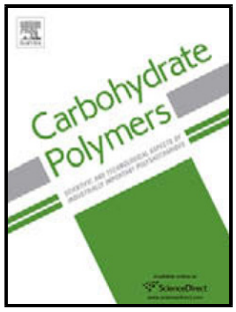

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Regioselective chlorination of cellulose esters by methanesulfonyl chloride

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Highlights:

- Regio-, chemoselective chlorination of cellulose esters
- Efficient subsequent displacement with nucleophiles (e.g. azide, amines, and thiols)
- Gateway to broad range of cellulose ester derivatives, including cationic and anionic

Abstract

Regioselective chlorination of cellulose is challenging due to its low reactivity, the small reactivity differences between cellulosic hydroxyl groups, and the high and diverse reactivity of most common chlorinating agents. Halogenation of cellulose affords useful precursors for subsequent nucleophilic substitution reactions, permitting incorporation of new functionality. Herein we report a simple and efficient pathway for preparation of 6-chloro-6-deoxycellulose esters and their derivatives. Cellulose acetate (degree of substitution (DS) 1.75, CA320S) can