

Supplementary Information

**Repetitive Biomimetic Self-healing of Ca²⁺-Induced
Nanocomposite Protein Hydrogels**

Jun Chen¹, Qiuchen Dong¹, Xiaoyu Ma¹, Tai-Hsi Fan², and Yu Lei^{1, 3*}

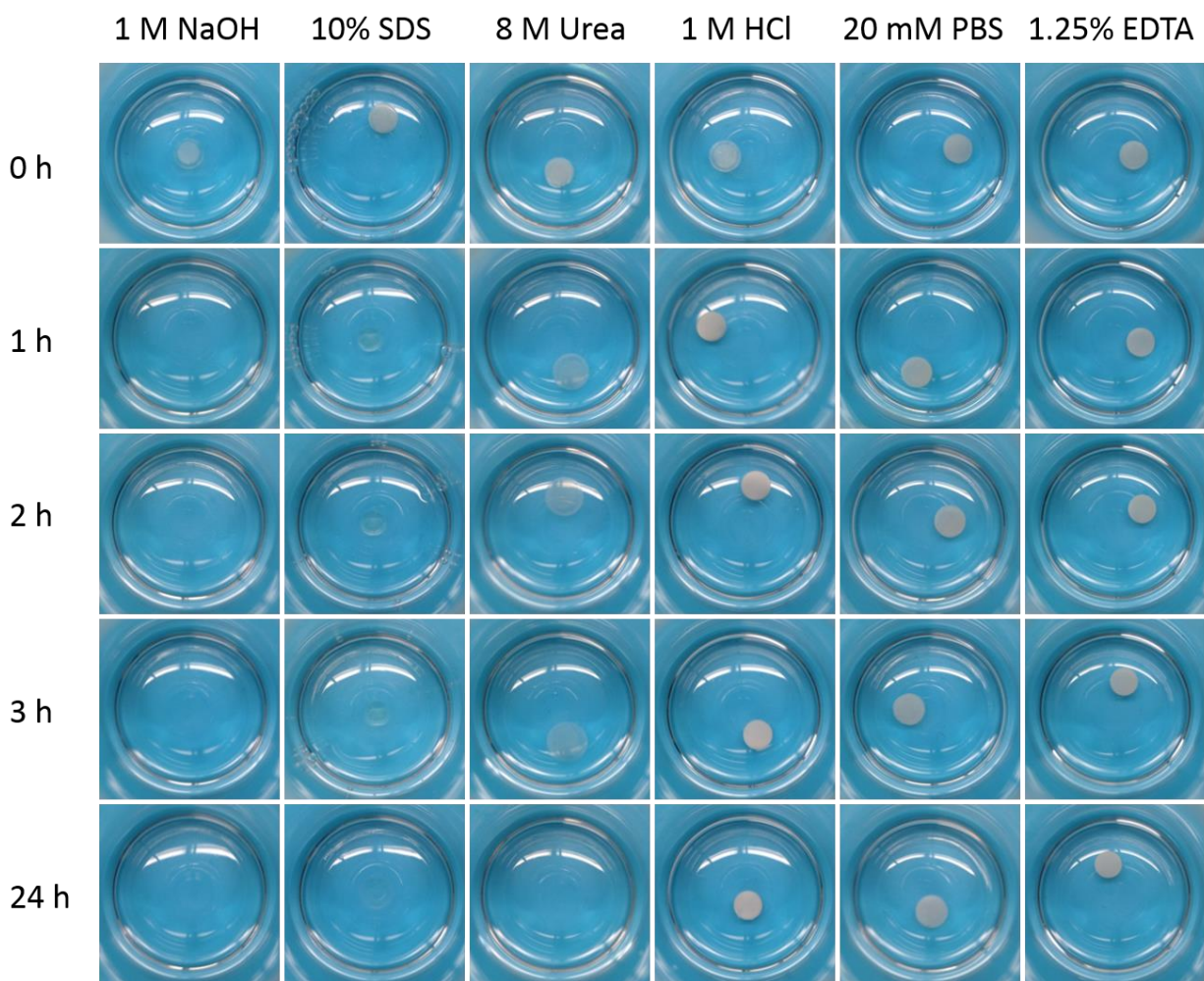
¹Department of Biomedical Engineering, University of Connecticut, Storrs, CT 06269, USA

²Department of Mechanical Engineering, University of Connecticut, Storrs, CT 06269, USA

³Department of Chemical and Biomolecular Engineering, University of Connecticut, Storrs, CT 06269, USA

