Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Tough thermoplastic hydrogels with re-processability and recyclability for strain sensors

Xiaohua Zhang[a,c,‡], Xuefeng Yang[b,‡], Qiyuan Dai[a,c], Yichen Zhang[c], Haotian Pan[a,c], Chenxi Yu[a,c], Qi Feng[a,c], Shuangli Zhu[a,c], Hua Dong[a,c], Xiaodong Cao[a,c,d,e,f*]*

a. School of Materials Science and Engineering, South China University of Technology, Guangzhou 510006, P. R. China.

b. Department of Biomedical Engineering, The Chinese University of Hong Kong, Hong Kong 999077, P. R. China.

c. National Engineering Research Center for Tissue Restoration and Reconstruction, South China University of Technology, Guangzhou 510006, P. R. China.

d. Key Laboratory of Biomedical Engineering of Guangdong Province, South China University of Technology, Guangzhou 510006, P. R. China.

e. Key Laboratory of Biomedical Materials and Engineering of the Ministry of Education, South China University of Technology, Guangzhou 510006, P. R. China.

f. Innovation Center for Tissue Restoration and Reconstruction, South China University of Technology, Guangzhou 510006, P. R. China.

‡ Xiaohua Zhang and Xuefeng Yang contributed equally to this work.

* Corresponding author: Xiaodong Cao, E-mail: caoxd@scut.edu.cn

Hua Dong, E-mail: donghua@scut.edu.cn

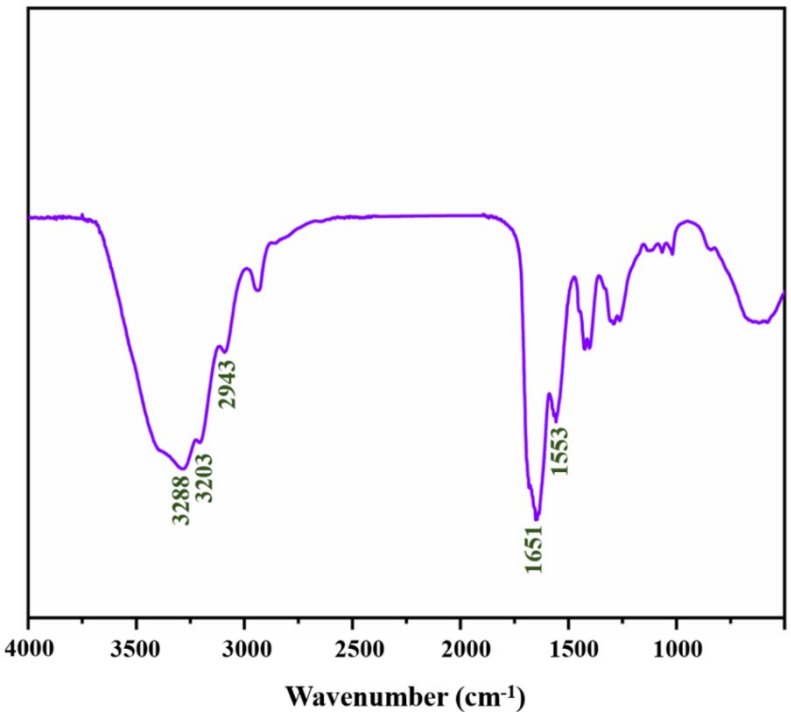

Figure S1. The FTIR spectrum of PNAGA.

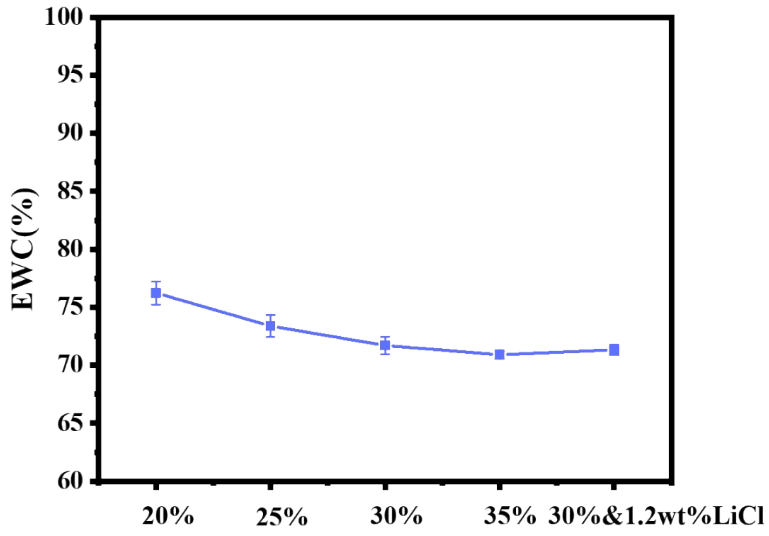

Figure S2. The equilibrated water content (EWC) of PNAGA hydrogels with different monomer concentration.

