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SOYBEAN BIO-BASED MATERIALS: SYNTHESIS AND APPLICATION

S. Amata,^a C. Rizzo,^a V. Barra,^a E. Piacenza,^a A. Palumbo Piccionello^a

^a STEBICEF Department, University of Palermo, Viale delle Scienze Bld.17, I-90128 Palermo (Italy)
e-mail: sara.ama01@unipa.it

Research on the sustainability of synthetic chemical processes and the use of environmentally friendly materials in a variety of applications nowadays is highly relevant. Recently, the design and synthesis of polymeric materials from environmentally friendly sources have become more popular due to the growing demand for polymeric materials and the need to reduce environmental contamination. The production of bio-based polymers using ring-opening metathesis polymerization reactions from epoxidized soybean oil and its copolymerization with other monomers has been the focus of several pioneering research works on the production of new biopolymers.^{1,2}

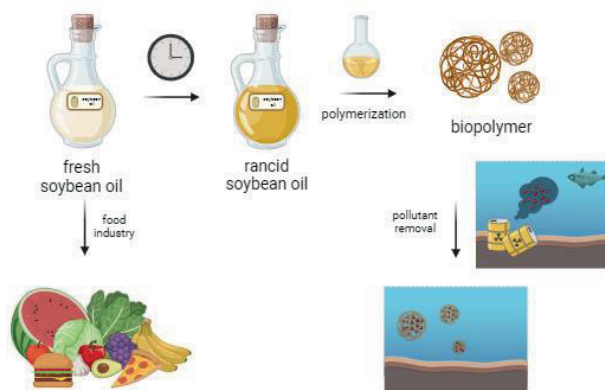


Figure 1. Schematic new biopolymer synthesis and application.

Herein, a new synthetic polymerization strategy has been set up using as starting material new and waste soybean oil. The structural properties of the material have been elucidated by ¹H NMR, FT-IR, and GC-MS of the derived methyl esters analysis. Additionally, thermal stability and morphology have been examined through DSC and SEM examinations. In addition, the new bio-polymer is chemically degradable and can be efficiently applied for the removal of pollutants from wastewater, including dyes, and halogenated solvents, the biocompatibility of the polymer as proved as well.

References

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