

Graft copolymerization of cationic monomers onto starch

For the first time, cationic graft copolymers of starch were synthesized by means of a novel radical graft process (PCT /EPO2/07829) without the unwanted formation of homo-polymer. Basic requirement was the choice of adequate graft monomers.

Process and products have been analytically controlled by SEC by means of graft monomers, which can be selectively UV-detected in the grafted chain and the homo-polymer compared to the starch substrate.

Transfer active monomers always result in bimodal mass distributions suggesting the formation of graft- as well as homo-polymer (Figure 1).

Due to the larger hydrodynamic volume graft-polymers elute at smaller elution volumes than the respective homo-polymers.

With increasing reaction time due to the growing molar masses the peak maxima shift to lower volumes.

Transfer inactive monomers, on the other side, result exclusively in graft-polymers whose average molar mass increases with the time of reaction. The elugrams shows only one peak exhibiting again a distinct shift of the peak maximum (Figure 2).

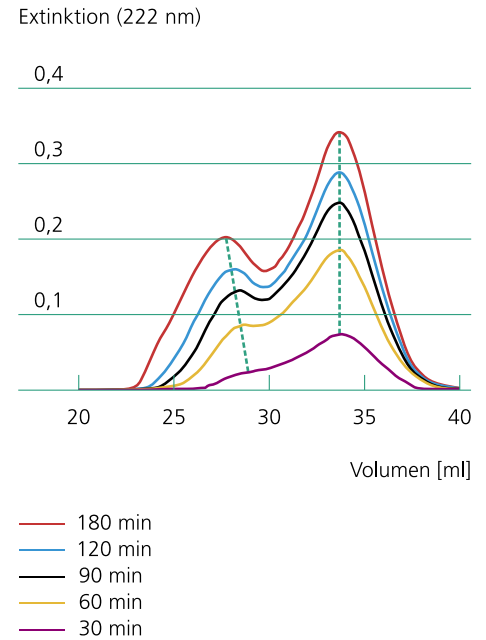


Figure 1
SEC elugram for the graft polymerization of a transfer active monomer onto starch; Detection at 222 nm

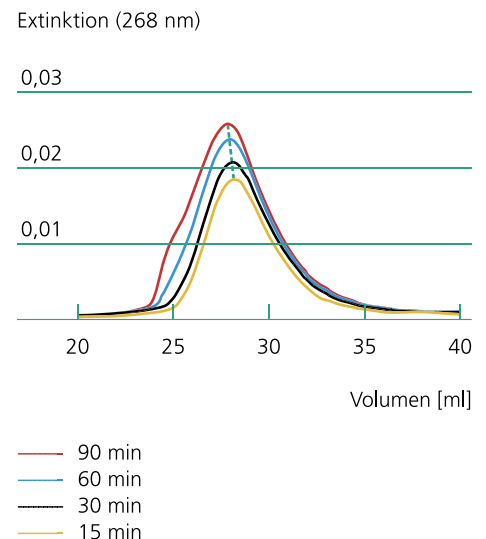


Figure 2
SEC elugram for the graft polymerization of a transfer inactive monomer onto starch; Detection at 268 nm

Cooperations

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