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](image)

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
   (b) D. J. Heldebrant and P. G. Jessop, J. Am. Chem. Soc., 2003, 125, 5600;