Supporting Information to

Tuning Chemical and Physical Crosslinks in Silk Electrogels for Morphological Analysis and Mechanical Reinforcement

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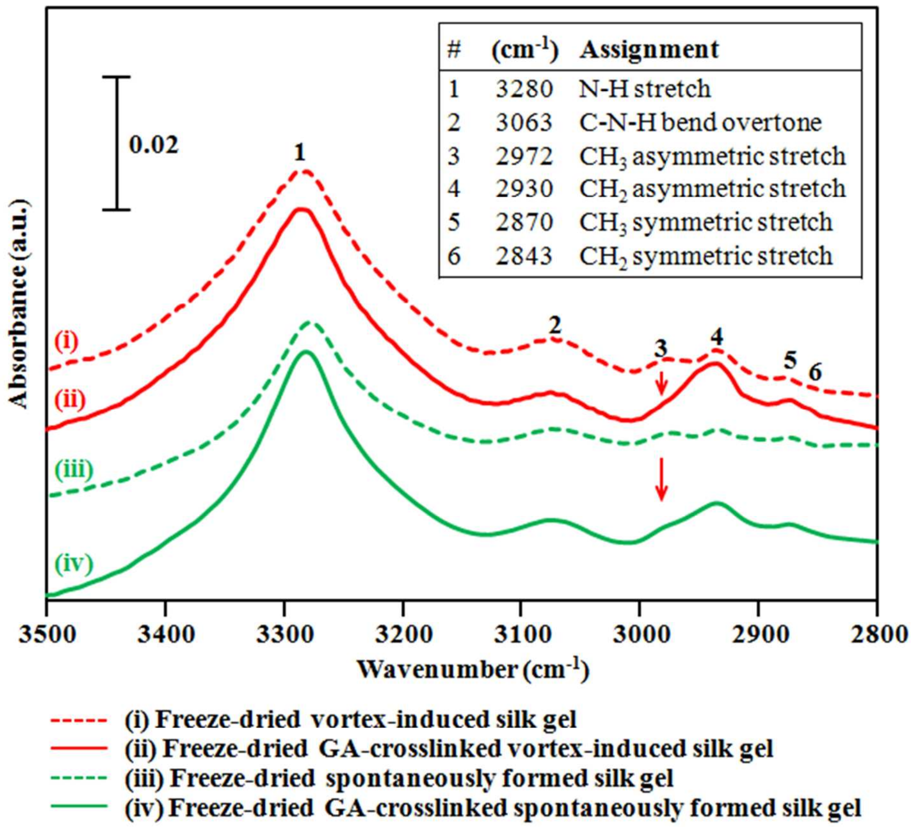

Figure S1. FTIR spectra (in the 3500 ~ 2800 cm^{-1} range) of (top to bottom): the freeze-dried vortex-induced silk gel, the freeze-dried glutaraldehyde-crosslinked vortex-induced silk gel, the freeze-dried spontaneously formed silk gel, and the freeze-dried glutaraldehyde-crosslinked spontaneously formed silk gel. The principle IR bands and their assignments [S1] were summarized in the inset. The chemically crosslinked silk gels exhibit a decrease in the intensity of the 2972 cm^{-1} CH_3 asymmetric stretching vibration band (as pointed out by the arrow) suggesting the involvement of the side chain methyl groups in the crosslinking. Similar result was obtained on the electrogelled silk, as shown in Figure 3).

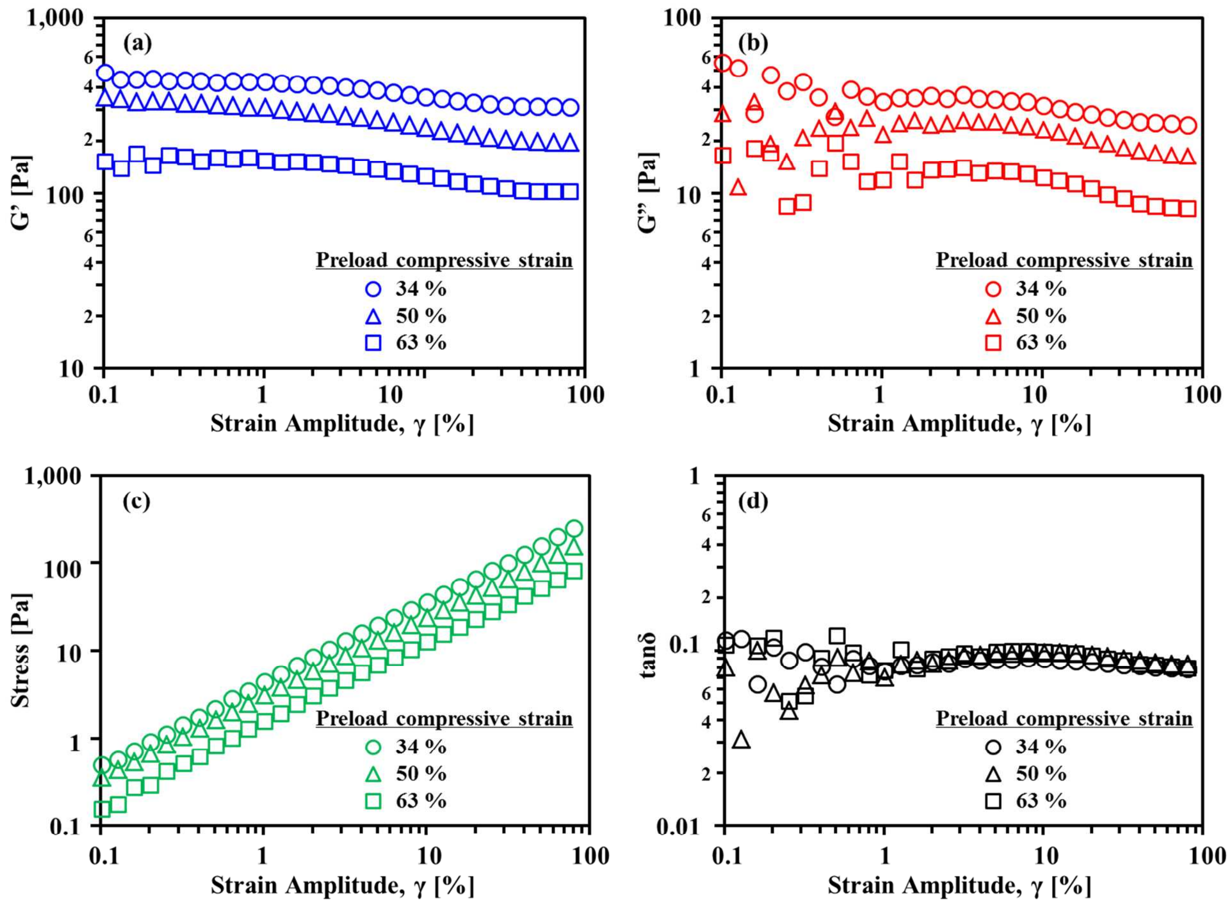

Figure S2. Linear rheology of glutaraldehyde-crosslinked silk *e*-gel under various levels of compressive pre-strain up to 63 %. The strain dependence of (a) the dynamic elastic modulus, G', (b) the dynamic loss modulus, G'', (c) the dynamic stress and (d) the loss tangent, tanδ = G''/G', was measured as the amplitude of strain increased from 0.1 ~ 100 % at a fixed frequency of 1 rad/sec.

References

S1. Hu, X.; Kaplan, D.; Cebe, P. *Macromolecules* **2006**, *39*, 6161-6170.