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Supporting information

Dynamic Disulfide Bonds Fabricated Multifunctional Liquid-free Elastomer for Recyclable Soft Electronics

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Content:

Figure S11. Comparison of **PTAIM** with the reported ICEs.

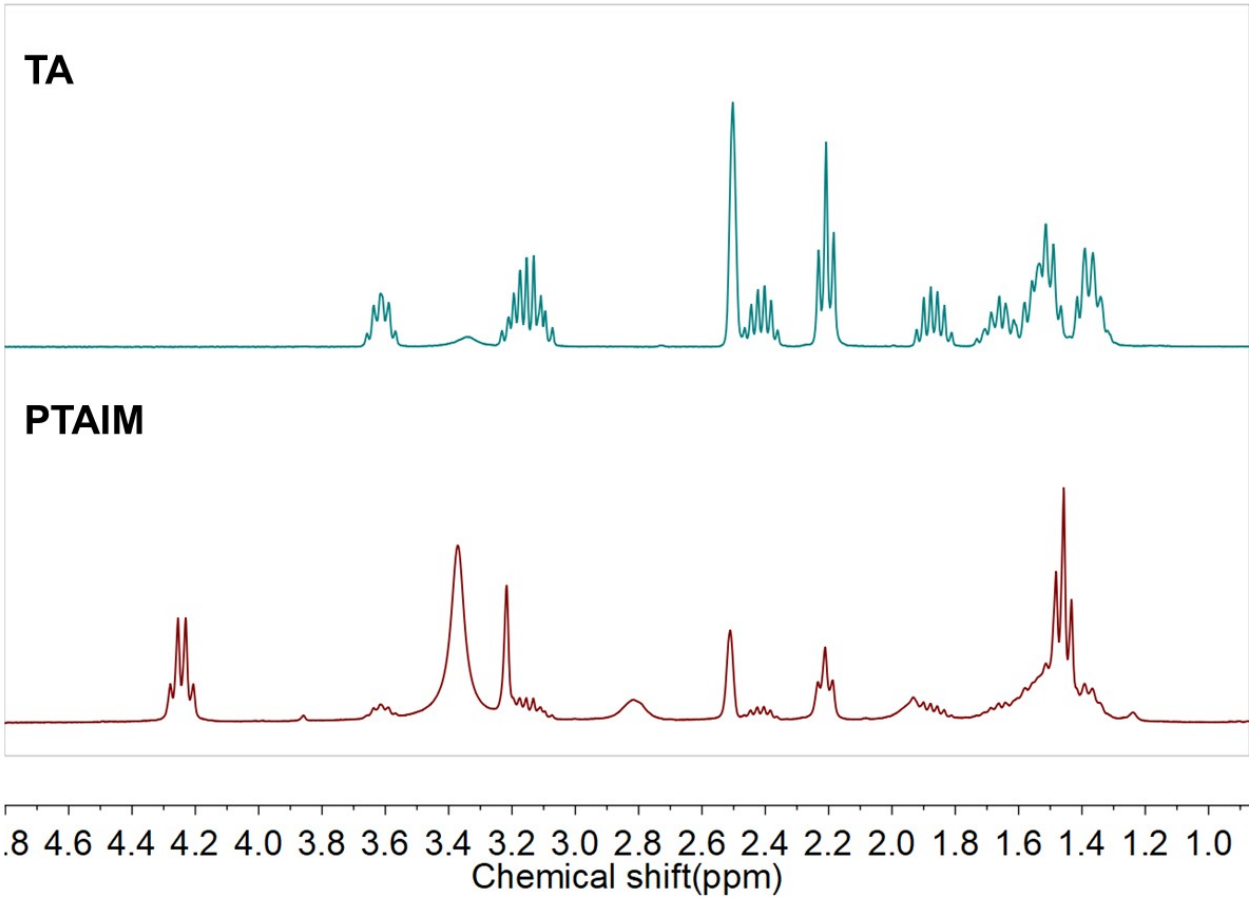

Figure S1. ^{1}HNMR spectrum of TA monomer and **PTAIM**. The peak at 2.8 ppm in **PTAIM** indicates the formation of the linear polymer through the ROP process of TA monomer.

