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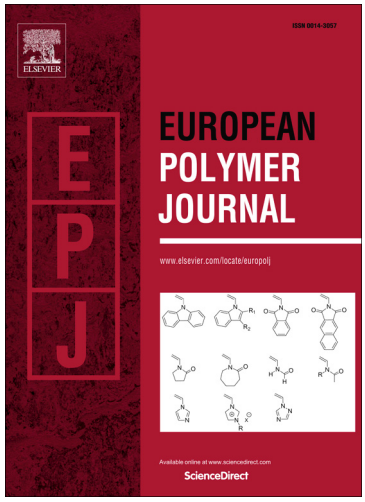

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Abstract:

A new kind of polymeric chemosensor containing chiral phenylglycine and 1-phenethylamine moieties in the side chain was synthesized by reversible addition-fragmentation chain transfer (RAFT) polymerization, which can guarantee controllable molecular weight, narrow molecular weight distribution, and precise polymer structure. As a chemosensor, the resulting polymers showed UV-vis and fluorescence spectra changed upon addition of F^- relative to other anions including Cl^-, Br^-, HSO_4^-, AcO^-, NO_3^-, $H_2PO_4^-$, and N_3^-. When F^- was added at high concentrations, the polymer gave detectable color change from colorless to yellow, which was attributed to the deprotonation process of the acylamino N-H group and the mechanism was supported by the ^1H NMR titration. Furthermore, the addition of F^- also can lead to a most pronounced change of CD spectra of the chiral polymer, indicating this kind chiral sensor can also be used as a probe for selective recognition of F^- based on CD spectra.

Keywords: chiral polymer; sensor; anion recognition; RAFT polymerization