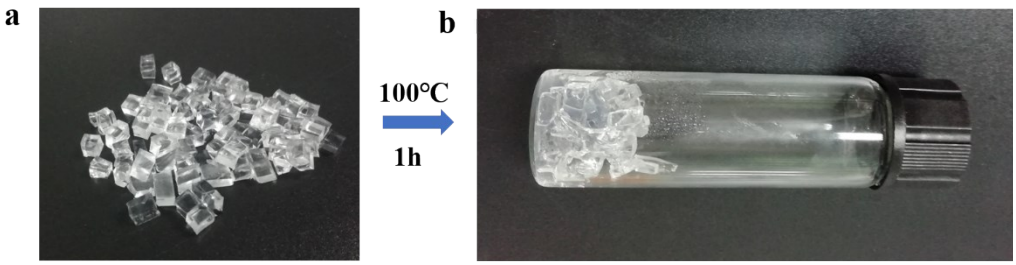

Figure S3. (a) The fragments of PNAGA-30 hydrogels. (b) The fragments were packed in sealed bottles and heated in 100 °C oil bath at atmospheric pressure for 1 h.

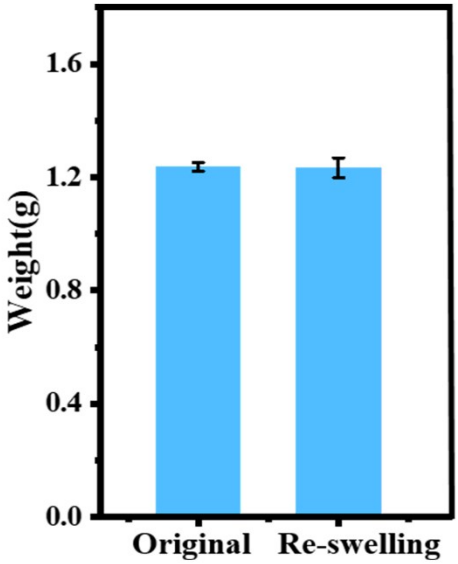

Figure S4. The weight of the original and the re-swelled PNAGA-30 hydrogels.

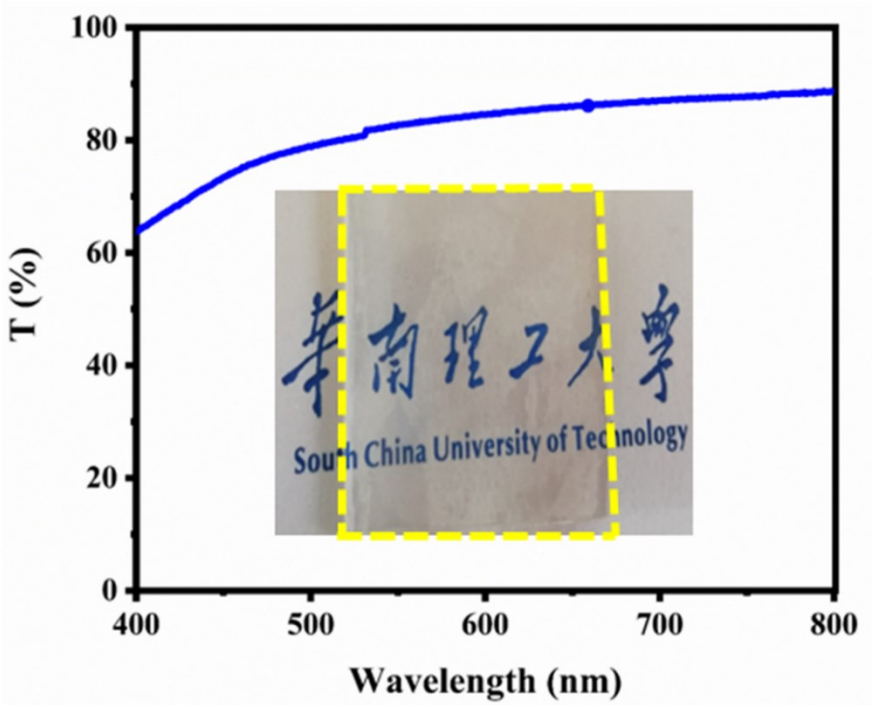

Figure S5. Optical transmittance of the PNAGA-30&1.2wt%LiCl hydrogels versus wavelength (the words under hydrogel sheet were indicated by yellow dotted lines for clear observation).

