Electronic Supplementary Material (ESI) for RSC Advances. This journal is © The Royal Society of Chemistry 2017

## **Supplementary information**

## Self-healable, tough and highly stretchable hydrophobic association / ionic dual physically cross-linked hydrogels

Yulin Zhang<sup>1</sup>, Chengxin Hu<sup>1</sup>, Xu Xiang<sup>2</sup>, Yongfu Diao<sup>1</sup>, Binwei Li<sup>1</sup>, Linying Shi<sup>1</sup>, Rong Ran<sup>1</sup>

( <sup>1</sup> College of Polymer Science and Engineering, Sichuan University, <sup>2</sup> Chengdu Product Quality Supervision and Inspection Institute, Chengdu 610065, China )

<sup>\*</sup>Corresponding author. Email address: ranrong@scu.edu.cn

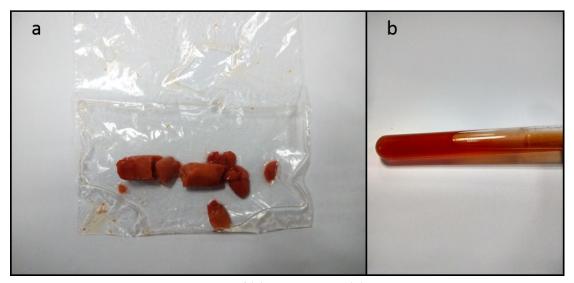


Fig. S1 Photos of (a) S-DPHF-2 and (b) C-DPHF-2

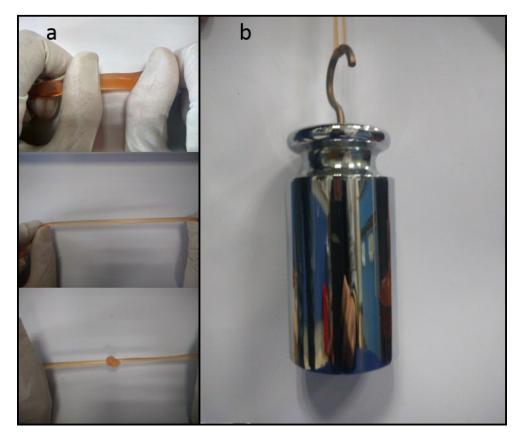


Fig. S2 Photos of S-DPHF-0.25 exhibiting excellent mechanical performance: (a) Stretching and stretching after being knotted (b) Hanging weight of 2 kg



Fig. S3 Photos of the S-DPHF-0.25 gel self-healing process

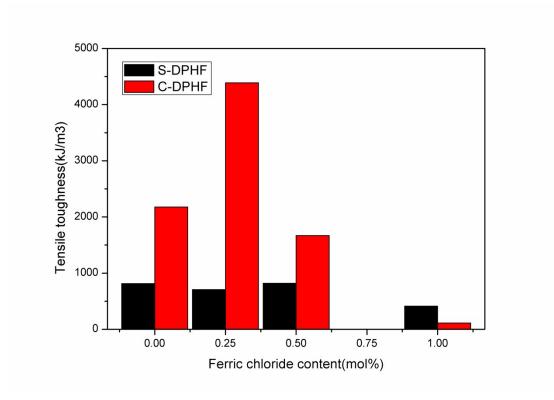


Fig. S4 Tensile toughness of S-DPHF and C-DPHF calculated from Fig. 3