Supporting Information for:

Physically and Chemically Dual-crosslinked Hydrogels with Superior Mechanical Properties and Self-Healing Behavior

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WALLS analysis

The WALLS of SDS/C18/NaCl, SiPU and their mixed solution were tested, and the result shows in Figure S1. The diameter of SDS/C18/NaCl, SiPU and mixed solution is about 62 nm, 77 nm and 82 nm, respectively. Due to the instrument error and the influence of macromolecular particles, the three solutions may have similar average size. The results of WALLS show that the two micelles can be dispersed in solution singly and stably.

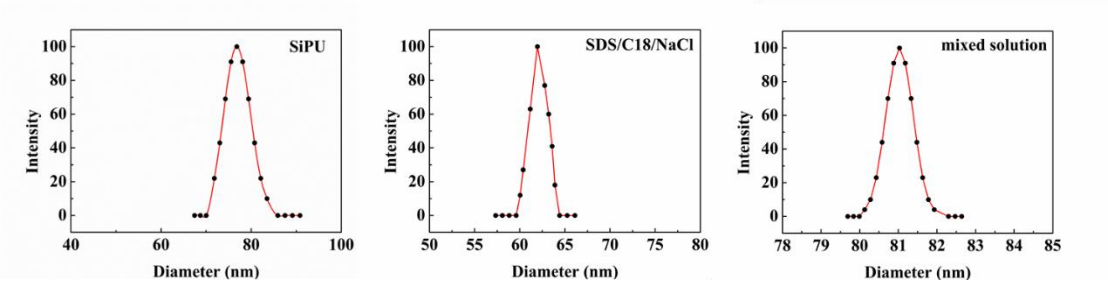

Figure S1 The size distribution curve of SDS/C18/NaCl, SiPU and their mixed solution.

Self-healing properties of hydrogels

In order to accurately describe the self-healing efficiency of PCDC-2 hydrogel, we compared the tensile stress-strain curves of the initial sample and the self-healing sample, and the results are shown in Figure S2. This shows that the PCDC hydrogel has a self-healing efficiency of 71%.

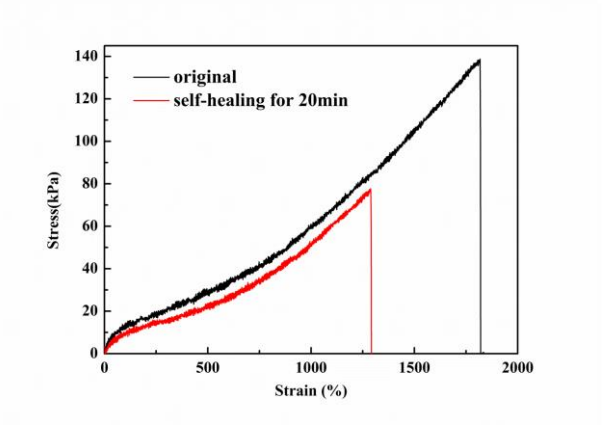

Figure S2 Tensile stress-strain curve of initial sample and self-healed PCDC-2 hydrogel.