ADVANCED MATERIALS

Supporting Information

for *Adv. Mater.*, DOI: 10.1002/adma.201801934

Muscle-Inspired Highly Anisotropic, Strong, Ion-Conductive Hydrogels

*Weiqing Kong, Chengwei Wang, Chao Jia, Yudi Kuang, Glenn Pastel, Chaoji Chen, Gegu Chen, Shuaiming He, Hao Huang, Jianhua Zhang, Sha Wang, and Liangbing Hu**

SUPPLEMENTARY INFORMATION

Muscle-Inspired Highly Anisotropic, Strong, Ion-Conductive Hydrogels

Weiqing Kong,[1a] Chengwei Wang,[1a] Chao Jia,[1a] Yudi Kuang,[1] Glenn Pastel,[1] Chaoji Chen,[1] Gegu Chen[1], Shuaiming He[1], Hao Huang[2], Jianhua Zhang[3], Sha Wang,[1] Liangbing Hu[1, *]

[1]Department of Materials Science and Engineering, University of Maryland, College Park, Maryland, 20742

[2]Department of Mechanical Engineering, University of Maryland, College Park, Maryland, 20742

[3]Metabolic Diseases Branch, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland 20892, United States

[*]Email: binghu@umd.edu

[a] These authors contributed equally to this work.

