Electronic Supplementary Material (ESI) for Soft Matter.

Supporting Information

Double Network Hydrogels with Highly Enhanced Toughness Based on a Modified First Network

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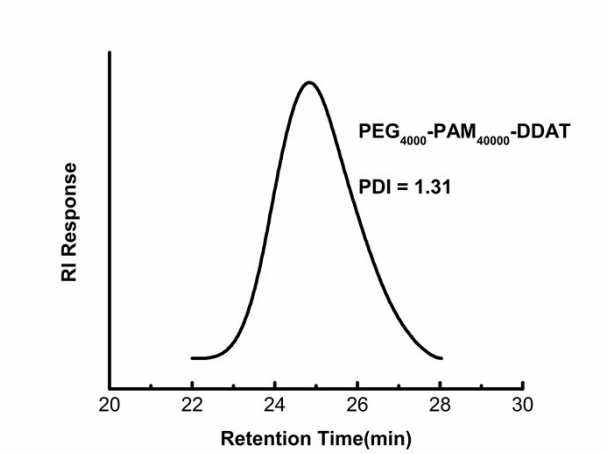

Figure S1. GPC trace of PEG_{4000}-PAM_{40000}-DDAT macro-RAFT agent.

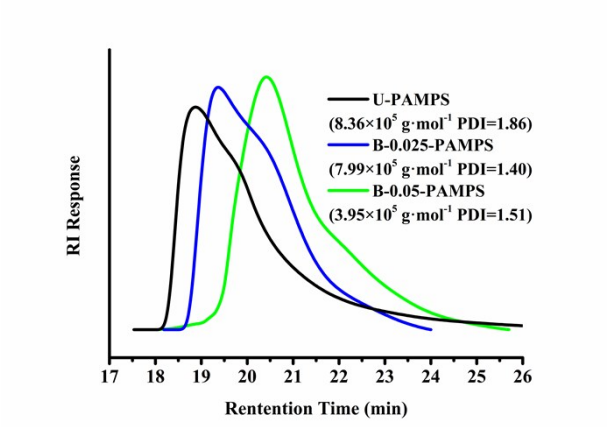

Figure S2. GPC trace of U-PAMPS, B-0.1-PAMPS and B-0.025-PAMPS.

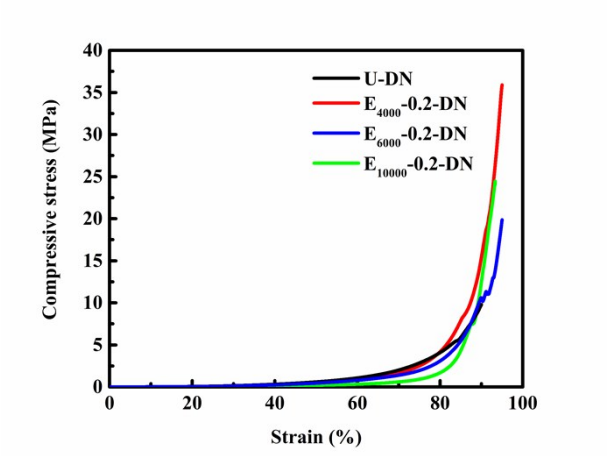

Figure S3. Compressive stress–strain curves of first-network PEG-DDAT-modified DN hydrogels with different molecule weight of PEG.

Table S1. Compressive Properties of First-Network-Modified DN Hydrogels

DN hydrogel	Compressive modulus (MPa)	Compressive stress (MPa)	Strain at break (%)
U-DN	0.173	12.65	85.5
E_{4000}-0.1-DN	0.247	16.93	90.0
E_{4000}-0.2-DN	0.156	35.90	95.0
E_{4000}-0.4-DN	0.143	20.23	95.0
E_{6000}-0.2-DN	0.140	19.86	90.0
E_{10000}-0.2-DN	0.048	24.47	92.5
$E_{4000}A_{2000}$-0.2-DN	0.142	13.50	92.5

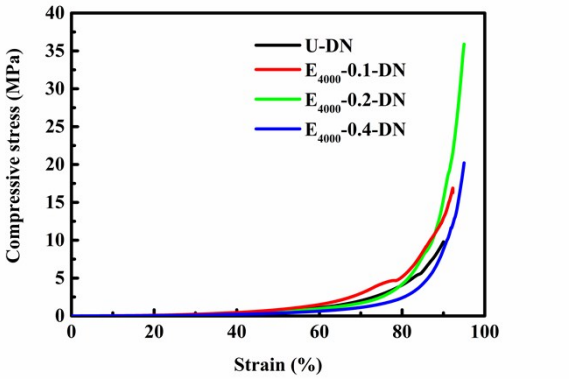

Figure S4. Compressive stress–strain curves of first-network PEG_{4000}-DDAT-modified DN hydrogels with different PEG_{4000}-DDAT concentrations.

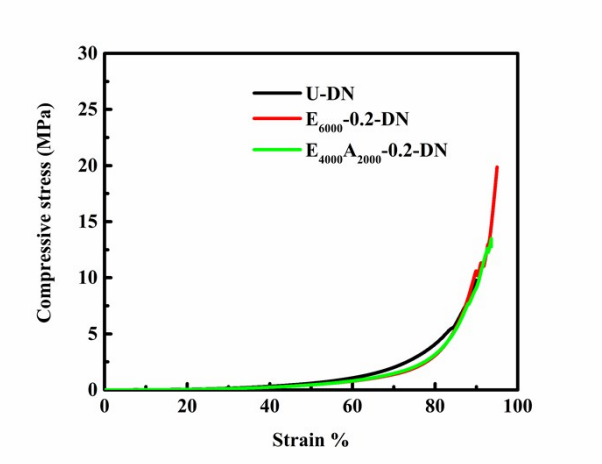

Figure S5. Compressive stress–strain curves of first-network PEG-PAM-DDAT-modified DN hydrogel, $E_{4000}A_{2000}$-0.2-DN with U-DN and E_{6000}-0.2-DN hydrogels as control groups.