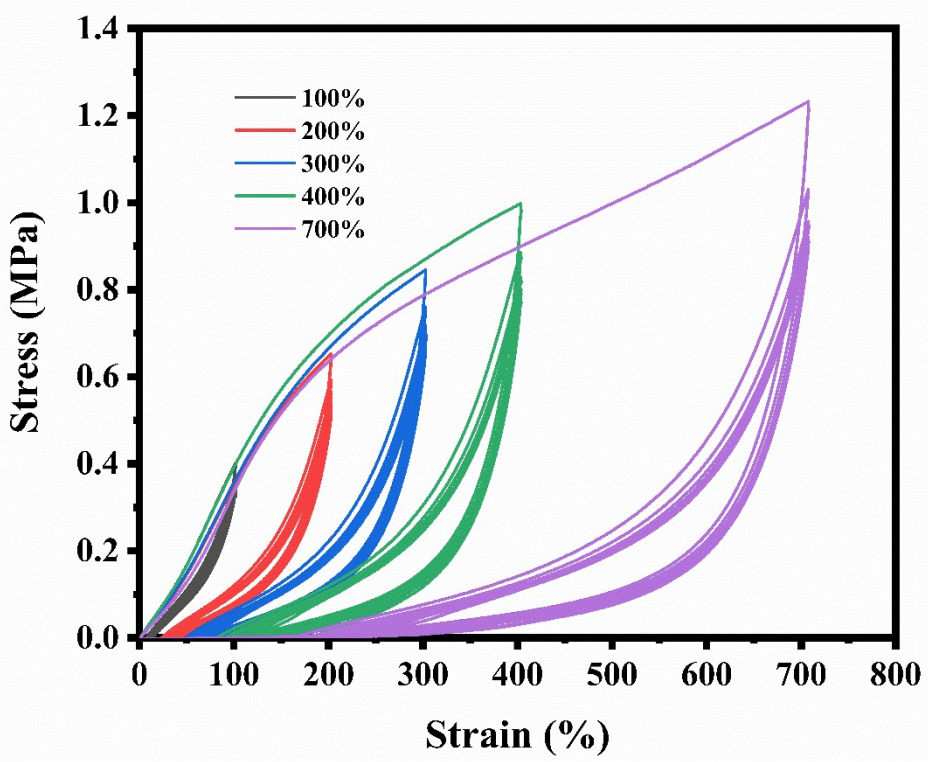

Figure S6. Stress-strain curves of PNAGA-30 & LiCl hydrogels under various strains cycles (a total of ten cycles).

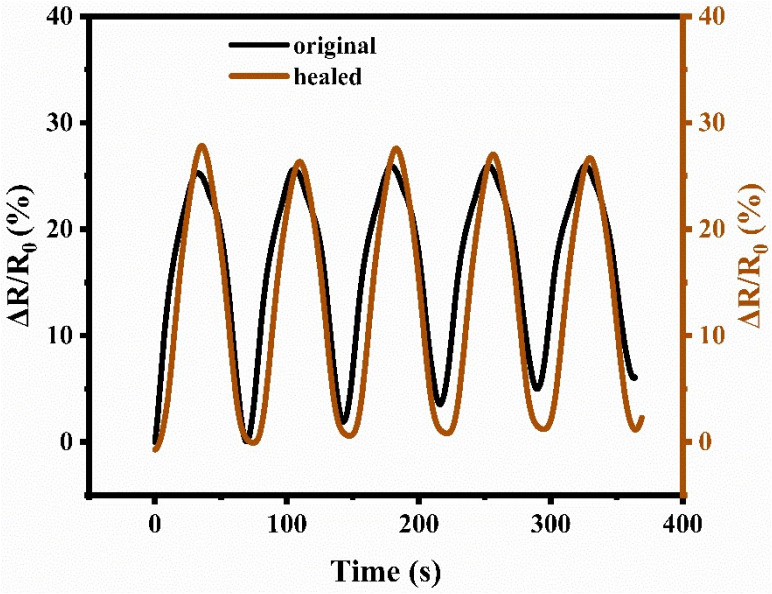

Figure S7. Relative resistance changes of the original and self-healed PNAGA-30 & LiCl hydrogel-based strain sensors at a large strain of 400% for five cycles.