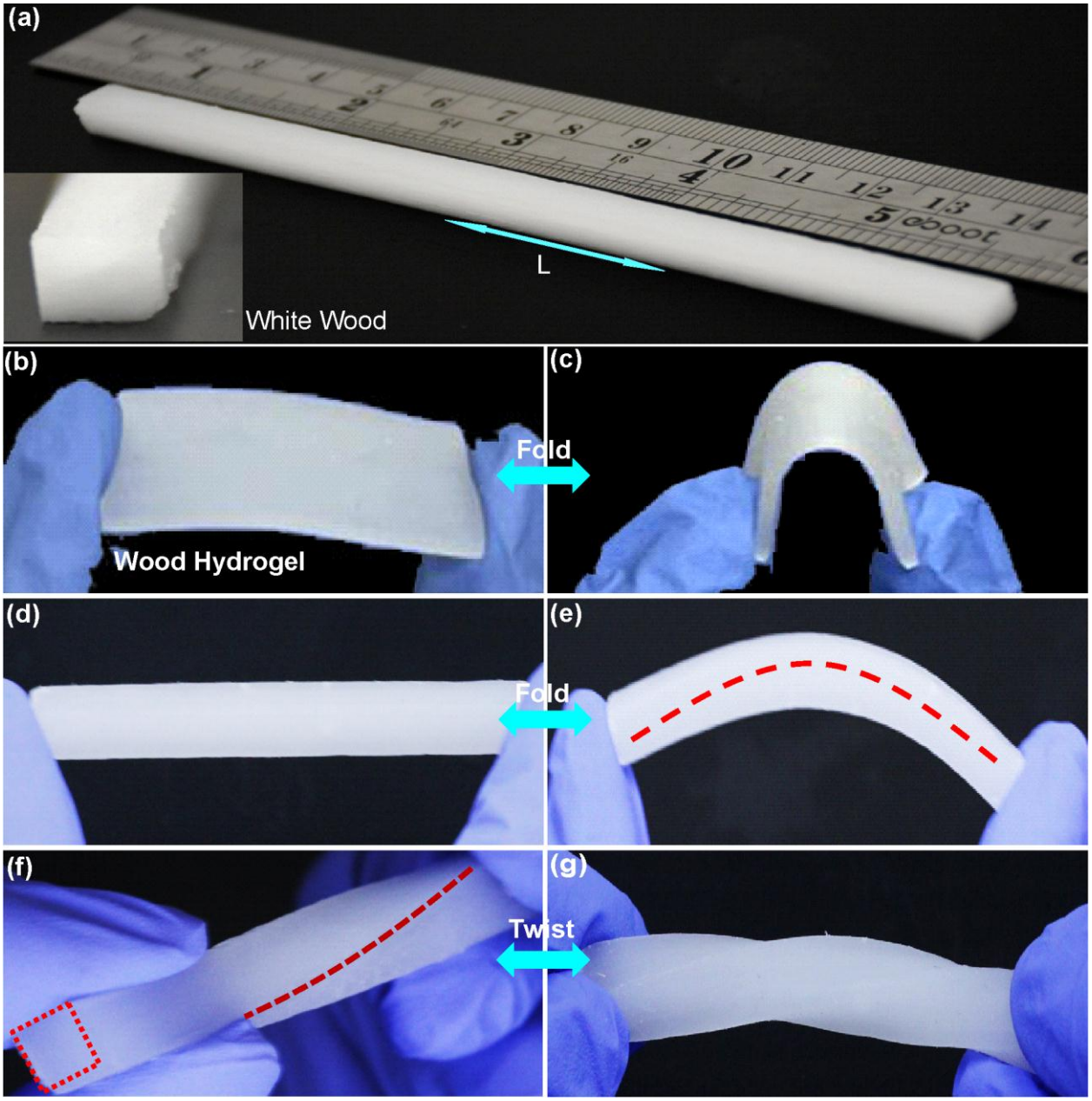

Figure S1 Pictures of the white wood and wood hydrogel. (a) Image of the white wood, which maintains its aligned structure after lignin removal. (b-c) Image of the wood hydrogel, before folding. (d-e) Image of the wood hydrogel in the bent state which can recover without any plastic deformation. (f-g) Image of wood hydrogel wood hydrogel column, which can be twist as muscle.

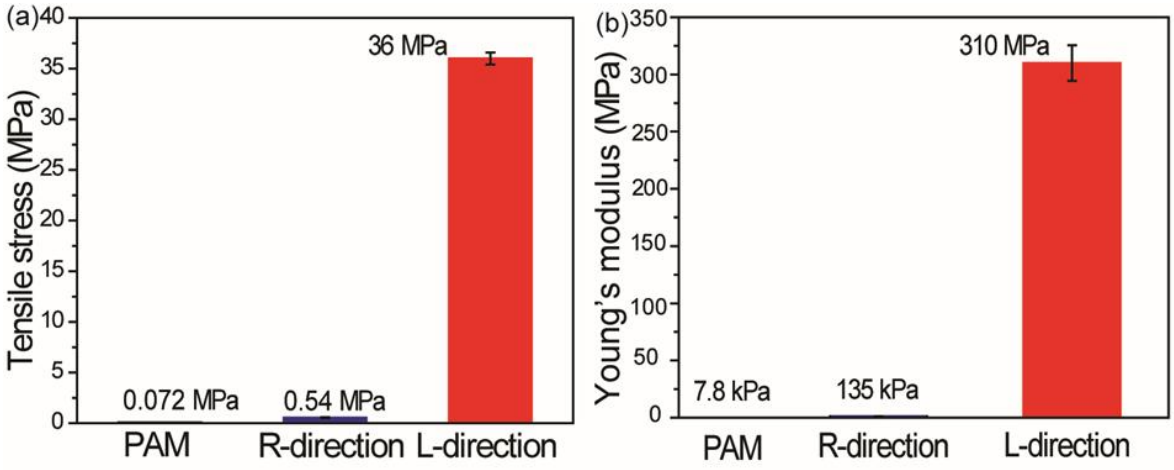

Figure S2 (a) The tensile strength of PAM hydrogel, R-direction and L-direction of wood hydrogel. (b) The Young's modulus of PAM hydrogel, R-direction and L-direction of wood hydrogel.

