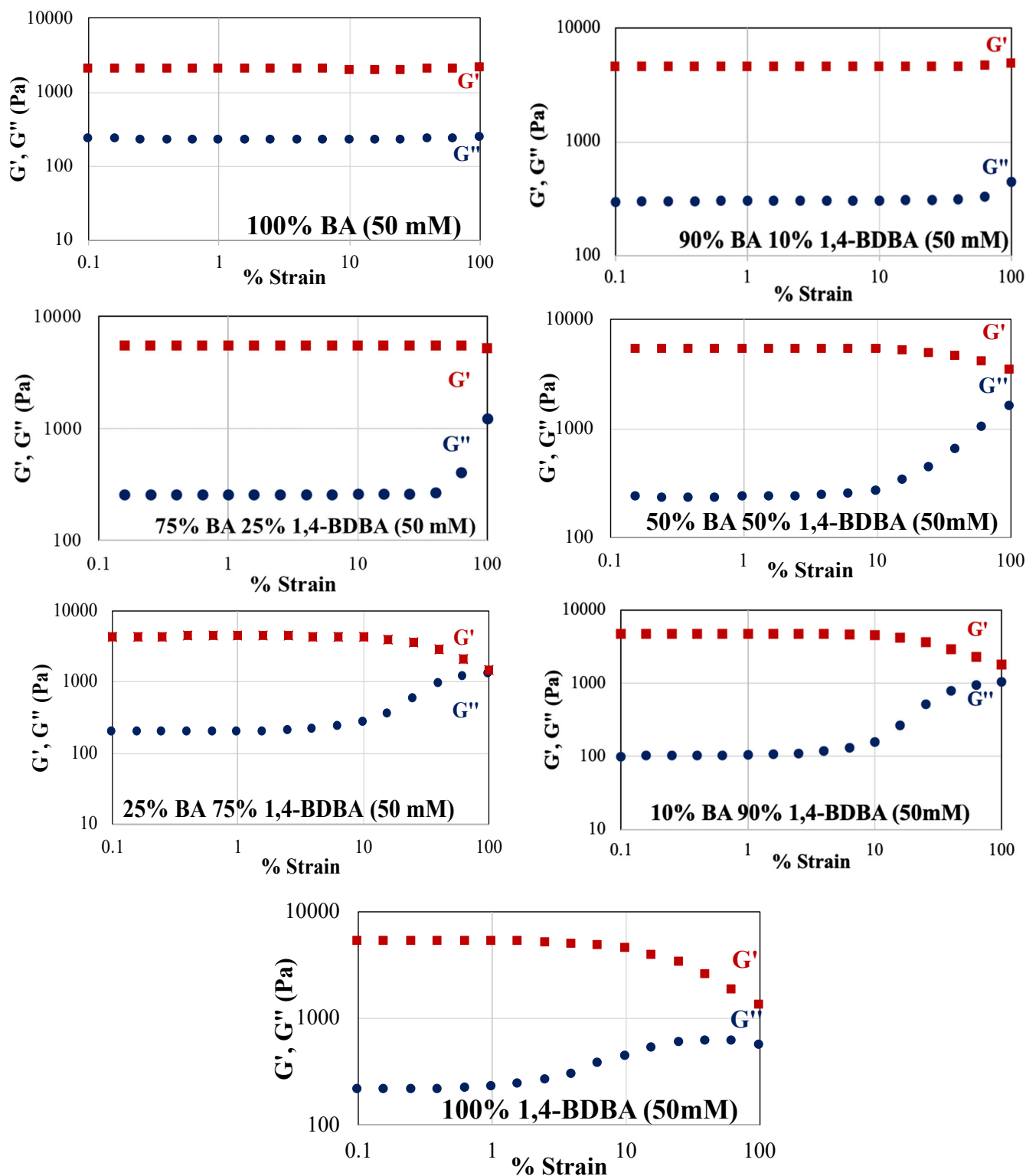


Figure S3. Strain sweeps of PVA gels in DMSO at a constant angular frequency of 10 rad/s with 50 mM BA alone, 50 mM 1,4-BDBA alone, and various combinations of BA and 1,4-BDBA at an overall crosslinker concentration of 50 mM.

