

31ST MATERIALS SCIENCE AND ENGINEERING CONFERENCE: ADVANCEMENT & INNOVATIONS

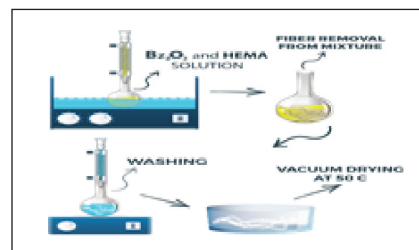
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The preparation and characterization of polyacrylonitrile fiber-g-poyl (hydroxyethyl methacrylate) copolymer by graft copolymerization technique

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Polyacrylonitrile (PAN) fiber is used in the textile industry frequently and has a prominent place among the synthetic fibers. It has good thermal stability, compatibility with polar materials due to containing the high polar nitrile groups, hardness and high abrasion resistance. However, in spite of many superior properties of PAN fibers, some of their poor features such as low moisture absorption and poor antistatic properties limit their further usage. So, surface modification is particularly important for fiber/fabric materials and in order to modify of surface of PAN fiber, functional monomers can be incorporated into fiber structure. One of the mostly used methods for this purpose, graft copolymerization method was used to graft

Hydroxyethyl Methacrylate (HEMA) onto PAN fiber directly to get the surface modified fibers. The grafting processes were carried out in aqueous medium containing benzoyl peroxide solution in acetone as initiator and HEMA solution at suitable concentrations. PAN fibers grafted HEMA at different percentages was prepared depend on the polymerization conditions such as initiator and monomer concentration, polymerization temperature. Grafting yield was determined gravimetrically and the maximum grafting yield was obtained as about 90% under the conditions investigated. The chemical structure of PAN fiber-g-poly(hydroxyethyl methacrylate) was characterized by FTIR and H-NMR spectroscopic techniques. The surface morphology of the grafted fiber was studied by SEM.



Biography

Meral Karakisla Sahin is a Professor in the Department of Chemistry, Faculty of Science, Ankara University since 2009. She has her expertise in the of area of conducting polymer composites, the synthesis of conducting polymers and applications, the preparation of graft copolymers, the synthesis of Schiff base polymers, the preparation of composite by improving their conductivity of textile and clay materials by using conducting polymers. In addition, she has made studies on the investigation of antibacterial and catalytic properties after deposition of silver nanoparticles to these composites and to prepare shielding material against to electromagnetic waves.

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