

Macromolecular Engineering of Aliphatic Polyesters by Ring-Opening Polymerization

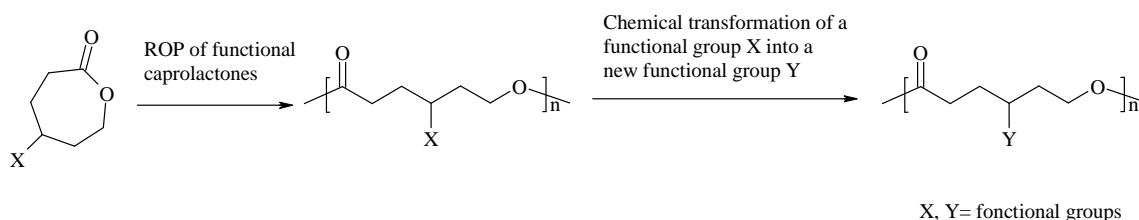
Philippe Lecomte, Christine Jérôme, Robert Jérôme

Center for Education and Research on Macromolecules (CERM)
University of Liège, B6a Sart-Tilman, B-4000 Liège (Belgium),
philippe.lecomte@ulg.ac.be

During the past few years, a steadily increasing attention was paid to the synthesis of biodegradable and biocompatible aliphatic polyesters because of potential applications as biomaterials or as environmentally friendly thermoplastics.

The first purpose of this work is to show that the modification of these aliphatic polyesters by pendant functional groups is an efficient tool to tailor the main properties, including biodegradation rate, bioadhesion, hydrophilicity, degree of crystallinity.

The strategies implemented for the synthesis of aliphatic polyesters bearing pendant functional groups rely on the synthesis of γ -substituted ϵ -caprolactones followed by their ring-opening polymerization and on the chemical modification of duly functionalized aliphatic polyesters (Scheme 1).



Scheme 1. Synthesis of functional aliphatic polyesters

The second part of the lecture will be dedicated to some recent examples dealing with the use of functional caprolactones to prepare various architectures such as star-shaped copolymers, graft copolymers, macrocycles and networks.

References

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- (2) P. Lecomte, R. Riva, S. Schmeits, J. Rieger, K. Van Butsele, C. Jérôme, R. Jérôme, *Macromol. Symp.*, **240**, 157 (2006).