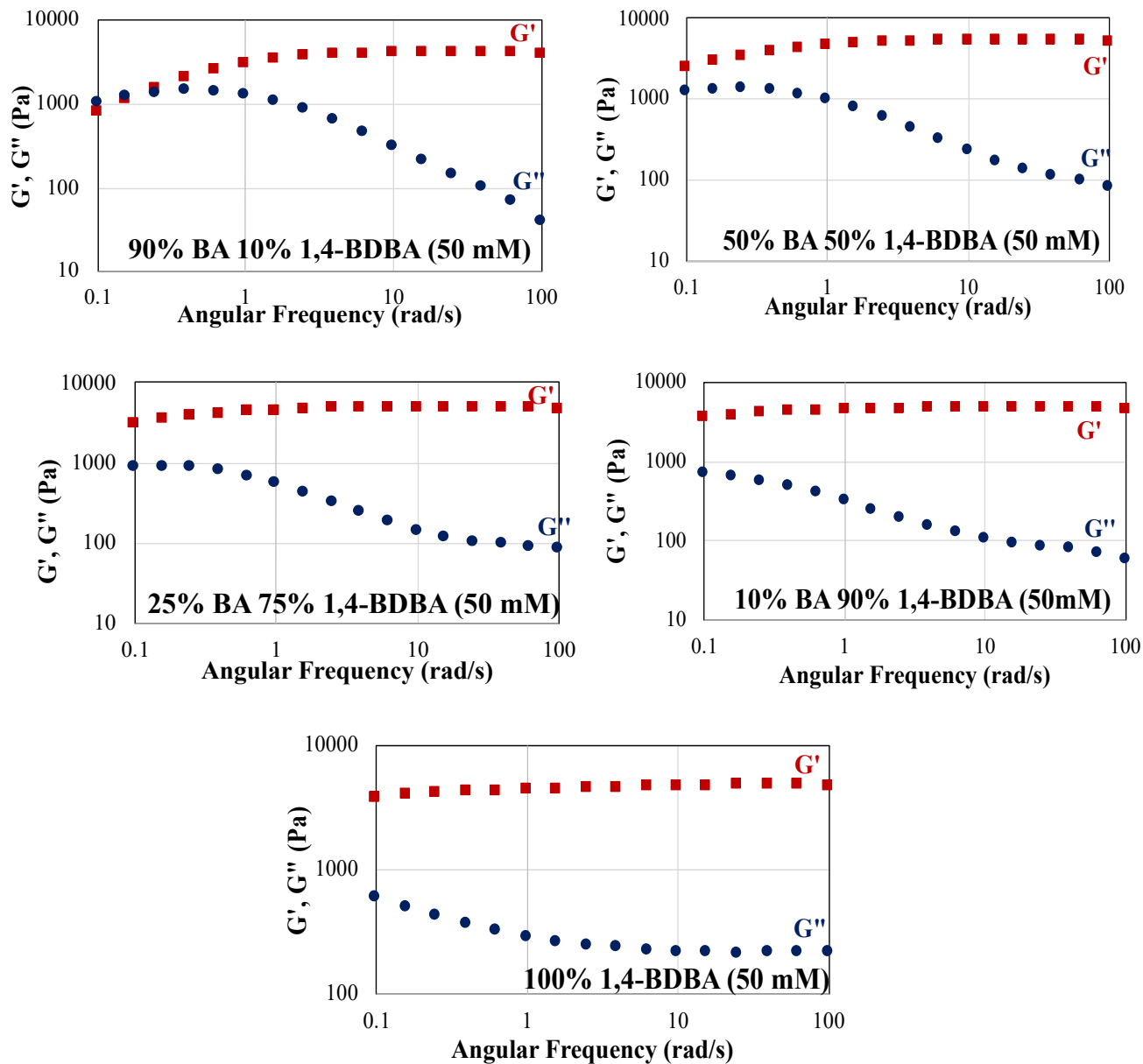


Figure S4. Frequency sweeps of PVA gels in DMSO at 1% strain with 50 mM BA alone, 50 mM 1,4-BDBA alone, and various combinations of BA and 1,4-BDBA at an overall crosslinker concentration of 50 mM.

