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A high-performance chiral selector derived from chitosan (*p*-methylbenzylurea) for efficient enantiomer separation

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Abstract

N-Methoxycarbonyl chitosan was prepared by selectively modifying the amino group at the 2-position of chitosan with methyl chloroformate, which was further functionalized with *p*-methylbenzylamine to produce chitosan (*p*-methylbenzylurea). Then, the hydroxyl groups at the 3- and 6-positions of the glucose skeleton were modified with various phenyl isocyanates, affording a series of chitosan 3,6-bis(arylcarbamate)-2-(*p*-methylbenzylurea)s, which were characterized and proposed as chiral selectors for enantiomer separation. Nineteen racemates, most of which are drugs or intermediates for drugs, were selected as the model analytes to evaluate the enantioseparation performance. The structure-performance relationship of the chiral selectors was investigated in detail. It was found that the

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