

Thermoresponsive Behaviors of Nitrilotriacetic Acid-End-Functionalized Poly[2-(2'-methoxyethoxy) ethyl methacrylate-co-(Poly ethylene glycol) methyl ether methacrylate] with Green Fluorescent Proteins

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Conjugation of proteins with synthetic polymers has been extensively studied because of its wide uses in medicine and biotechnology field. Green fluorescent protein (GFP) has a beta barrel structure consisting of eleven β -strands with an alpha helix containing the covalently bonded chromophore. The tightly packed structure of the barrel excludes solvent molecules, protecting the chromophore fluorescence from quenching by water. The six histidine-tagged GFP (His₆-GFP) was conjugated with Ni²⁺ chelated NTA end-functionalized polymer. NTA end-functionalized poly[2-(2'-methoxyethoxy)ethyl methacrylate-co-(poly ethylene glycol) methyl ether methacrylate] (p(MEO₂MA-co-PEGMA)) were prepared by atom transfer radical polymerization (ATRP) using initiators containing tert-butyl protected NTA moiety (tNTA-). Well-defined NTA-p(MEO₂MA-co-PEGMA) was confirmed using ¹H NMR, and GPC. In order to tune the LCST, p(MEO₂MA-co-PEGMA) with various initial monomer feed ratios were prepared. LCST was measured using UV spectroscopy.