

Mussel-mimetic copolymers-based adhesive hydrogel

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Typically, the double network hydrogels have demonstrated that high mechanical properties of hydrogels are possible through physical and chemical crosslinking between networks. The catechol-containing molecules as a crosslinking mediator of hydrogels are promising material candidates for the high elasticity and adhesiveness hydrogels. In this work, bio-inspired adhesive double network hydrogels were prepared by the Polyacrylamide(PAAm) and mussel inspired copolymers, that catechol moieties can form strong covalent bonds and coordination bonds in the hydrogel networks. Additionally, PAAm-mussel inspired copolymers hydrogel was successfully fabricated and crosslinked by using various cation(Ca^{2+} , Fe^{3+} , V^{5+}) to induce the formation of catechol-metal coordination interaction, that impart distinctive properties to hydrogel, such as adhesiveness on the various substrate and high toughness. It suggests that catechol based double network hydrogels can be considered to assist a various application using biomaterials.