Supplementary Information (SI) for Soft Matter.

Tough and Stretchable Ionic Polyurethane Foam for Use in Wearable Devices

Xuefeng Yan,[1] Yong Chen,[1] Jun Tan,[2,*] Cailiang Zhang,[3] Zeming Xie,[4] Si Yu Zheng,[4,*] Qi Wang,[1,5,*] Zhijun Zhou,[1] Jintao Yang[4,*]

[1] Zhejiang Hexin New Material Co., Ltd., Jiaxing 314000, P. R. China

[2] College of Biological, Chemical Science and Technology, Jiaxing University, Jiaxing 314001, P. R. China

[3] State Key Laboratory of Chemical Engineering, College of Chemical and Biological Engineering, Zhejiang University, Hangzhou 310027, P. R. China

[4] Zhejiang Key Laboratory of Plastic Modification and Processing Technology, College of Materials Science& Engineering. Zhejiang University of Technology, Hangzhou 310014, P. R. China

[5] Hexin Kuraray Micro Fiber Leather (Jiaxing) Co., Ltd., Jiaxing 314000, P. R. China

E-mails: tanjunzjxu@126.com (Jun Tan), zhengsiyu@zjut.edu.cn (Si Yu Zheng), wangqi@hexin-puleather.com (Qi Wang), yangjt@zjut.edu.cn (Jintao Yang)

Table S1. Composition of Samples.

Sample	Molar ratio			
	HDI	PTMG-2000	i-diol	BDO
CPU1	10	5	1	4
CPU2	10	5	2	3
CPU3	10	5	3	2
CPU4	10	5	4	1

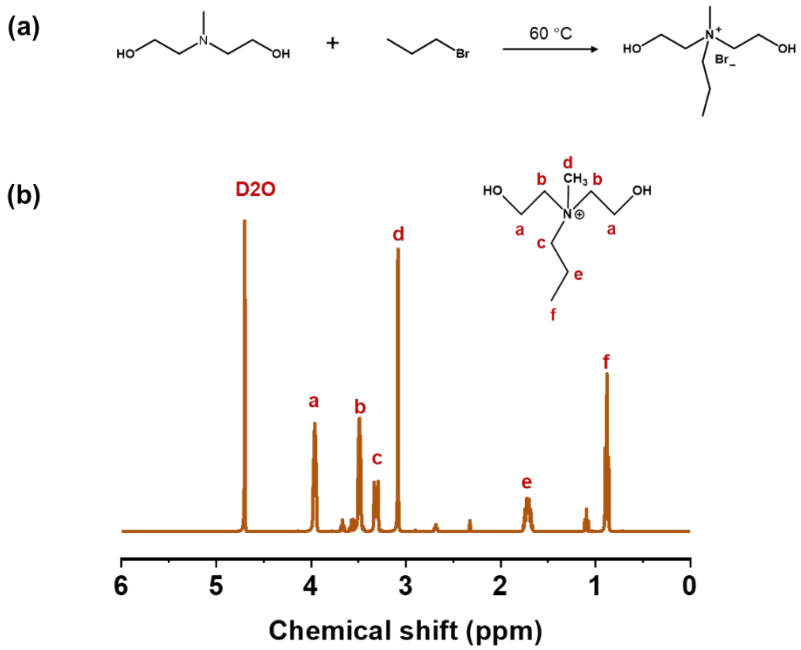

Figure S1. (a). Reaction routes for synthesis of i-diol. (b).^{1}H NMR spectra of i-diol monomer at 400 MHz, D2O.

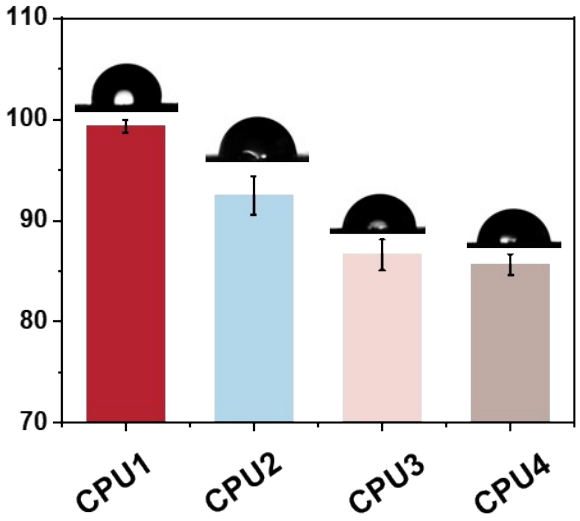

Figure S2. Water contact angle of the surface of CPU samples.

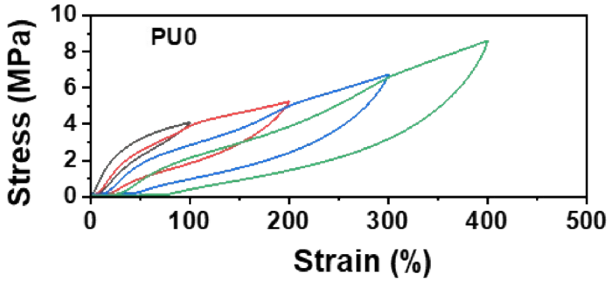

Figure S3. Cyclic loading-unloading curves of PU0 elastomers with different i-diol content after stretching to different strain.