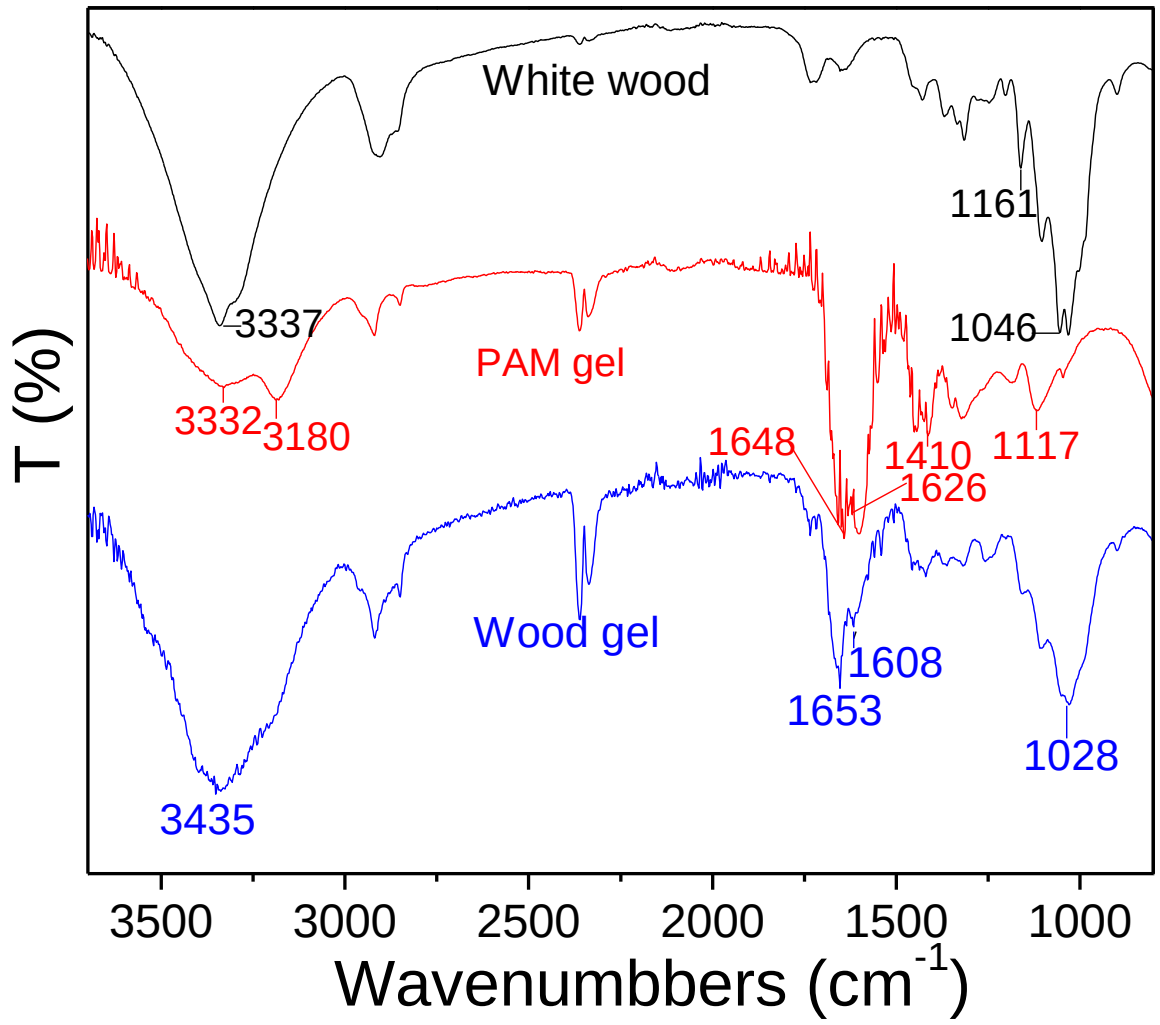

Figure S3 FT-IR spectra of the white wood, PAM and wood hydrogel.