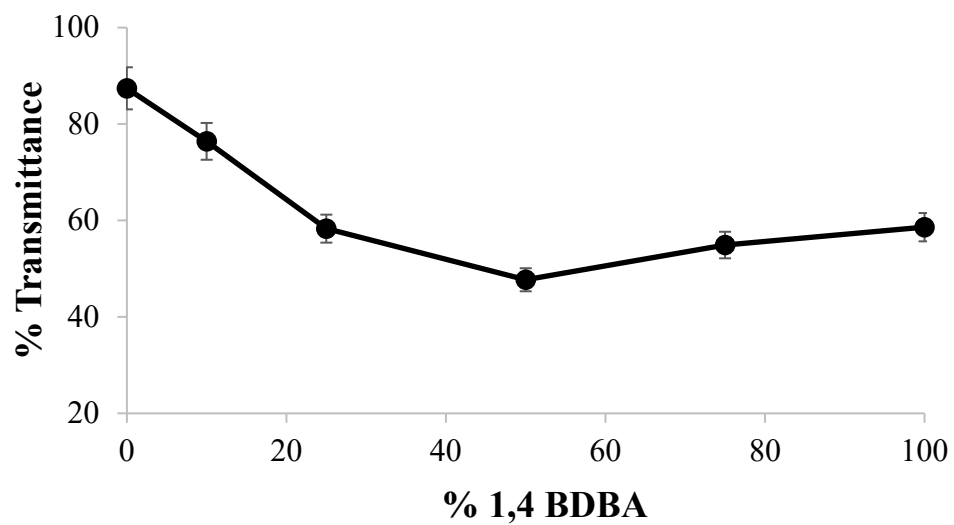


Figure S5. %Transmittance at 600 nm for PVA-BA gels (5% in DMSO) as a function of [1,4-BDBA] (overall crosslinker concentration [BA + 1,4-BDBA] = 100 mM).

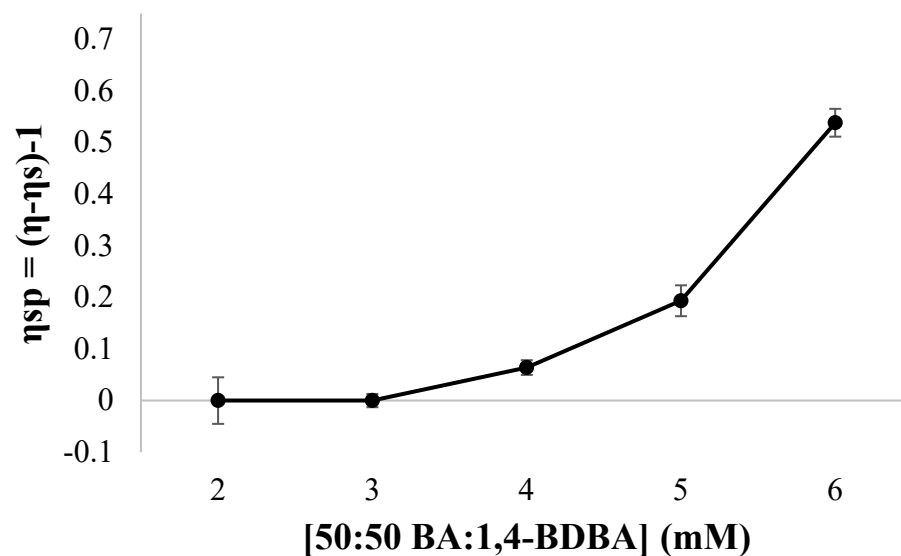
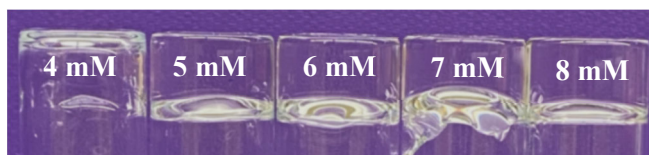
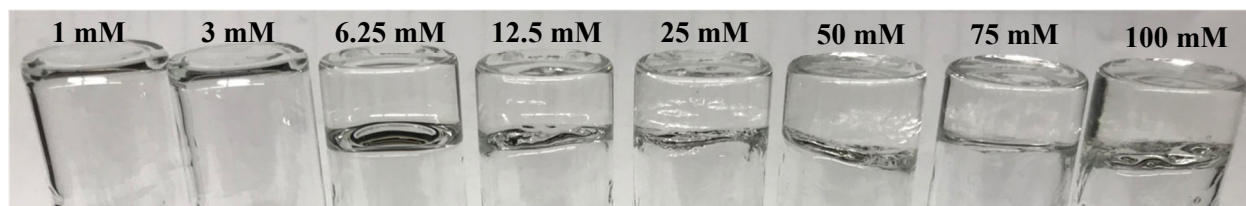


