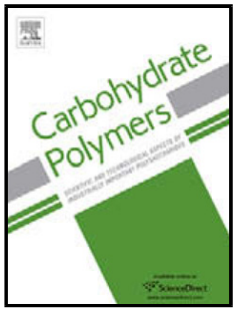

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β-Cyclodextrin-Based Supramolecular Poly(N-isopropylacrylamide) Hydrogels Prepared By Frontal Polymerization

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HIGHLIGHTS

- Frontal polymerization was used to synthesize supramolecularly crosslinked hydrogels.
- Frontal polymerization was successfully performed without any covalent crosslinker .
- Hydrogels exhibit swelling ratios strongly dependent on the amount of CD.
- Superabsorbent hydrogels were synthesized.

ABSTRACT

Frontal polymerization (FP) was successfully applied to the synthesis of poly(N-isopropylacrylamide)-grafted-acryloyl-β-cyclodextrin supramolecularly crosslinked hydrogels. It was established that acryloyl-β-cyclodextrin (AβCD) allowed performing successful frontal polymerizations with N-isopropylacrylamide, even in the absence of any covalent crosslinker, which is something generally required. It was found that the swelling properties of the resulting hydrogels can be tuned by varying the amount of AβCD. Namely, when little amounts of this non-covalent crosslinker were used, superabsorbent hydrogels were obtained. Hydrogels containing also