

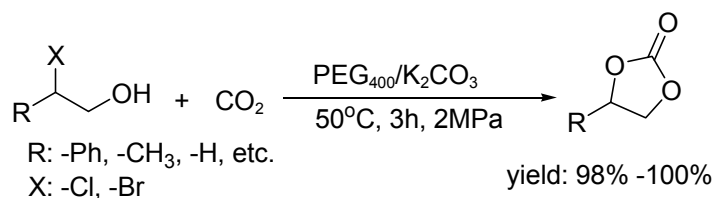


**POLYETHYLENE GLYCOL AS AN ALTERNATIVE SOLVENT FOR SYNTHESIS
OF CYCLIC CARBONATE VIA COUPLING HALOHYDRIN WITH CO₂
CATALYZED BY K₂CO₃**

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The chemical transformation of CO₂ into useful organic chemicals and materials is a hot topic in Green Chemistry. In continuation of our work ¹ on the development of useful synthetic methodologies for cyclic carbonates using CO₂ as a building block, we have recently found that halohydrin can be conveniently converted into cyclic carbonates through the reaction CO₂ in the presence of polyethylene glycol (PEG-400)/K₂CO₃ under mild conditions (Scheme 1).



Scheme 1

Polyethylene glycol (PEG) ² is an inexpensive, non-volatile, biologically acceptable, and eco-friendly solvent. And its applications as a reaction medium in organic syntheses have not yet been fully explored.

Various cyclic carbonates have been obtained with the yield of 98%-100% by the established protocol.

References

- (a) Y. Du, F. Cai, D.-L. Kong, L.-N. He, *Green Chem.*, **2005**, 7(7), 518-523;
(b) C.-X. Miao, J.-Q. Wang, Y. Wu, Y. Du, and L.-N. He, *ChemSusChem.*, **2008**, in press.
- (a) J. Chen, S. K. Spear, J. G. Huddleston and R. D. Rogers, *Green Chem.*, **2005**, 7, 64;
(b) D. J. Heldebrant and P. G. Jessop, *J. Am. Chem. Soc.*, **2003**, 125, 5600;
(c) M. Solinas, J. Y. Jiang, O. Stelzer and W. Leitner *Angew. Chem., Int. Ed.*, **2005**, 44, 2291.