Figure S6. Inverted vials of 5% PVA in DMSO with increasing amounts of crosslinkers (50% BA + 50% 1,4-BDBA; top = 1-100 mM; middle = 4-8 mM). Plot of the change in kinematic viscosity of 0.5% PVA in DMSO as a function of [BA:1,4-BDBA] (bottom).

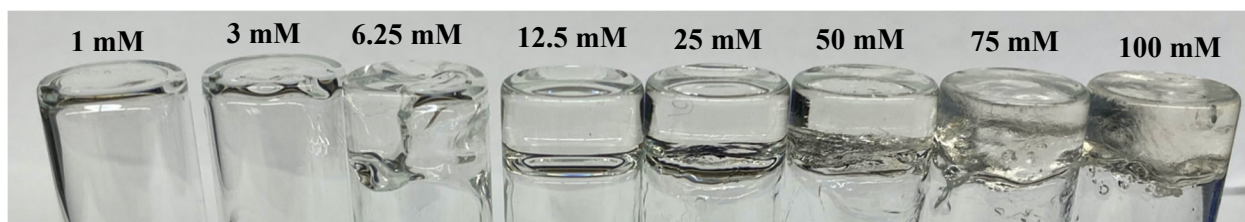


Figure S7. Inverted vials of 5% PVA in DMSO with increasing amounts of 1,4-BDBA.

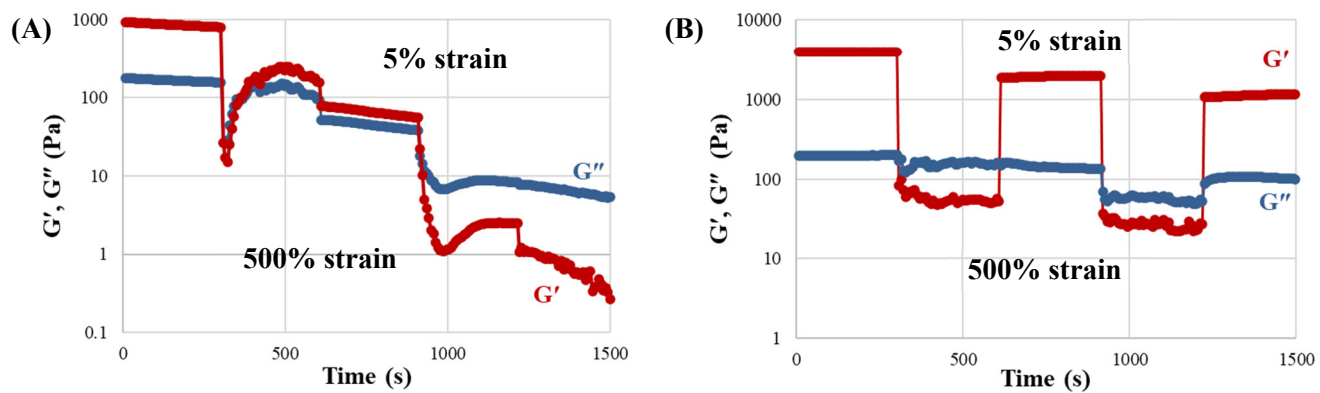


Figure S8. Hysteresis loops of PVA gels in DMSO at a constant angular frequency of 10 rad/s with 50 mM BA (A) and 25 mM BA + 25 mM 1,4-BDBA (B).

