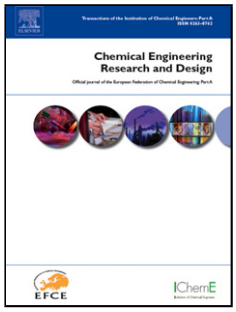

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Synthesis of a biobased monomer derived from castor oil and copolymerization in aqueous medium

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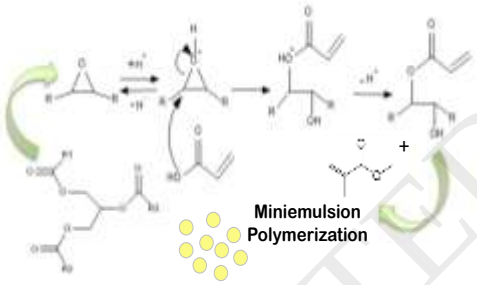
GRAPHICAL ABSTRACT

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 Tgs 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