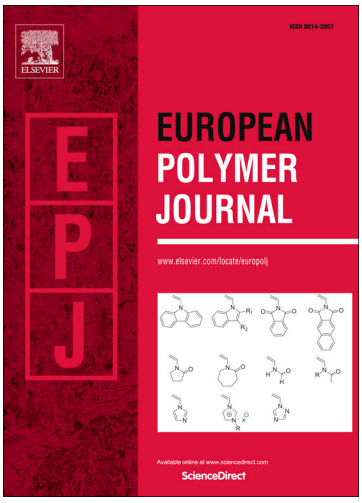

RAFT derived Chiral and Achiral Poly(ionic liquids) Resins: Synthesis and Application in Organocatalysis

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RAFT derived Chiral and Achiral Poly(ionic liquids) Resins: Synthesis and Application in Organocatalysis

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Abstract

Chiral and helical polymers and their resin are very attractive components in catalysis and separation chemistry. This manuscript discusses the synthesis and application of achiral and chiral imidazolium based poly(ionic liquids) (PILs). Imidazolium based cross-linked poly(ionic liquids) or polyelectrolytic-resins (**PIL-resin**) were synthesized by RAFT copolymerization of 1-vinyl-3-ethylimdazolium bromide with different cross linkers. In these PIL-resins, the chirality is induced at anionic part by simple anionic metathesis with optically pure amino acids, L & D-proline that gave six chiral PIL-resins. The morphology of PIL-resins was studied by SEM which shows microfibrils, twisted ribbons, and layered structures. The PIL-resins exhibit very good activity towards Diels-Alder reaction (cyclization of isoprene with different dienes), where quantitative conversions were achieved within 30 min at room temperature. Both catalytic activity and the selectivity remain same during first four recycles of the resin. The **chiral PIL-resin** catalysed heterogeneous asymmetric Baylis Hillman and Michael addition reactions shown better catalytic activities in comparison with chiral homo polymer.

Keywords: Poly(ionic liquids); Resin; Cross-linking; Organocatalysis; Diels-Alder reaction; Michael addition; Baylis Hillman reaction