

Supplementary Information for:

Super stretchable chromatic polyurethane driven by anthraquinone chromogen as chain extender

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BPUE samples were tested at room temperature in 50 mL solvent of 5% NaOH, 5% HCl, oxolane(THF), toluene(TL) and dimethyl formamide (DMF). The dissolution process of BPUE films were observed.

Table. S1 Solvent resistance of BPUEs

Time	5%NaOH	5%HCl	THF	TL	DMF
0s	-	-	++	+	+
2h	-	-	+++	++	++
72h	-	-	+++	+++	+++

“-” means Insoluble; “+” means Slightly Soluble; “++” means Dissoluble; “+++” means Completely Dissoluble

In order to test the solvent resistance of BPUEs, their solubility in 5% NaOH, 5% HCl, oxolane(THF), toluene(TL) and dimethyl formamide (DMF) was measured. Table S1 shows that the BPUE film has excellent acid and alkali resistance, which has no obvious change after soaked in 5% NaOH and 5% HCl for 72h. The organic solvent resistance of the BPUE films can be seen from table S1. The BPUE films were placed in oxolane(THF), toluene(TL)

and dimethyl formamide (DMF), most of the BPUE films dissolved in THF as soon as it was placed. This is because the THF is a highly soluble organic solvent and the BPUE film is composed with polycarbonate and polytetrahydrofuran, so its excellent solubility in THF can be explained. When the BPUE films were placed in TL and DMF, a few of them were dissolved and remained in slightly soluble state. It can be concluded that BPUE has excellent acid and alkali resistance and exhibit a tolerance to organic solvent TL and DMF.