

### Chitosan alkyl pyridinium halides as Biopolymer Catalysts for Oxazolidinone synthesis from Aziridine and CO<sub>2</sub>

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Synthesis of oxazolidinone by the cycloaddition of CO<sub>2</sub> with aziridine using an efficient catalyst stands one of the alternative routes for CO<sub>2</sub> fixation. Recently, biopolymers are regarded as promising materials for designing efficient, cheap, environmental friendly and recyclable heterogeneous catalysts in comparison to synthetic support heterogeneous catalysts. In the present study, a series of covalently functionalized chitosan-alkyl pyridinium halides (CS-RPX, R=Ethyl, Propyl, Butyl, Hexyl and X= Cl, Br) were synthesized, characterized and used as catalysts for the chemical transformation of CO<sub>2</sub> to 4-methyl-2-oxazolidinone using 2-methylaziridine under mild reaction conditions. Cycloaddition proceeded through the synergistic effect of the hydroxyl and amine groups of chitosan together with the anion. The catalyst was reused five times after the cycloaddition reaction, with only a slight loss in activity and selectivity. Various reaction parameters were studied to determine the conditions that resulted in the highest conversion and selectivity.