CO_2 AND LIGNIN AS FEEDSTOCKS FOR THE SYNTHESIS OF BIOBASED POLYCARBONATES

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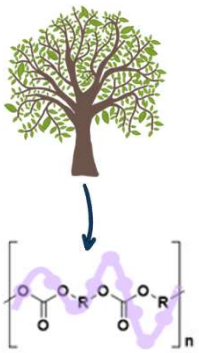
01 Introduction

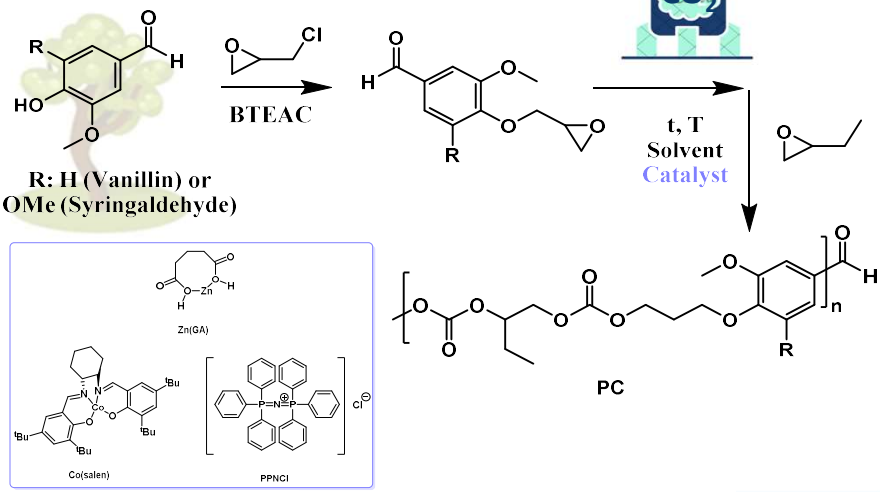
Issue

- Harmful
- Volatility of prices
- Shortage
- Necessity to reduce CO_2

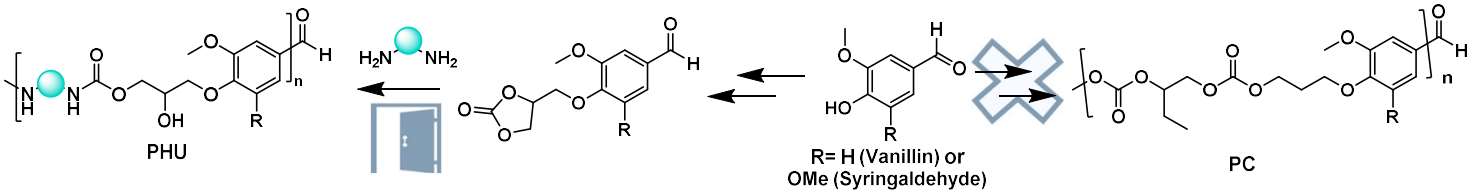
Solution

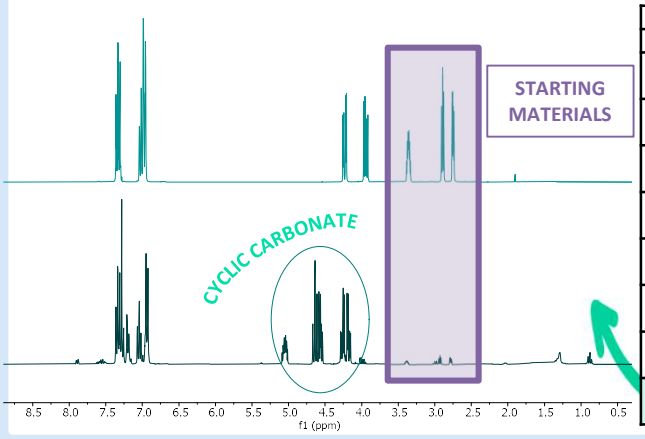


02 Experimental



03 Preliminary Results





Entry	M1	M2	Catalyst	Solvent	T (°C)	t (h)
1	------	1,2-butylenoxide (300 eq.)	Zinc Glutarate (1 eq.)	CH_2Cl_2:Toluene 1:1 (10 mL)	r.t.	24
2	Vanillin epoxide (300 eq.)				80	
3	Vanillin epoxide (300 eq.)					
4	Vanillin epoxide (300 eq.)					72
5	Vanillin epoxide (300 eq.)		Zinc Glutarate (300 eq.)			
6	Eugenol epoxide (300 eq.)					
7	Syringaldehyde epoxide (300 eq.)					
8	Syringaldehyde epoxide (300 eq.)		Co(salen) + PPNCl 1:1 eq.			
9	------	Phenylglycidylether (300 eq.)	Co(salen) + PPNCl 1:1 eq.			

04 Conclusions

- Successfully synthesis of vanillin and syringaldehyde derived monomers.
- Despite conducting various experimental trials, the synthesis of polycarbonates was not successfully achieved under the conditions studied. However, a cyclic carbonate was obtained as a byproduct, which is of interest due to its potential to be polymerized into polyhydroxyurethanes. This outcome opens a new research pathway toward the development of alternative polymers with similar applications.

We are the Innovative Macromolecular Materials group from the Physical Chemistry department that studies the properties of polymeric compounds and their role in material processing for a broad range of applications. The group is lead by Dr. José Luis Vilas and was founded in the 70s by Professor Luis M. León.

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