ABSTRACT

Abstract of the work

In this study cross linked biopolymers were synthesized from linseed oil and sesame oil by the polymerization of alkyd resin of the oils with co-monomers such as methyl acrylate, methyl methacrylate, vinyl acetate and N-vinyl-2-pyrrolidone. Alkyd resin was prepared by the glycerolysis of the respective oils followed by the reaction with cyclohexane dicarboxylic anhydride. Characterization of the biopolymers includes chemical resistance, swelling analysis, thermal and mechanical studies.

This study also comprises the synthesis of interpenetrating polymer network from both oils using the same co-monomers and studies the thermal and mechanical properties of the IPN network. TG-DTA, TG-DTG and DSC were the studies used for thermal analysis and mechanical properties of the polymer network were determined from tensile strength.

This study also include the synthesis of polymer composite from linseed oil and sesame oil with methyl methacrylate and methyl acrylate co-monomers using sisal fiber, coconut fiber, wood flour and wheat flour as fillers and studies the thermal and mechanical properties of the polymer composites.

Photo and biodegradation of the polymers were also studied by exposing the polymers to direct sun light and UV light and by soil burial test. The extent of degradation was studied by measuring the weight loss, SEM analysis and IR spectral studies.