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Title	Extremely tough composites from fabric reinforced polyampholyte hydrogels
Author(s)	King, Daniel R.; Sun, Tao Lin; Huang, Yiwan et al.
Citation	Materials horizons, 2(6), 584-591 https://doi.org/10.1039/c5mh00127g
Issue Date	2015-11-01
Doc URL	https://hdl.handle.net/2115/60325
Rights(URL)	https://creativecommons.org/licenses/by/3.0/
Type	journal article
File Information	c5mh00127g1.pdf, Supplementary Information

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Electronic Supplementary Material (ESI) for Materials Horizons.
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Extremely Tough Composites from Fabric Reinforced Polyampholyte Hydrogels

Daniel R. King[1], Tao Lin Sun[2], Yiwan Huang[3], Takayuki Kurokawa[2], Takayuki Nonoyama[2], Alfred J. Crosby[1]*, Jian Ping Gong[2]*

[1]Polymer Science and Engineering Department, University of Massachusetts, Amherst MA 01003, USA

[2]Faculty of Advanced Life Science, Hokkaido University, Sapporo 060-0810, Japan

[3]Graduate School of Science, Hokkaido University, Sapporo 060-0810, Japan

*Corresponding Authors

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.

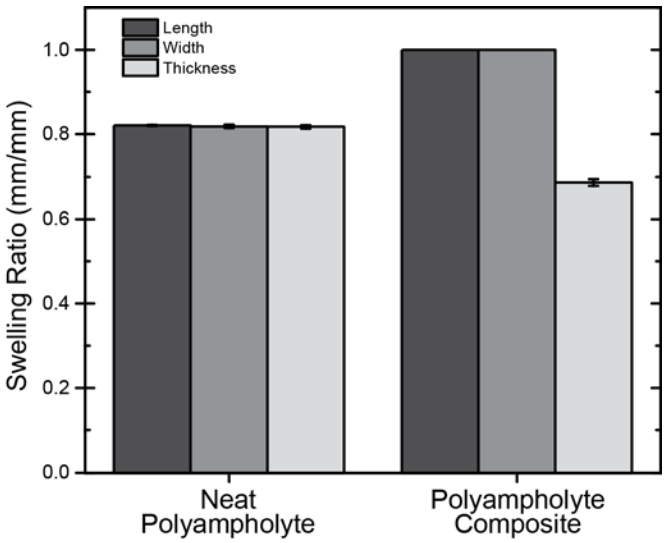


Figure S1 - Swelling ratio (water equilibrium dimension divided by as-prepared dimension) for the neat polyampholyte and polyampholyte composite.

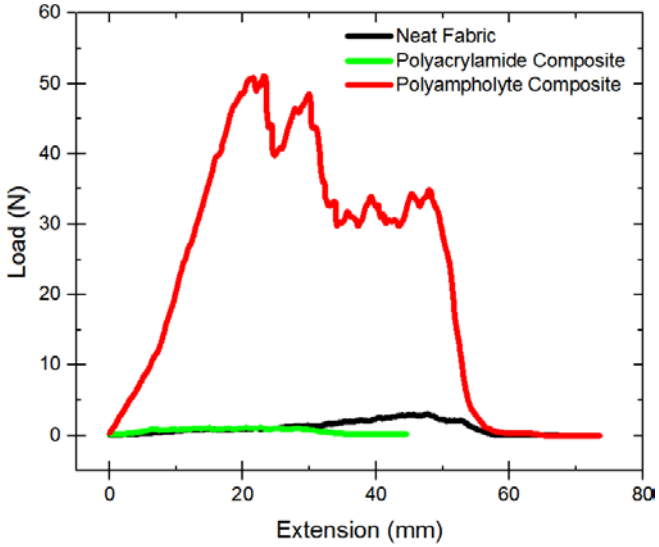


Figure S2 - Load versus extension curve for the trouser tearing test of 20 mm wide samples. The t and L_{bulk} are 0.3 mm and 26.4 mm, 1.2 mm and 19.8 mm, and 0.64 mm and 21.9 mm, for the neat fabric, polyacrylamide composite, and polyampholyte composite, respectively.

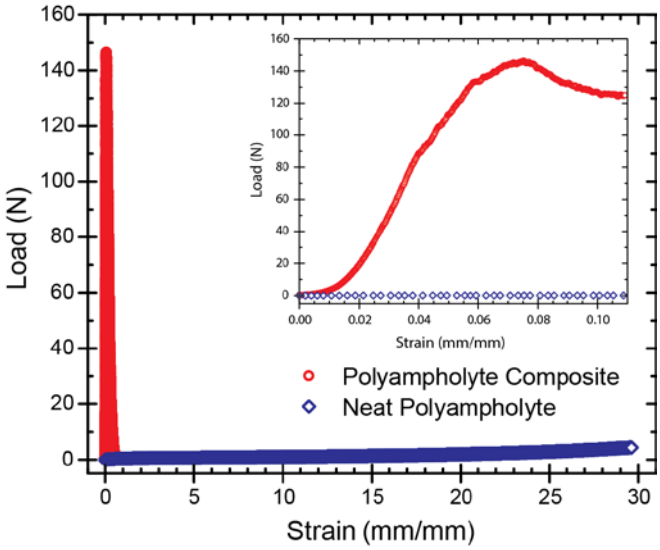


Figure S3 - Load versus strain curves for the polyampholyte composite and the neat polyampholyte gel. The polyampholyte composite has dimensions of w = 9.2 mm and t = 0.94 mm, and the neat polyampholyte gel has dimensions of w = 4 mm and t = 3 mm. The inset plot demonstrates that at the strain where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

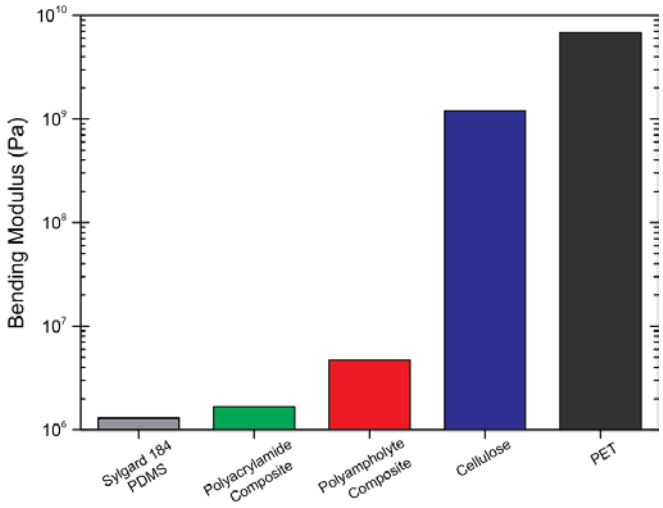


Figure S4 - Comparison of bending moduli for the polyacrylamide and polyampholyte composite to Sylgard 184 PDMS, cellulose, and PET (From Reference [35])