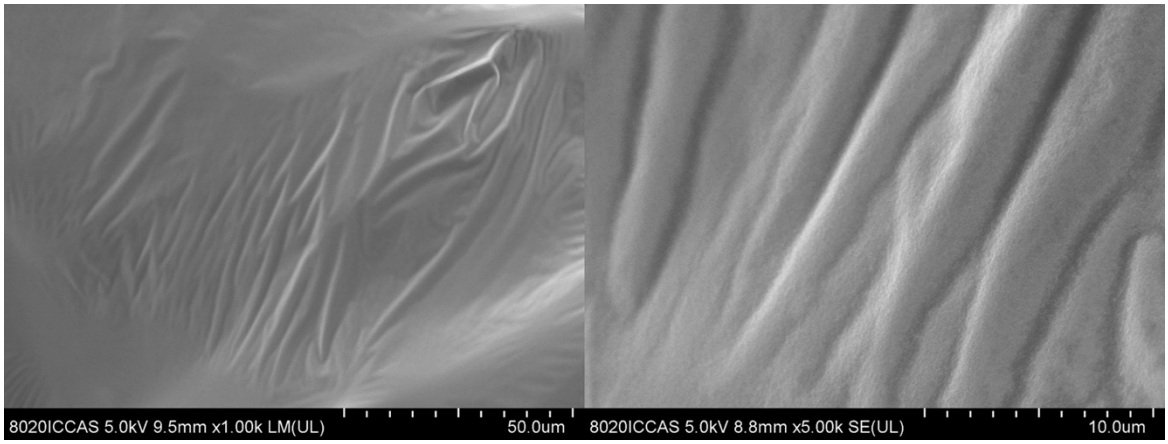

Figure S2. SEM images of **PTAIM** with the ratio of 1:0.2:0.4:0.1.

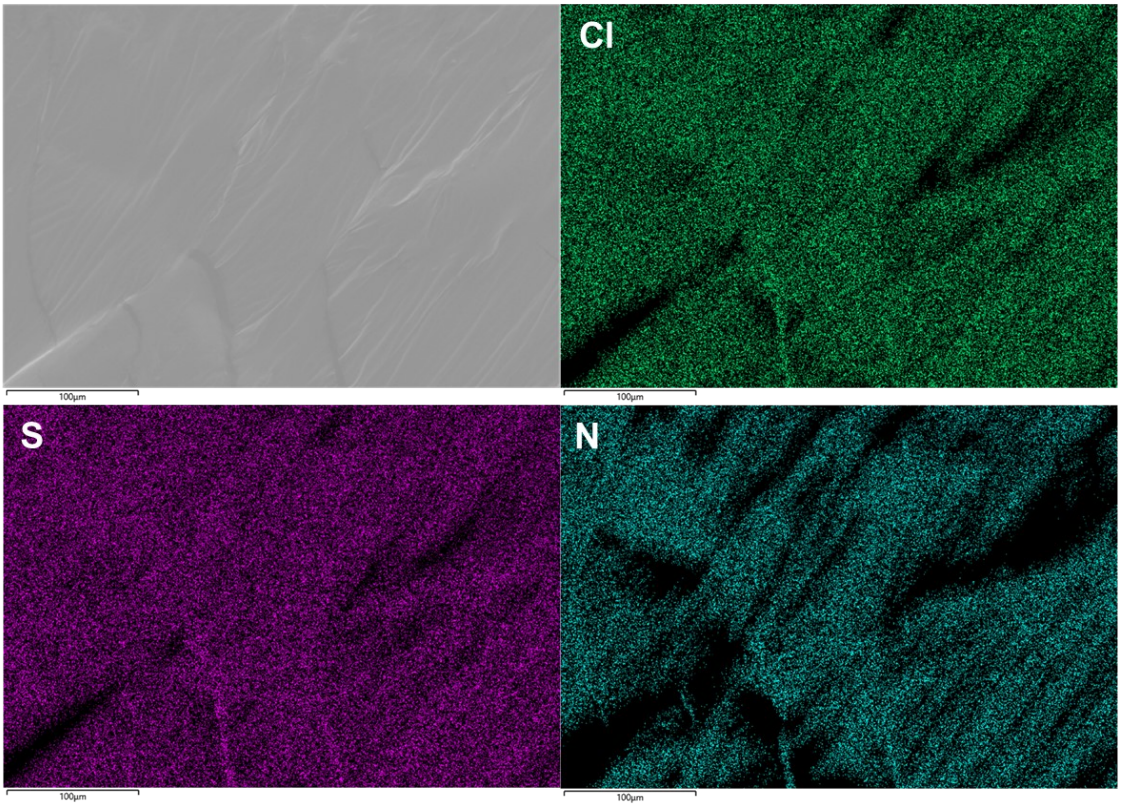

Figure S3. SEM mapping images of **PTAIM** (green: Cl element, blue: N element, purple: S element).

