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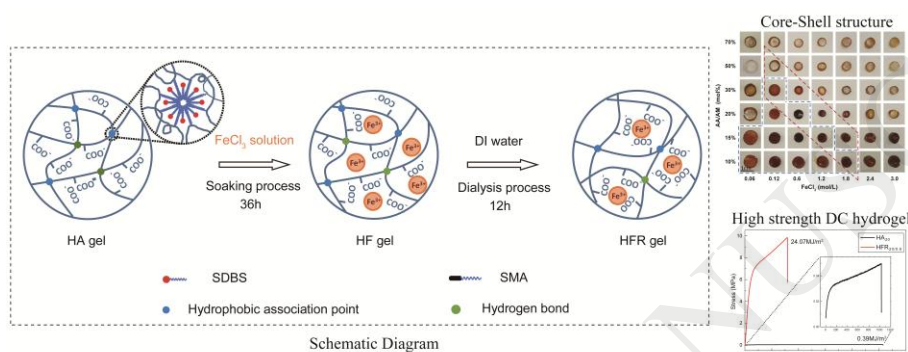
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Preparation of High Strength Double Physically cross-linked Hydrogels by Immersion Method — How to avoid uneven soaking

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Graphical abstract



Abstract:

As a fascinating soft material, hydrogel has attracted tremendous attention due to its potential for applications in smart structures and biomedical engineering. However, common hydrogels with low mechanical properties cannot be suitable for rough environments with strong external loads. This study reports a general and facile strategy to fabricate tough and high energy dissipation double cross-linked (DC) hydrogels which contain two kinds of physical interactions - hydrophobic association and metal ions coordination. The double physically cross-linked gels were prepared by a simple, three-step method: synthesis, immersion, and rearrangement. During the immersion procedure, we were surprised to find the core-shell like structure which was caused by the Fe³⁺ uneven diffusion. The four typical kinds of the core-shell

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