Electronic Supplementary Material (ESI) for Materials Horizons.

Extremely Tough Composites from Fabric Reinforced Polyampholyte Hydrogels

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Supplementary Information

Video S1 – Tearing test of a 20 mm wide neat fabric sample.

Video S2 – Tearing test of a 20 mm wide polyacrylamide composite sample.

Video S3 – Tearing test of a 20 mm wide polyampholyte composite sample.

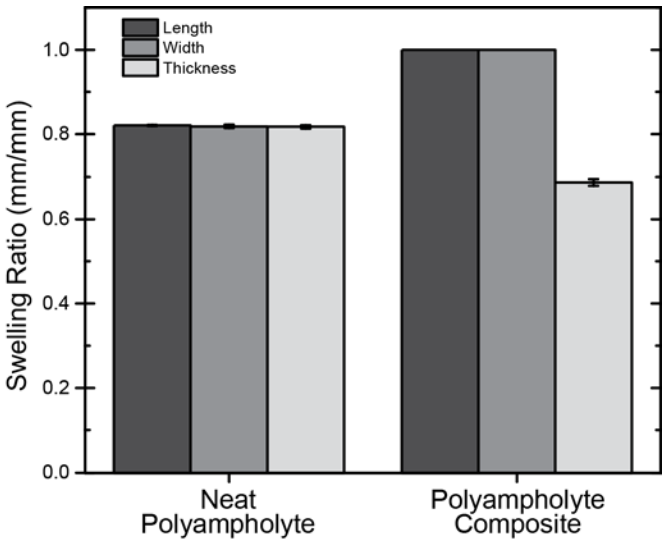

Figure S1 - Swelling ratio (water equilibrium dimension divided by as-prepared dimension) for the neat polyampholyte and polyampholyte composite.

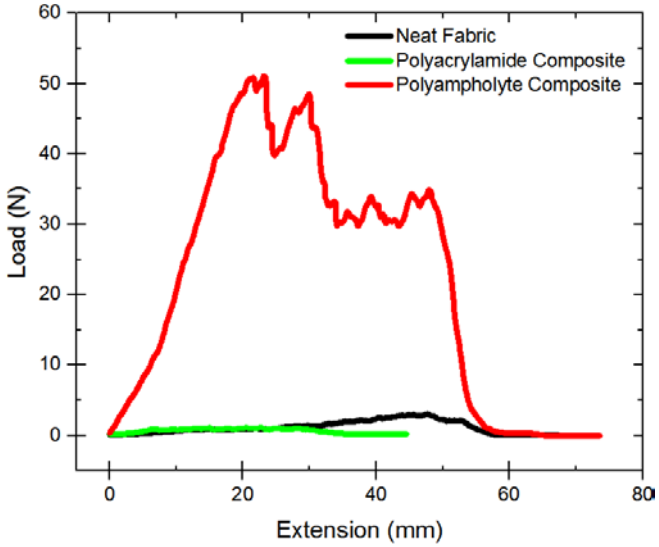

Figure S2 - Load versus extension curve for the trouser tearing test of 20 mm wide samples. The t and L_{bulk} are 0.3 mm and 26.4 mm, 1.2 mm and 19.8 mm, and 0.64 mm and 21.9 mm, for the neat fabric, polyacrylamide composite, and polyampholyte composite, respectively.

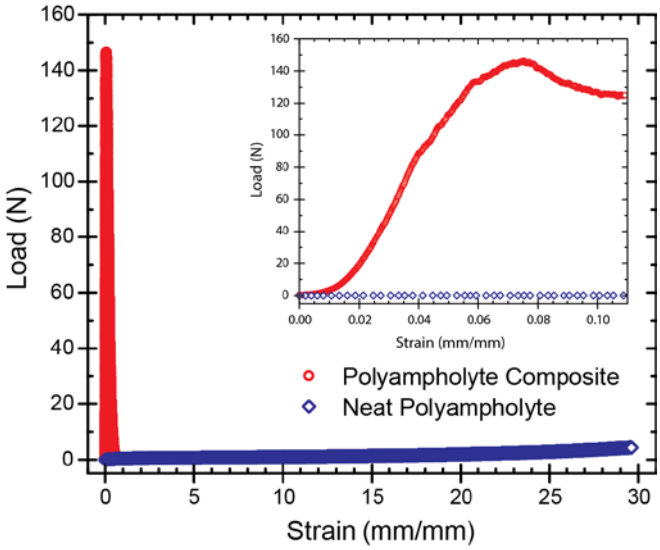

Figure S3 - Load versus strain curves for the polyampholyte composite and the neat polyampholyte gel. The polyampholyte composite has dimensions of w = 9.2 mm and t = 0.94 mm, and the neat polyampholyte gel has dimensions of w = 4 mm and t = 3 mm. The inset plot demonstrates that at the strain where maximum load occurs in the composite, the polyampholyte gel is supporting minimal load. Polyampholyte gel data is from Reference [28].

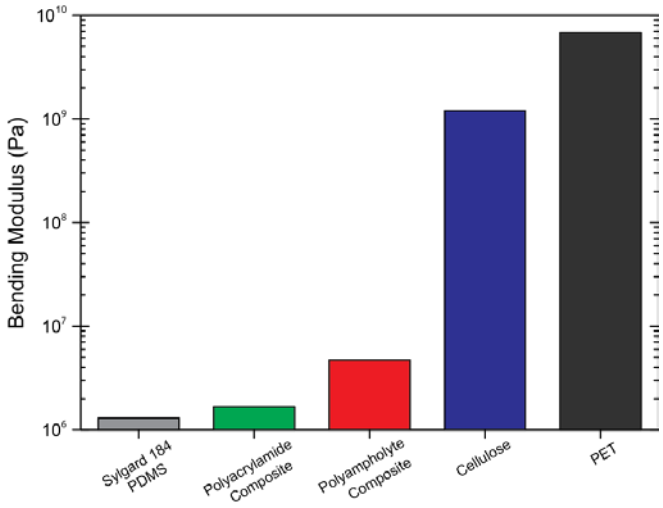

Figure S4 - Comparison of bending moduli for the polyacrylamide and polyampholyte composite to Sylgard 184 PDMS, cellulose, and PET (From Reference [35])