

## Supporting information

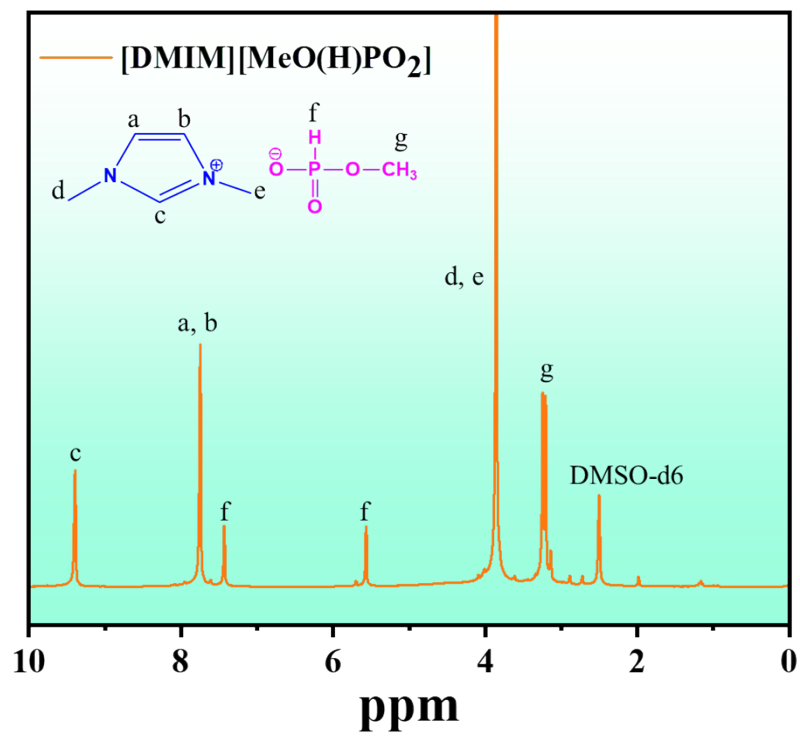
### **A sustainable, high ionic conductivity, semi-interpenetrating double-network ionogel film composed of phosphorylated corn straw-derived cellulose and polyaspartamide derivatives**

*Bo Wang,<sup>1a</sup> Shuai Xie,<sup>1a</sup> Yan Li,<sup>a</sup> Meiqing Fan,<sup>b</sup> Xu Zeng,<sup>a</sup> Hong Zhang,<sup>a</sup> Yue Cao,<sup>a</sup> Xin Zhang,<sup>\*a</sup> Bo Ren,<sup>\*a</sup> and Xiao Dong Yang<sup>\*a</sup>*

*<sup>a</sup>Jilin Provincial Key Laboratory of Straw-Based Functional Materials, Institute for Interdisciplinary Biomass Functional Materials Studies, Jilin Engineering Normal University, Changchun 130052, P. R. China.*

*<sup>b</sup>Measurement Biotechnology Research Center, College of Food Engineering, Jilin Engineering Normal University, Changchun, 130052, PR China*

*\* zhangxin0422@jleu.edu.cn, ren20121217@126.com, y86908051@126.com.*



**Figure S1.**  $^1\text{H}$  NMR spectra of  $[\text{DMIM}][\text{MeO}(\text{H})\text{PO}_2]$  ionic liquid.

**Table S1.** A comparative analysis of diverse cellulose-based ionic films

| Category  | Ionic Conductivity (mS/cm) | Voltage (V) | Ref.      |
|---|----------------------------|-------------|-----------|
| AE-Cel  | 2.8                        | 1.5         | This work |
| C-pHEMA/C-p-cellulose-[DMIm][(MeO)(H)PO <sub>2</sub> ] : BMIM TFSI (9 : 1) PIL_IL | 2.6                        | 2.5         | [S1]      |
| PEG-CNC-NaTFSI solid polymer electrolyte  | 2.34                       | -           | [S2]      |
| Cellulose/Methylcellulose gel   | 4.36                       | -           | [S3]      |
| CNF/PEG gel   | 0.61                       | -           | [S4]      |
| Cellulose-PDC organogels  | 4.14                       | -           | [S5]      |
| Cellulose/Chitosan  | 2.1                        | 2           | [S6]      |
| MxG-CNC-g-PPMA  | 0.71                       | -           | [S7]      |
| PS-r-PMMA <sub>s</sub>  | 0.98                       | -           | [S8]      |

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