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## Bioinspired organohydrogels with heterostructures: Fabrications, performances, and applications

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摘要

Since emerging in 1960, the artificial hydrogels have garnered enormous attentions in scientific community due to their high level of similarities to biological soft tissues in both structures and properties. With the proceeding of research, the concern of hydrogels is gradually shifted from fundamental investigation to abundant functionalization. In contrast to the natural soft tissues, the current artificial hydrogels still possess relatively simple structures and unsatisfactory environmental adaptability, extremely limiting their practical applications in complex environments. Enlightened by the prominent adaptability of biological organisms, the binary cooperative complementary principle is utilized to develop bioinspired organohydrogels by combining two components with opposite but cooperative physiochemical features. The present review provides the advanced progresses of bioinspired organohydrogels with sophisticated heterogeneous networks and desirably environmental adaptabilities. We clearly summarize the synthesizing strategies in regard to both corresponding mechanisms and typical examples, including macroscopic organohydrogels, organohydrogels with binary solvent, organohydrogels with heteronetworks, and emulsion-based organohydrogels. Meanwhile, the intriguing features of the reported organohydrogels, such as temperature resistance, switchable mechanics, adaptive wettability, and opposite components compatibility, are also clearly highlighted with a short overview of their promising applications. Ultimately, the current challenges and perspectives on the future development of bioinspired organohydrogels are also discussed.

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