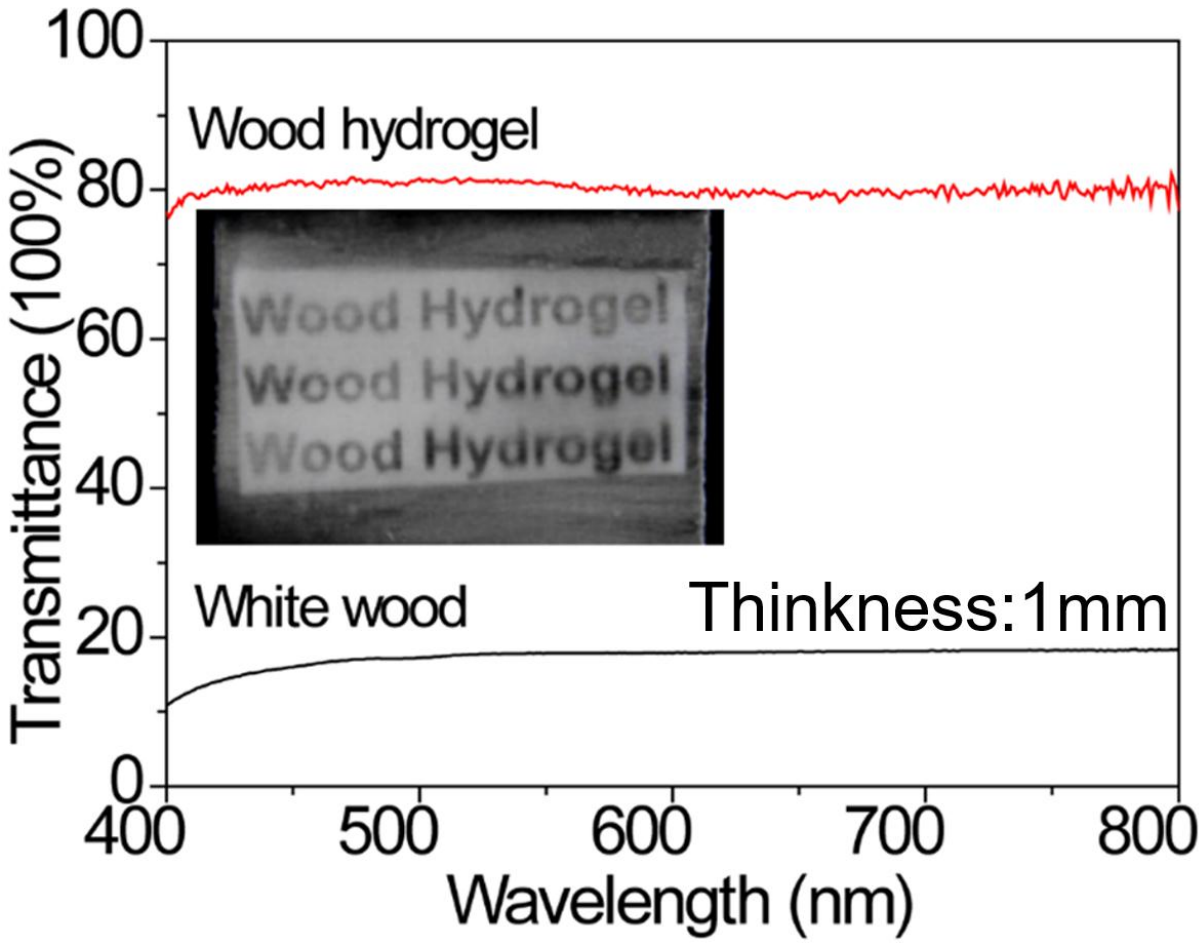

Figure S4 Total transmittance for the white wood and wood hydrogel.