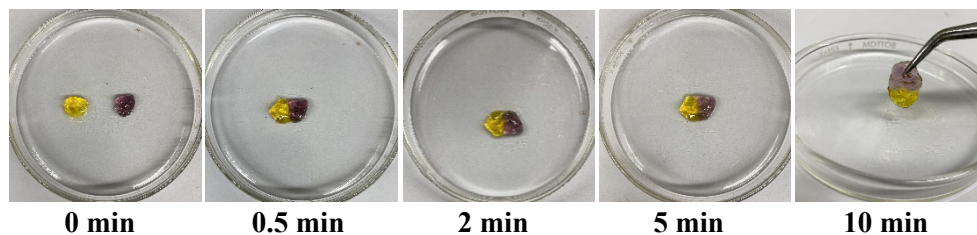


Figure S9. Images of PVA gels with 25 mM BA + 25 mM 1,4-BDBA self-healing over time.

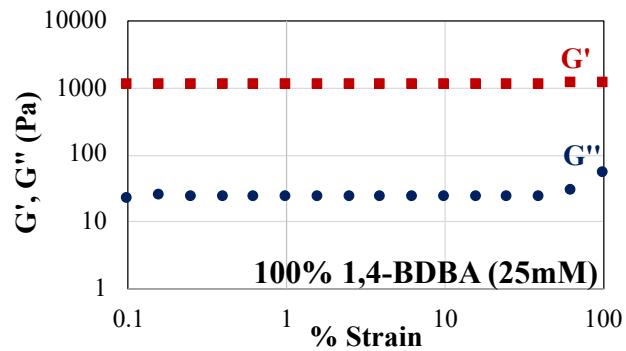
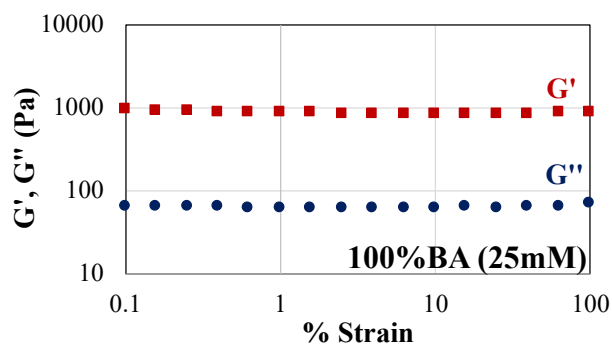


Figure S10. Strain sweeps of PVA gels in DMSO at a constant angular frequency of 10 rad/s with 25 mM BA alone and 25 mM 1,4-BDBA alone.

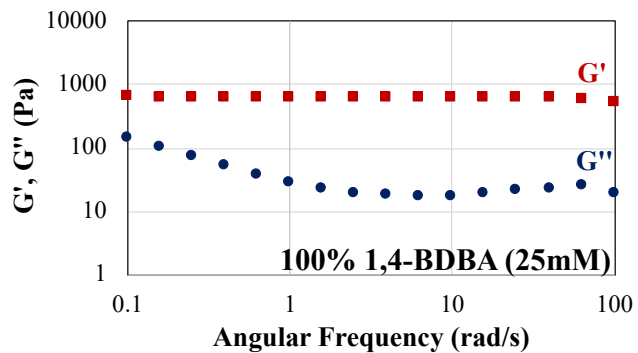
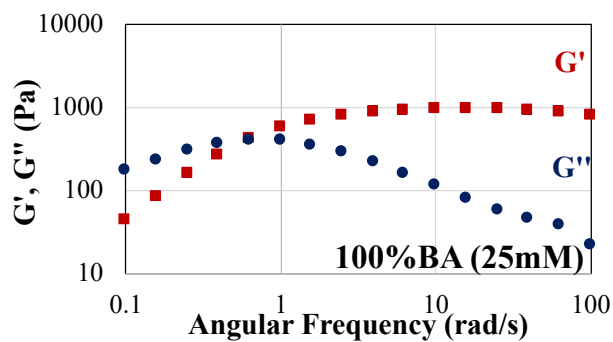


