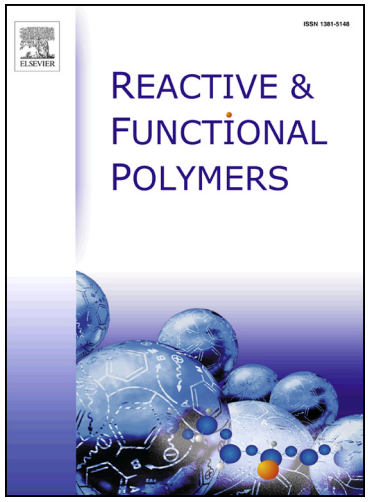

Macrocycle-functionalized polystyrene beads as specific absorbers

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Macrocycle-functionalized polystyrene beads as specific absorbers

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ABSTRACT

Crosslinked polystyrene beads were first functionalized with phenacylester linkers, and a series of four macrocycles with different ring sizes were synthesized from these linkers. The macrocycles were built from amide-linked monomers coupled by conventional peptide-synthesis methods. Annulation was achieved by copper(I)-catalyzed intramolecular azide-alkyne cycloaddition to give triazole linked macrocycles. The macrocycles were cleaved from the polymer beads with hydrazinolysis or saponification. The structures of macrocycles were confirmed by high-resolution nuclear magnetic resonance (NMR) and liquid chromatography-mass spectrometry (LC-MS) analysis. The ability of the polymers to selectively bind compounds from a mixture of aromatic derivatives in ethanol was tested. The prepared polystyrene supported macrocycles were found to selectively bind bromophenol blue and bromocresol green non-covalently with an association constant of 160 - 490 M^{-1}.

Keywords: macrocycle; affinity absorbent; solid support; polystyrene; molecular recognition