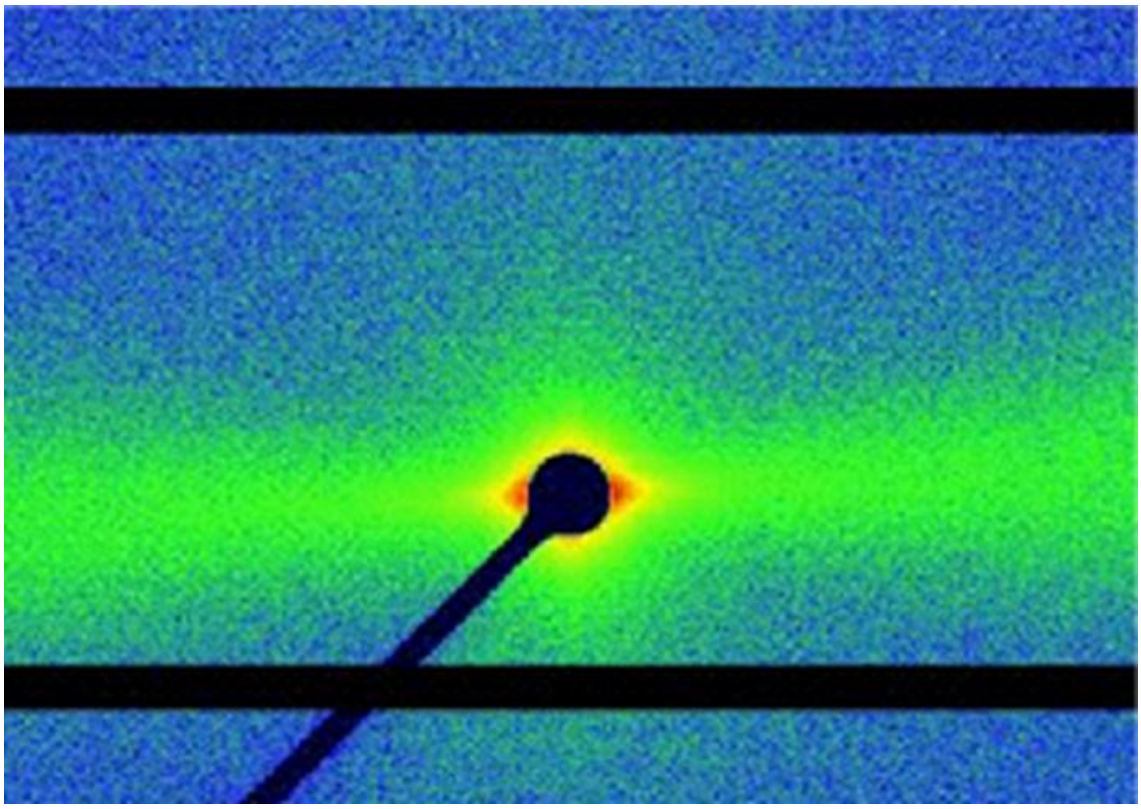

Figure S5 2D SAXS patterns of the wood hydrogel showing distinct anisotropic behavior.

