

Supplementary Information

Long chain branching hydrogel with ultrahigh tensibility and high strength by grafting from via photo-induced polymerization

Shuangfei Xiang, Ting Li, Yang Wang, Piming Ma, Mingqing Chen,
Weifu Dong*

The Key Laboratory of Food Colloids and Biotechnology, Ministry of Education, School of
Chemical and Material Engineering, Jiangnan University, Lihu Road 1800, Wuxi 214122,
China

E-mail: wfdong@jiangnan.edu.cn

Fax: +86 510 85917763

Tel: +86 510 85917090

Tensile loading-unloading test

Six successive tensile loading/unloading cycles with maximum strain of 500% were tested for LCB-2M, LCB-4M, LCB-6M and LCB-8M (Figure S1). The first tensile hysteresis loop was calculated from loading/unloading cycles (Figure S2). When the concentration of AAm was $2 \text{ mol}\cdot\text{L}^{-1}$, the tensile hysteresis energy was $208.5\pm 11.3 \text{ KJ}\cdot\text{m}^{-3}$. With increasing the concentration of AAm to $8 \text{ mol}\cdot\text{L}^{-1}$, the tensile hysteresis energy was improved to $293.4\pm 15.1 \text{ KJ}\cdot\text{m}^{-3}$. It was obvious the tensile hysteresis energy enhanced with increasing the content of AAm. The results were similar to the compressive loading-unloading cycles.

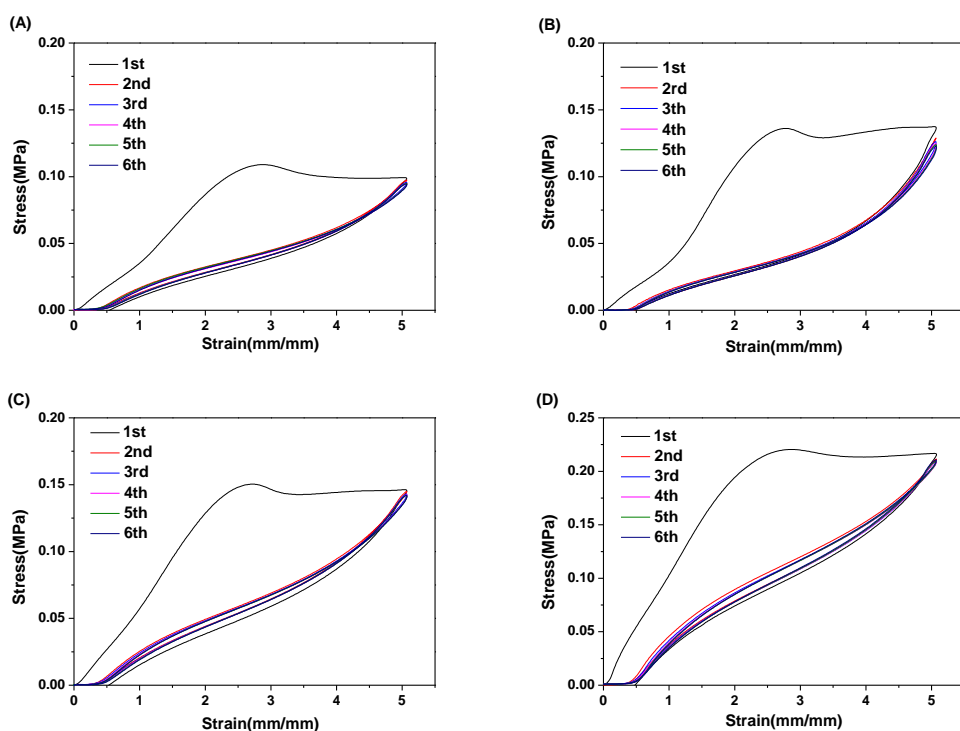


Figure S1. Loading/unloading cycles with maximum tensile strain of 500%. LCB-2M(A), LCB-4M(B), LCB-6M(C) and LCB-8M(D).

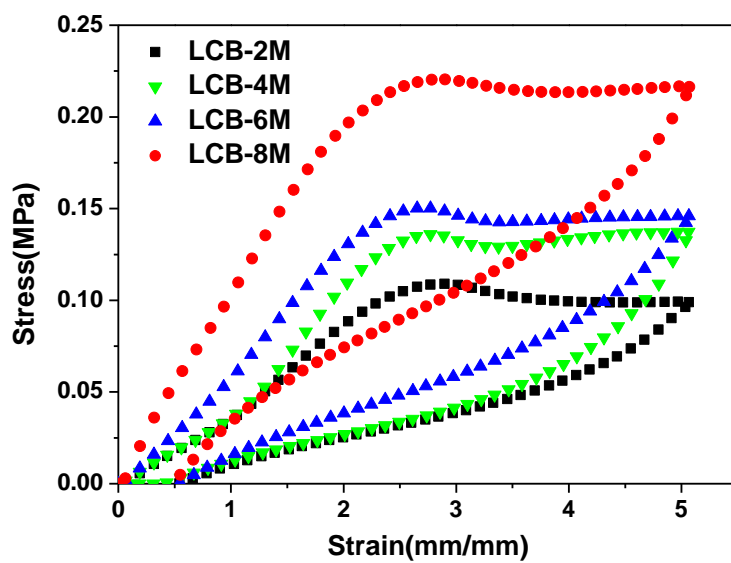


Figure S2. First loading/unloading cycles of LCB gel with maximum tensile strain of 500%.