Patent Search

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Abstract:

A 1st GENERATION AND 4th GENERATION BENZOXAZINE POLYMER AND METHOD THEREOF ABSTRACT The present invention discloses a benzoxazine polymer, comp generation benzoxazine monomer of Formula 1 or 1a blended with a 4th generation benzoxazine monomer of Formula 2. In weight ratio of 1:1, 3:1 and 1:3, and com Formula 1 and 1a are substituted Cardanol aniline (C-a). Moreover, the present invention discloses a process of preparation of benzoxazine polymer comprising the s weighing and mixing of 1st generation benzoxazine (C-a) of formula 1 or 1a and of 4th generation Benzoxazines of formula 2; adding solvent to the mixture followed polymerizing, blending and heating to obtain the benzoxazine polymers.

Complete Specification

Description:A 1st GENERATION AND 4th GENERATION BENZOXAZINE POLYMER
AND METHOD THEREOF

FIELD OF THE INVENTION
The present invention relates to the field of polymer chemistry and discloses composition comprising polymer composites prepared by thermal polymerization of p blended of 1st and 4th generation benzoxazine (BZ) monomers. The resultant hybrid thermoset revealed better adhesive, and mechanical properties than their ind generations. Further, the monomers can be easily synthesized based on petro- and bio/waste-derived feedstocks, and their utility as single or composite hybrid ma can be spread over small, medium to large industrial applications.
BACKGROUND OF THE INVENTION
Benzoxazine monomers have gained significant interest recently to prepare an upcoming class of thermosetting resins, polybenzoxazines (PBZ). Benzoxazine resins various attractive properties including a long shelf-life, molecular design flexibility, low cost, high glass-transition temperature, high modulus, relatively low viscositie flame retardancy, low moisture absorption and very low shrinkage. Additionally, monomer structures can be easily tailored to affect the temperature at which they undergo catalyst-free ring-opening polymerization (ROP) to form a high crosslinked polymer, showcasing high char yield (Yc). Besides their use as in composite, adh dielectric materials, and fire-resistive coatings recently this class of polymers are explored for self-healing, 3D printing and shape memory applications etc. Thus, the benefit of large molecular design flexibility is a tool to serve the specific need of application after customizing the monomer structure to affect the resultant thermo

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