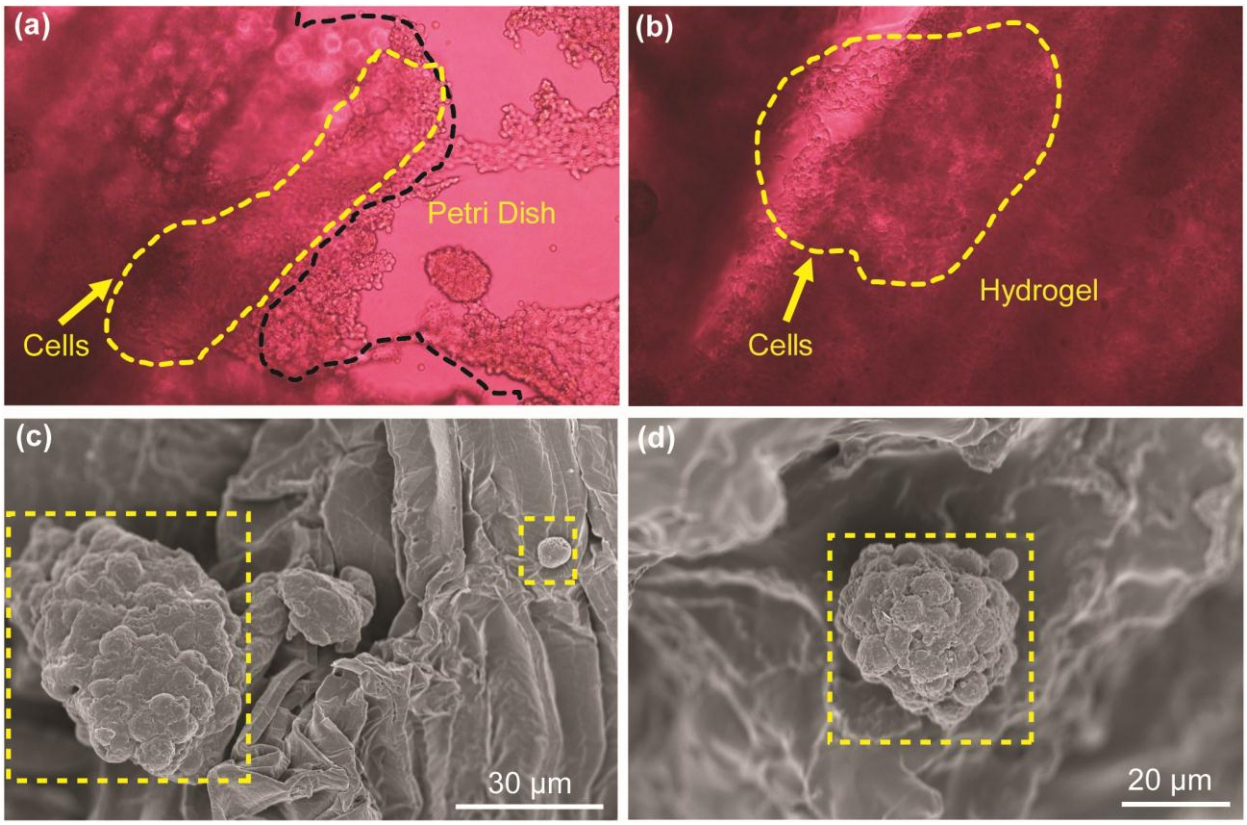

Figure S6 Cell culturing performance of wood hydrogel. (a-b) Fluorescent microscopic images of HEK293 cells on wood hydrogels. (c-d) SEM images of HEK293 cells cultured on wood hydrogel.