Figure S11. Frequency sweeps of PVA gels in DMSO at 1% strain with 25 mM BA alone and 25 mM 1,4-BDBA alone.

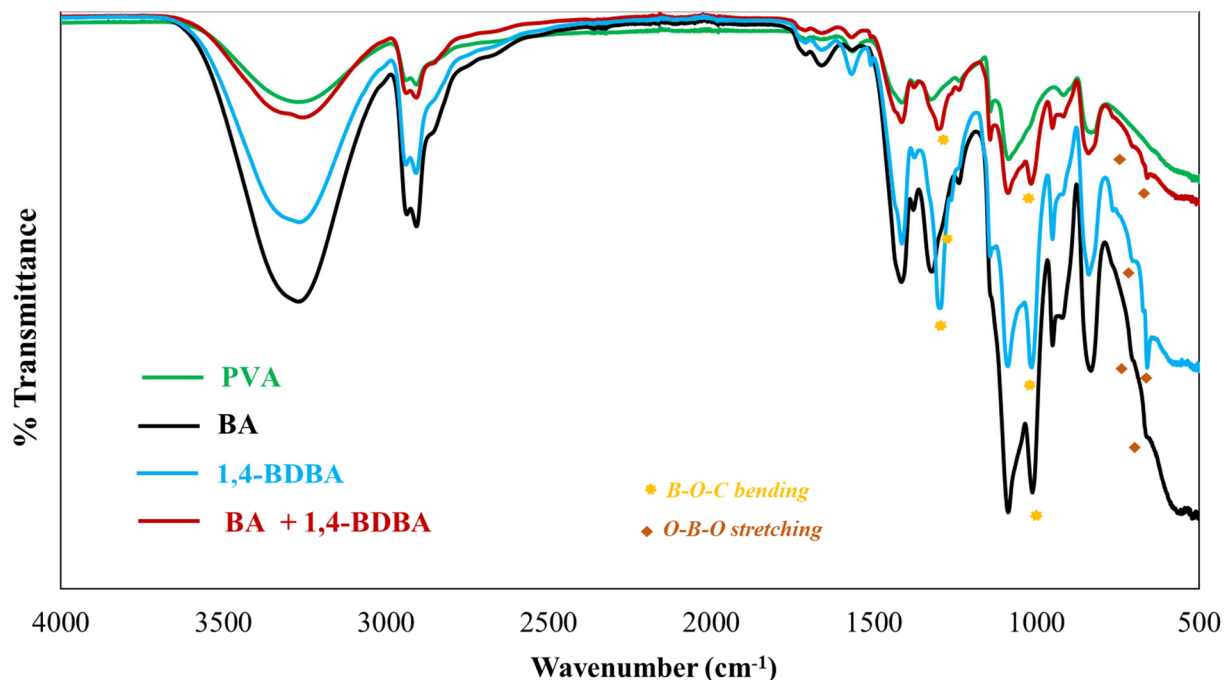


Figure S12. Full FTIR spectra of lyophilized PVA (— PVA), PVA + BA (— BA), PVA + 1,4-BDBA (— 1,4-BDBA), and PVA + BA + 1,4-BDBA (— BA + 1,4-BDBA). Notable signals for B-O-C bending (★) and O-B-O stretching (◆) are labeled.