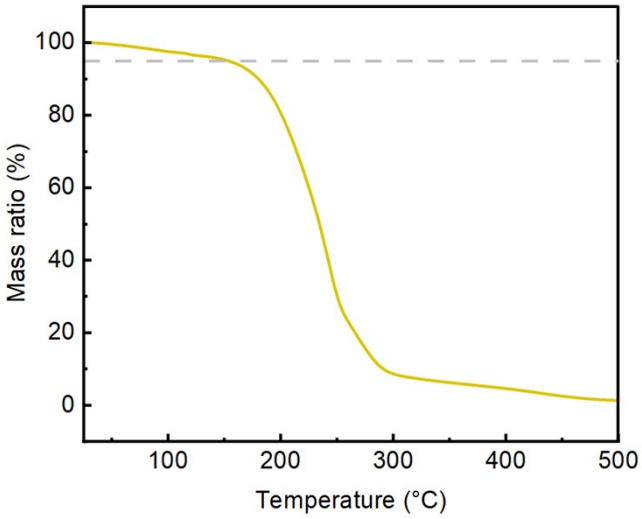

Figure S4. TGA of **PTAIM** with the ratio of TA:IA:[VBIM][Cl]:[BMIM][Cl] = 1:0.2:0.4:0.1.

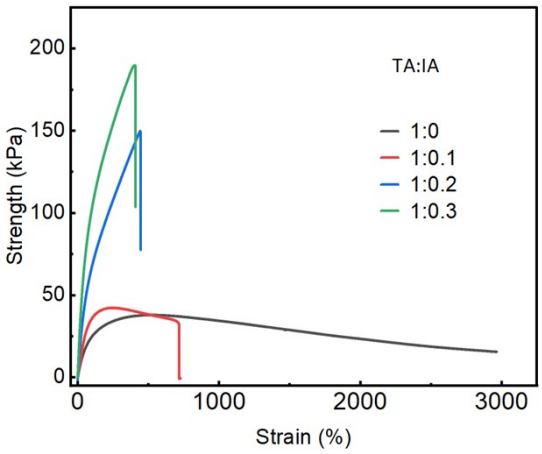

Figure S5. Strain-stress curves of **PTAIM** with different ratios of TA to IA, the ratio of TA to [VBIM][Cl] is 1:0.4.

Table S1 The mechanical performance of PTAIM with different content of [VEIM][Cl]. The ratio of IA to TA is fixed at 0.2:1.

Ratio	Young's modulus (kPa)	Break strain (%)	Break stress (kPa)
1:0	486	>3000	N/A
1:0.1	532	714	33
1:0.2	1159	440	149
1:0.3	2520	405	189

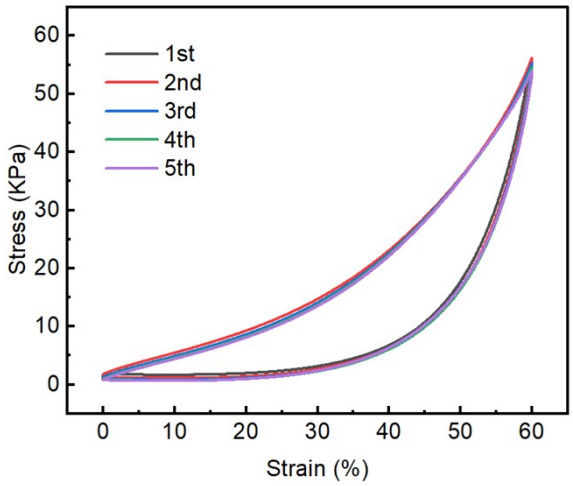

Figure S6. Successive compression curves of **PTAIM** at the strain of 60% for 5 times.

Figure S7. The degradation process of ICE in 0.5 M NaOH solution.