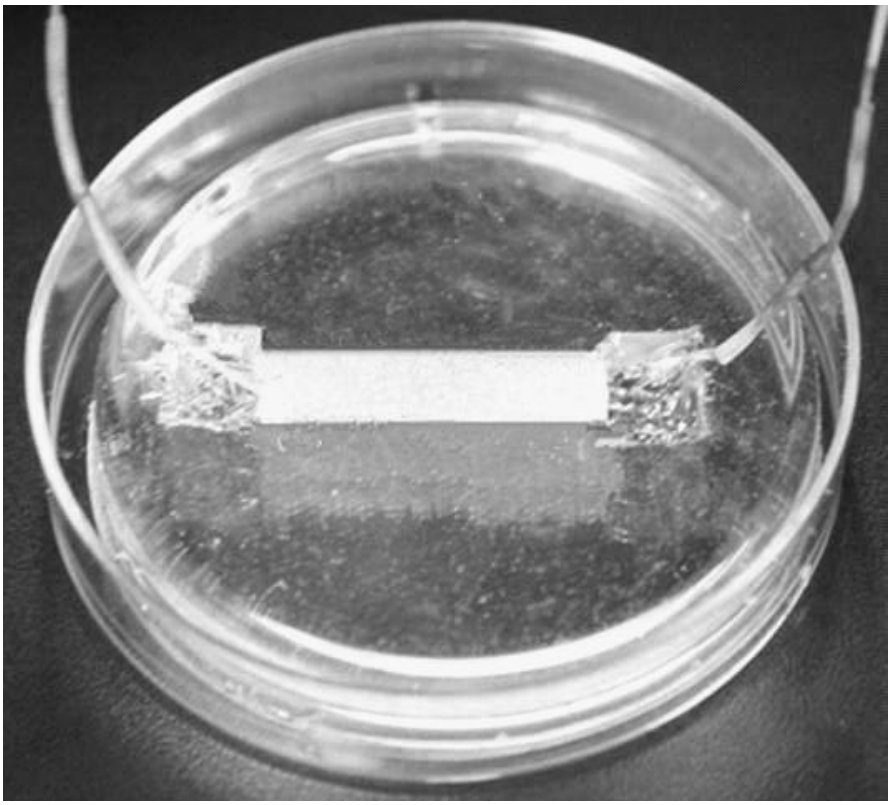

Figure S7 Photo of the wood hydrogel embedded in PDMS.

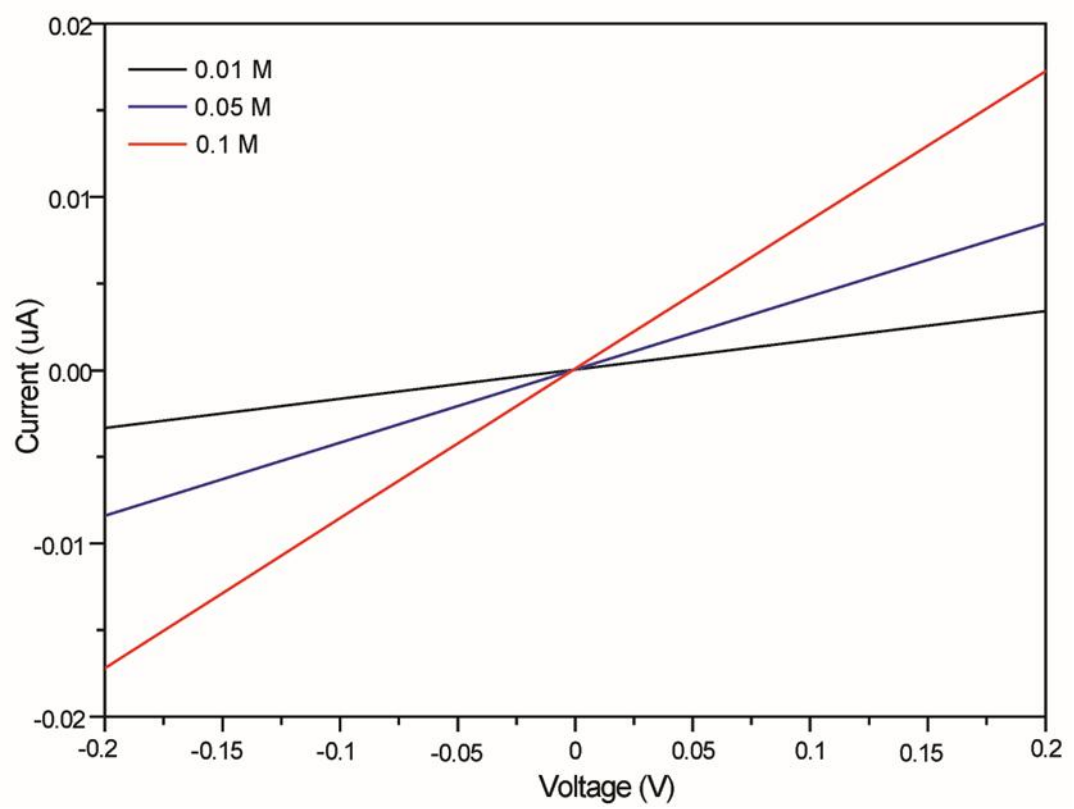

Figure S8 I−V curves obtained at KCl concentrations of 0.01 M, 0.05 M and 0.1 M.