

## Effect of Loading Conditions on Loading Efficiency of pH-Responsive P(MAA-co-EGMA) Hydrogels for Intelligent Drug Delivery Applications

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pH-Responsive hydrogels based on the methacrylic acid(MAA) are widely used for biomaterial and pharmaceutical fields because of their unique swelling properties in response to the external pH changes. In this study, pH-responsive P(MAA-co-EGMA) hydrogels were synthesized via dispersion photopolymerization for the cosmetic applications. The loading behavior of cosmetic materials to the hydrogels was investigated. In loading experiments of the cosmetic materials such as vitamin C, EGCG, adenosine, and arbutin, the loading efficiencies of some materials were very low because of the electrostatic repulsion between the ionized carboxylic acid groups of P(MAA-co-EGMA) hydrogels and loaded materials. In order to increase the loading efficiency, we synthesized P(MAA-co-EGMA) hydrogels with various compositions of MAA and EG and we carried out the loading experiments by changing the media pH which was lower than pKa of the loaded materials.