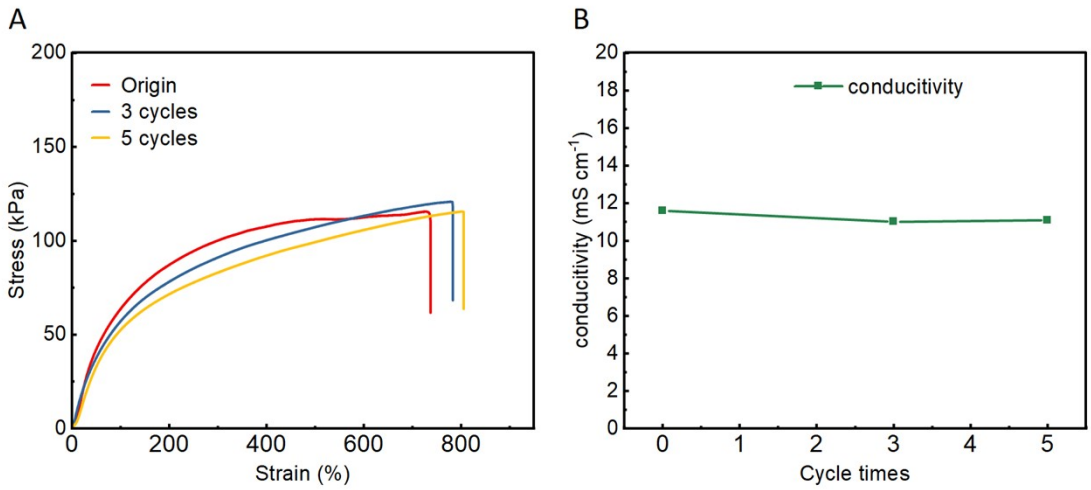

Figure S8. The tensile stress curves (A) and conductivity (B) of **PTAIM** before and after remolding for 3 and 5 cycles.

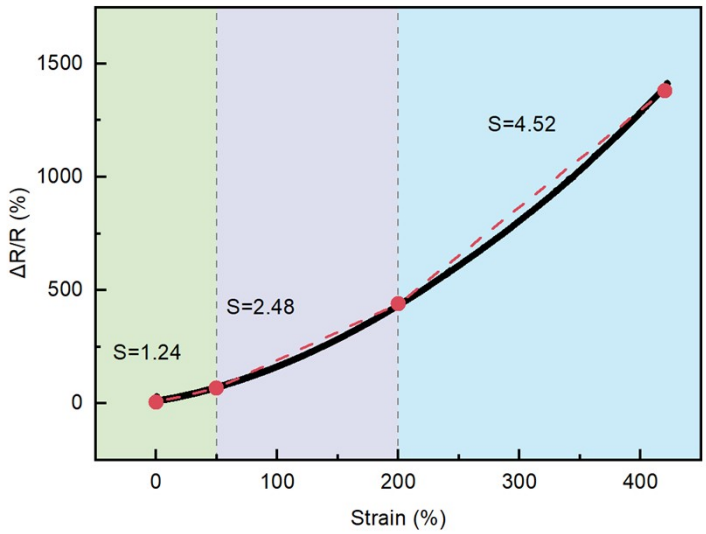

Figure S9. Relative resistance changes of **PTAIM** as the function of strain after remolding for 3 times.

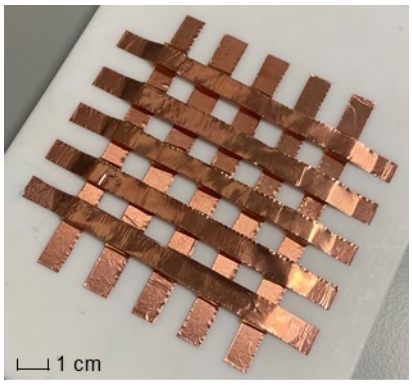

Figure S10. The photo of a 5×5 **PTAIM** pressure sensor array.

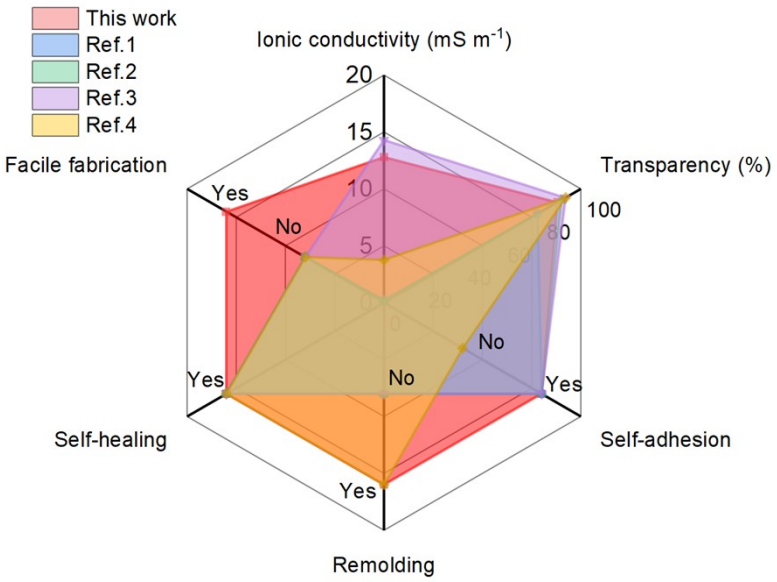

Figure S11. Comparison of **PTAIM** with the reported ICEs[1-4].

References

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