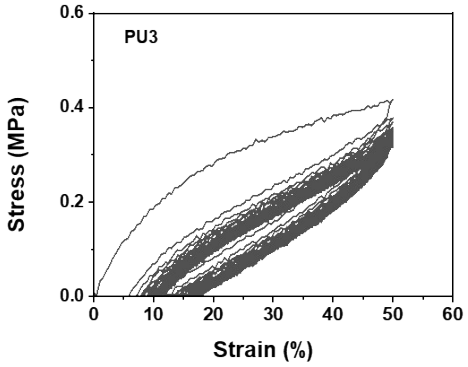

Figure S4. Cyclic loading-unloading curves of the PU3 elastomer under 50% strain for 50 cycles.

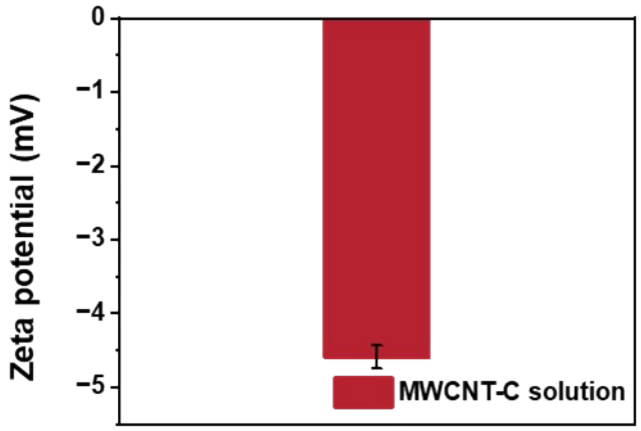

Figure S5. Zeta potential of the carboxyl MWCNTs solution.

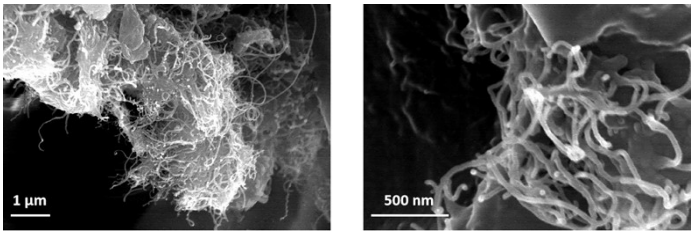

Figure S6. SEM images of the cross-section of PU/MWCNTs-C foam.

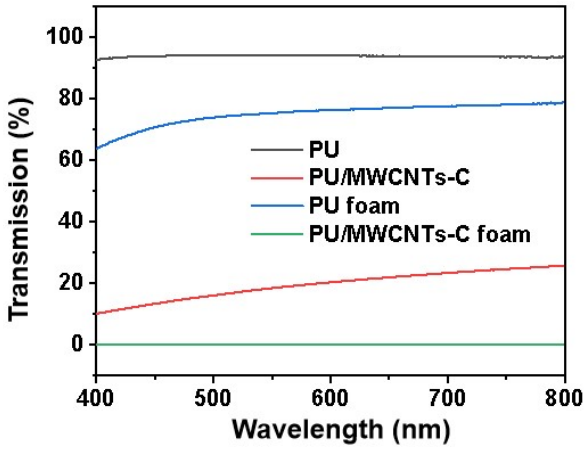

Figure S7. UV-vis curves of bulk PU3, PU3 foam, CNTs absorbed bulk PU3 and PU3/MWCNTs-C foam.

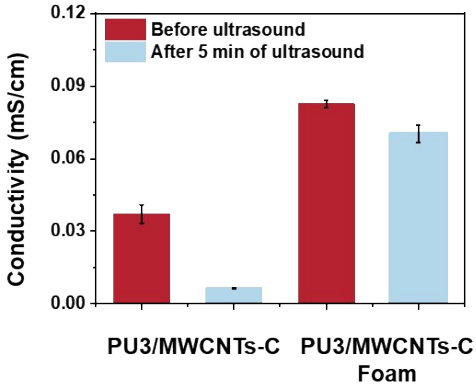

Figure S8. The conductivity of bulk PU/MWCNTs-C and PU/MWCNTs-C foam before and after the ultrasonication treatment.

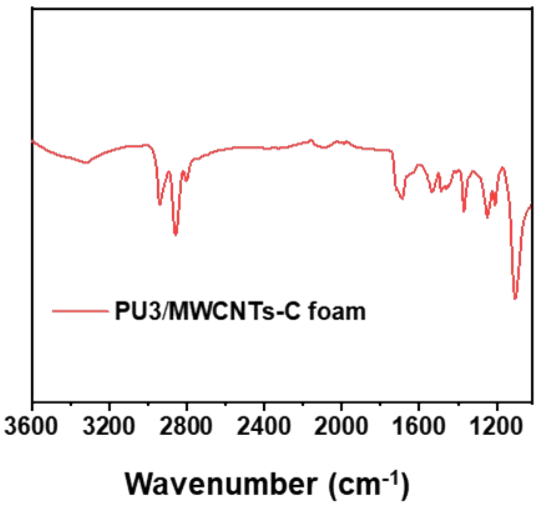

Figure S9. The FTIR spectrum of PU3/CNTs composite foam.

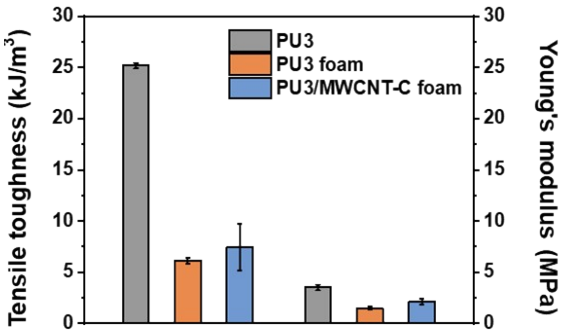

Figure S10. The tensile toughness and Young's modulus of the bulk PU3, PU3 foam and PU3/MWCNTs-C foam.