

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Interference color change of TDN hydrogel under polarized mode in-situ stretching. The interference color gradually appeared and brightened with the increase of tensile strain.

File Name: Supplementary Movie 2

Description: Interference color change of HEDN-0.8 hydrogel under polarized mode in-situ stretching. The interference color gradually appeared with the increase of tensile strain, and then gradually brightened, and finally showed a color change in accordance with Michel-Levy chart.

File Name: Supplementary Movie 3

Description: Crack growth of notched TDN hydrogel.

File Name: Supplementary Movie 4

Description: Crack blunting and growth of notched HEDN-0.8 hydrogel.

File Name: Supplementary Movie 5

Description: Interference color distribution of notched TDN hydrogel under polarized mode in-situ stretching. The Interference color is distributed only around the notch.

File Name: Supplementary Movie 6

Description: Interference color distribution of notched HEDN-0.8 hydrogel under polarized mode in-situ stretching. The interference color is distributed in the bulk of the gel, and the brightness of the interference color is almost the same as that around the notch.