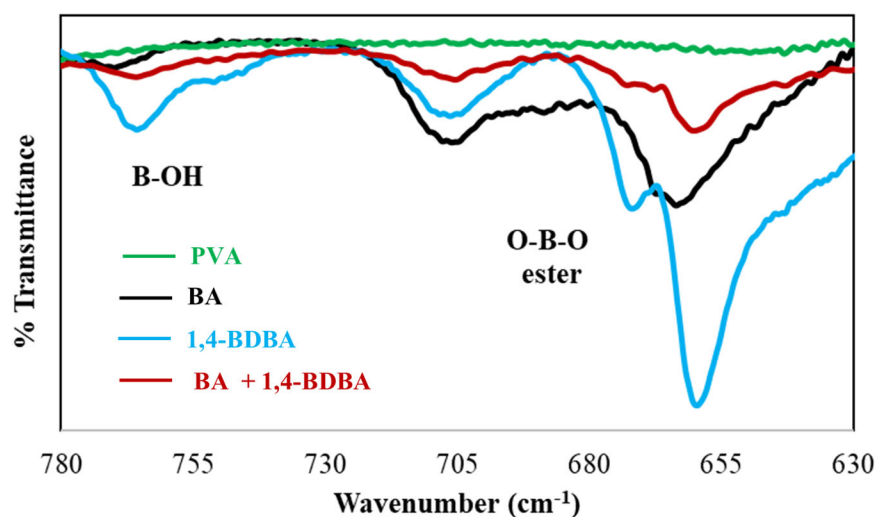


Figure S13. Baseline-corrected B-O stretching region of FTIR spectra for lyophilized PVA (— PVA), PVA + BA (— BA), PVA + 1,4-BDBA (— 1,4-BDBA), and PVA + BA + 1,4-BDBA (— BA + 1,4-BDBA).

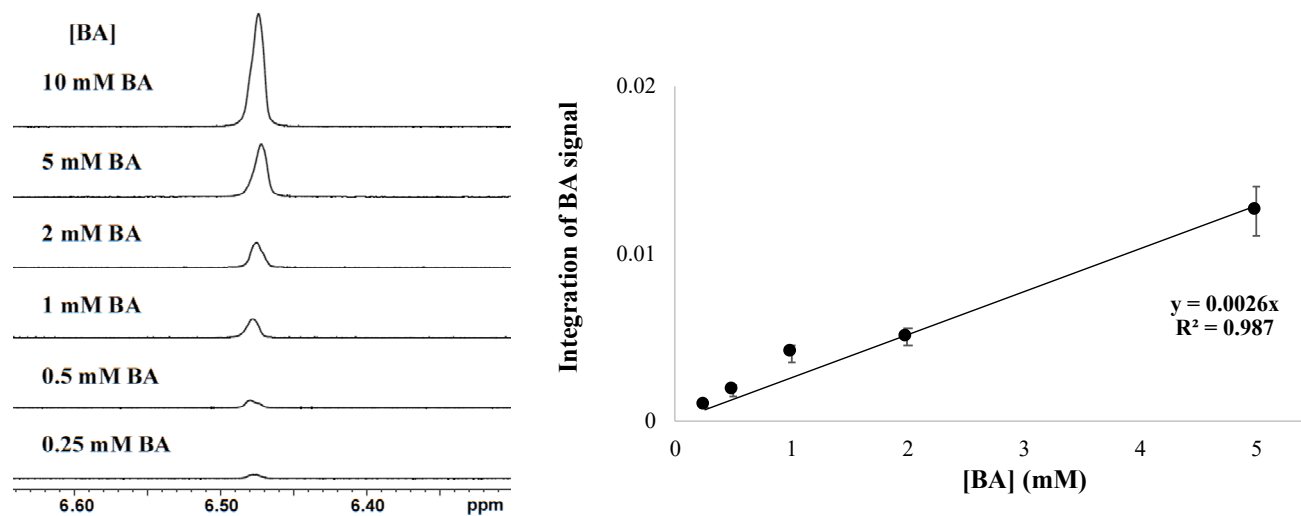


Figure S14. ^1H NMR spectra of **BA** signal at ~ 6.48 ppm for each **BA** standard (from 0.25 mM to 10 mM) and plot of the integration of this signal relative to the CH_2Cl_2 internal standard as a function of **BA** concentration.