

Supporting Information for

Enhanced Rupture Force in a Cut-Dispersed Double-Network Hydrogel

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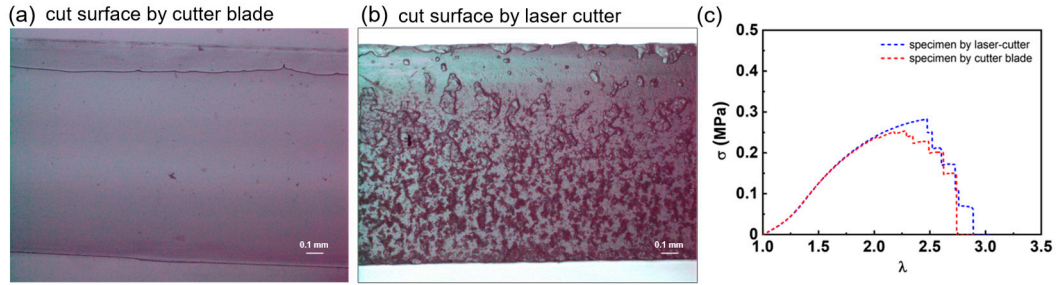


Figure S1. The cut surface and the pure shear fracture behaviors of DN hydrogels. (a) The cut surface of DN hydrogel by cutter blade. (b) The cut surface of DN hydrogel by laser cutter. (c) The mechanical comparison The pure shear fracture behaviors of DN hydrogel are hardly affected by the cut methods.

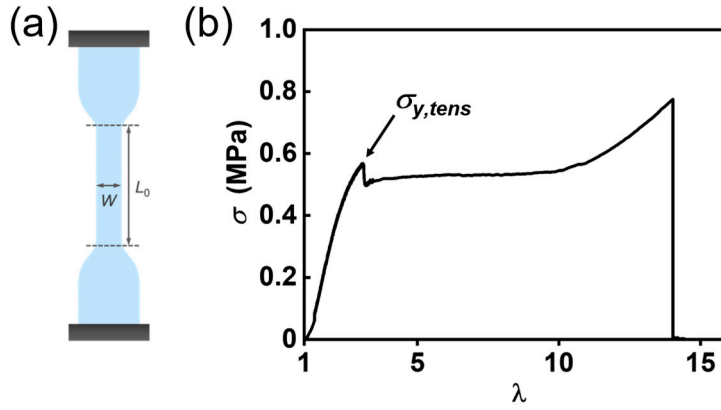


Figure S2 The stress-strain curve of the bulk DN gels. (a) Schematic diagram of the sample. The total length sample is 25 mm, the gauge length L_0 is 12 mm, and the width w is 2 mm. (b) The strain-stress curve of gel under uniaxial tensile deformation of bulk DN gels.

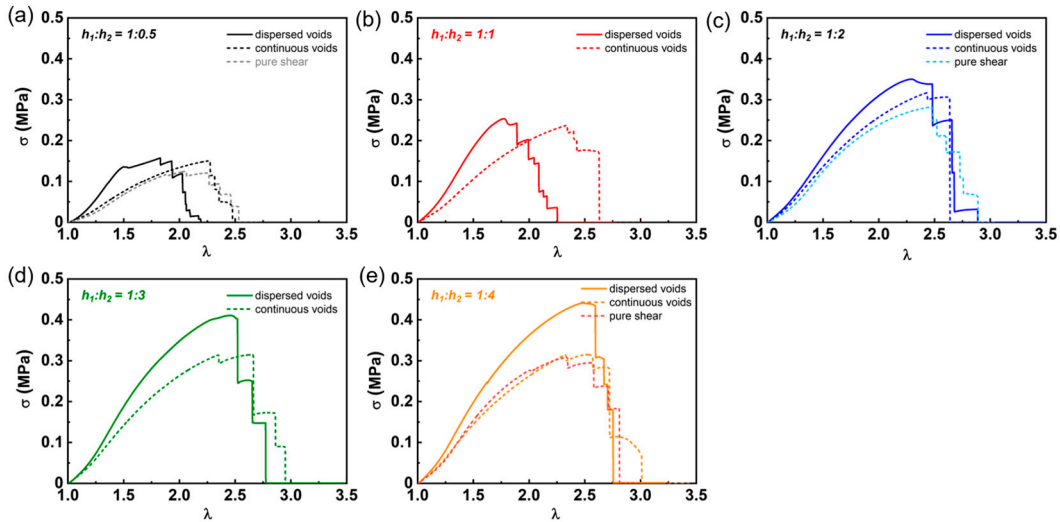


Figure S3. Representative strain-stress curves of highly deformable DN hydrogels under different

structural models with dispersed cuts and continuous cuts. The representative stress (MPa)-strain (λ) curves of DN hydrogels under different structural models containing dispersed cuts and continuous cuts at different spacing ratios $h_1: h_2$ of 1:0.5 (a), 1:1 (b), 1:2 (c), 1:3 (d) and 1:4 (e). The force curves of samples with a pure shear geometry were also provided in (a), (c), and (e) for comparison.

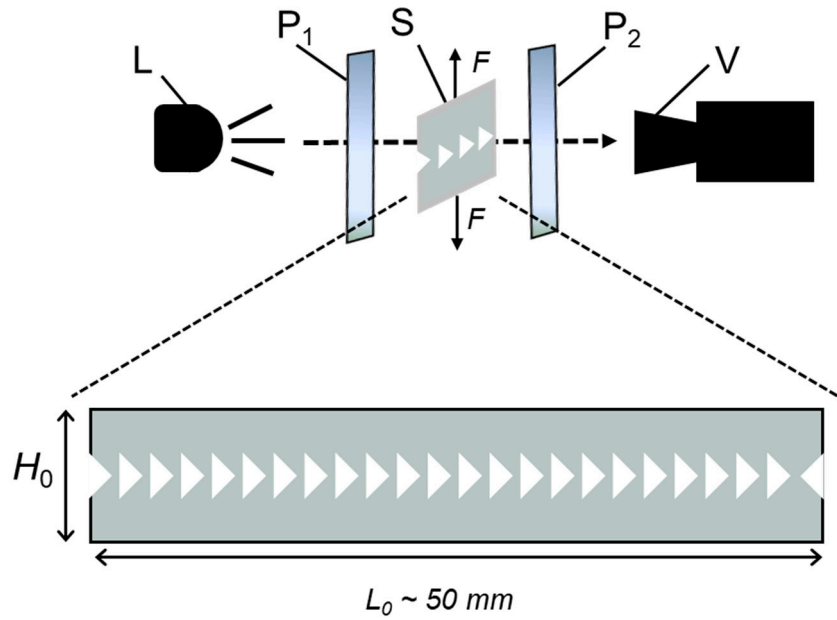


Figure S4. Schematic diagram of birefringence observation set-up for fracture tests. L: lamp, P₁, P₂: crossed circular polarized film, S: sample, V: a video camera. The sample was stretching in the direction shown by arrows.