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School of Materials Science & Engineering

"Stimuli responsive block copolymer hydrogels for biomedical applications"

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(School of Chemical Engineering, Sungkyunkwan Univ.)

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Stimuli Responsive Block Copolymer Hydrogels For Biomedical Applications

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Over the last decade, injectable stimuli-sensitive polymeric hydrogels have attracted considerable attention, because of their potential biomedical and pharmaceutical applications, such as in drug/protein delivery and tissue engineering. In this presentation, I will talk about the recent progress in injectable block copolymer hydrogels responding to pH and temperature, which were developed in my group, and their potential biomedical applications. These copolymers usually contain tertiary amine groups as pH-sensitive moieties and many different chemical groups, such as ester, amide, urethane, urea… to control the hydrogel properties, including biodegradable, mechanical, in vitro and in vivo stability, cytotoxicity and release behavior. These copolymer aqueous solutions exists in the sol states at low pH and low temperature with low viscosity, which is suitable for formulation with proteins or bioactive molecules, and exhibited a sol-gel transition to be the gel states with high viscosity by changing to physiological conditions (37 °C, pH 7.4) or after being injected into the body, which can let them serve as proteins/bioactive molecules depots for long term sustained release. The potential applications of these hydrogels as drugs/proteins carriers will also be reported

Keywords Injectable hydrogel; pH/temperature sensitive; Block copolymer; Protein delivery

References

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