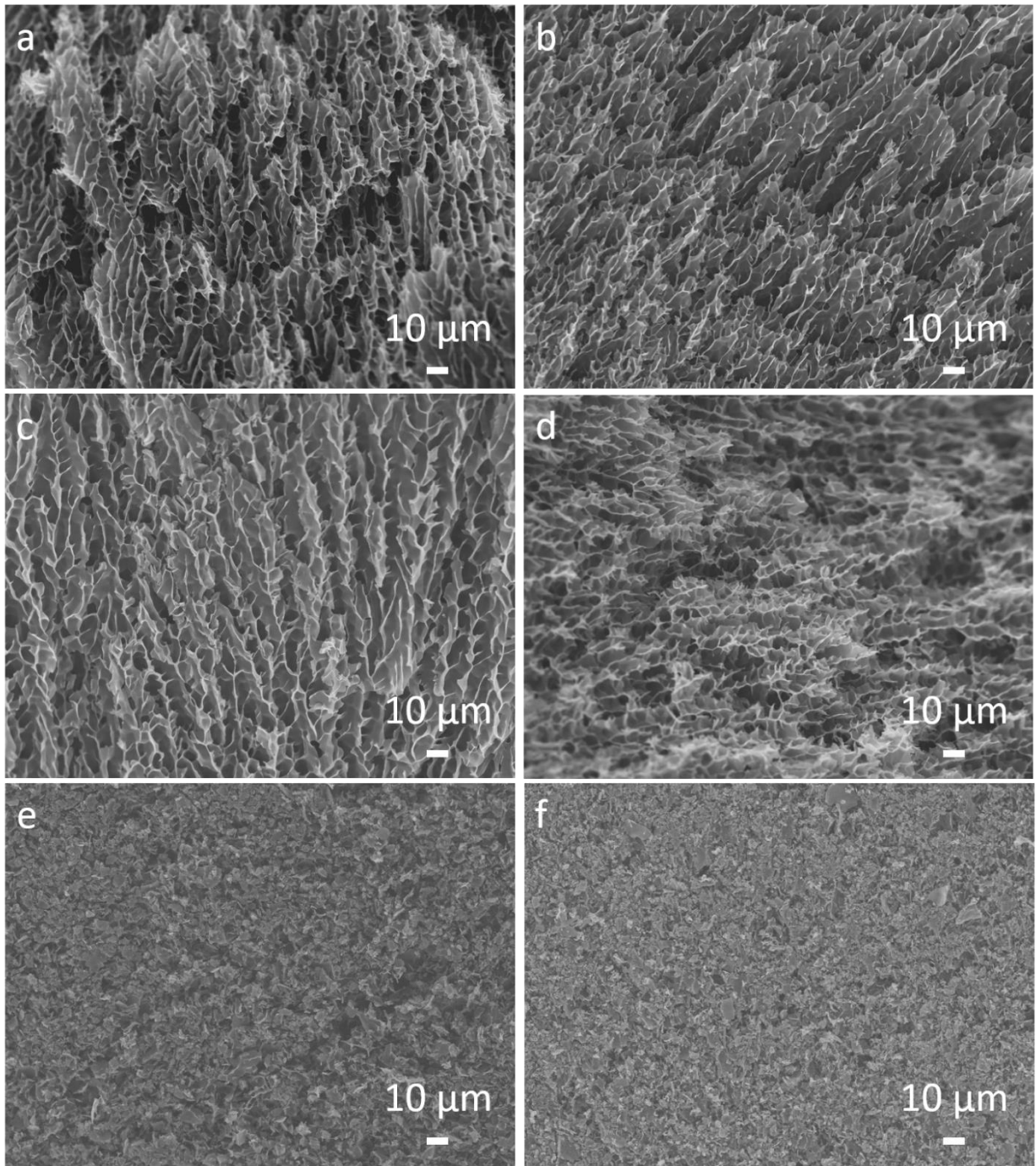
*Corresponding author

1. Calcium BSA hydrogel in different chemical environment



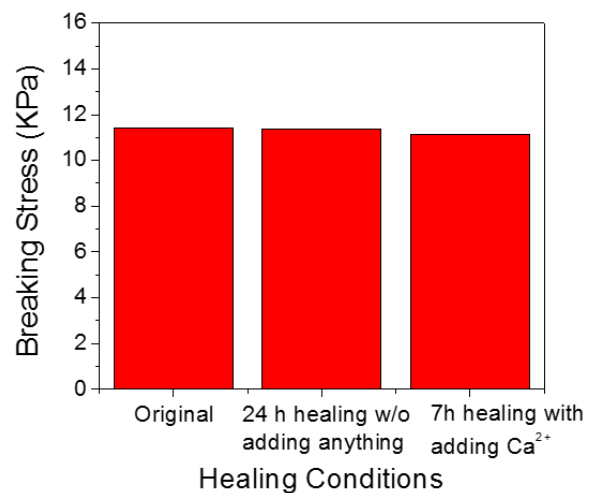
Supplementary Figure S1 | Time-dependent optical images of the as-prepared protein hydrogels in different chemical environment.

2. SEM images of calcium BSA Hydrogel



Supplementary Figure S2 | (a to f) SEM images of lyophilized calcium BSA hydrogels with 10, 15, 20, 30, 40, and 50 mM of Ca^{2+} , respectively.

3. Tensile test for quantitative self-healing evaluation



Supplementary Figure S3 | Breaking stress of 20 mM Ca²⁺ induced 10% BSA hydrogel: original, healed for 24 hrs at room temperature without adding anything, and healed with appearance of physiological Ca²⁺ concentration for 7 hrs at room temperature, respectively.