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Synthesis of a biobased monomer derived from castor oil and copolymerization in aqueous medium

Larissa S. Laurentino^{1,2}, Anderson M. M. S. Medeiros^{3,4}, Fabricio Machado³, Cristiane Costa¹, Pedro H. H. Araújo¹, Claudia Sayer¹

¹Department of Chemical Engineering and Food Engineering, Federal University of Santa Catarina, Florianópolis, SC, Brazil

²Department of Chemical Engineering, Federal University of Ceará, Fortaleza, CE, Brazil

³Institute of Chemistry, University of Brasília, Brasília, DF, Brazil

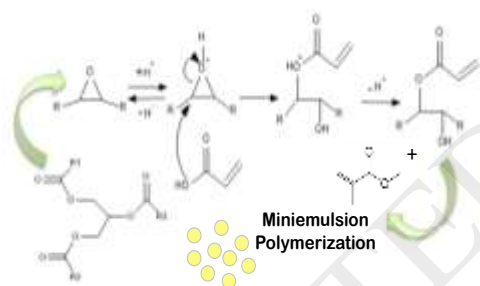
⁴Université Claude Bernard Lyon 1, CPE Lyon, Laboratoire de Chimie Catalyse Polymères et Procédés (C2P2), LCPP Group, CNRS, UMR 5265, Villeurbanne, F-69612, France

Correspondence to: Claudia Sayer (E-mail: claudia.sayer@ufsc.br)

GRAPHICAL ABSTRACT

TEXT

A biobased monomer acrylated ricinoleic acid was synthesized from castor oil and copolymerized with methyl methacrylate in miniemulsion forming polymeric nanoparticles. The addition of the biobased monomer led to a decrease in the glass transition temperature of the copolymer and to the formation of a small fraction of gel, resulting in materials with interesting properties for future applications.



Highlights

- A biobased monomer acrylated ricinoleic acid was synthesized from castor oil.
- The biobased monomer was copolymerized with methyl methacrylate in miniemulsion forming polymeric nanoparticles.
- Polymers with lower T_gs were obtained with the addition of the biobased monomer.
- The copolymers exhibited interesting properties for future applications as adhesives.

Abstract Vegetable oils-based polymers are promising materials with application in the industry of coatings and adhesives. Chemically-modified ricinoleic acid obtained from castor oil was used in this study to produce polymeric

materials. The adopted strategy consisted in the epoxidation of the double bonds of ricinoleic acid, followed by the ring opening reaction in the presence of acrylic acid to form the acrylated ricinoleic acid (ARA). Free radical

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