nescence properties were prepared by a low temperature and less toxic method. The PC nanocomposites prepared by dispersing the surface protected semiconductor nanoparticles were also characterized by various methods.
Results: Uniform fibers with average diameter 90 nm without any beads were formed at a PC solution concentration of 14 w/v%. TEM images of PC fibers incorporated with CdS shows dispersed nanoparticles throughout the fiber. This is confirmed by XRD analysis. The uv-visible spectrum of the PC fiber composite shows a red shift in absorption. The composite shows a characteristics optical property by the photoluminescent spectra.
Conclusions: The large specific surface area and small pore size of nanofibers obtained by this method making them excellent candidates for filtration and membrane applications. The polymer nanocomposites prepared by electrospinning after dispersing various nano sized materials also have wide variety of applications.
Keywords: Polymer nanocomposite, Electrospinning, Photoluminescence, nanofibers, Bead, Nanoparticles.

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STUDIES ON OIL RESISTANCE AND BIODEGRADABILITY OF COMPOSITES FROM CHICKEN FEATHER FIBRE AND ACRYLONITRILE BUTADIENE RUBBER

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Background: The strategies of waste management nowadays aim at making wealth from waste. Chicken feathers from poultry waste are an excellent prospect, because they are inexpensive and abundant. The present study aims on the use of waste chicken feather as filler in acrylonitrile butadiene rubber (NBR), which is a synthetic rubber that possesses good heat and oil resistance.
Method: Composites with three series of chicken feather fibres were studied i.e., raw (RCF), sterilized (SCF) and alkali treated (ACF). Composites were prepared using a conventional laboratory two roll rubber mixing mill. Surface modification of the fibre was done by alkaline treatment to improve the interfacial adhesion and it characterised by FTIR. The swelling behaviour of the composites in N, N-dimethylformamide, acetonitrile, dimethyl sulfoxide and water were analyzed for the swelling coefficient values. The biodegradable characteristics of CF reinforced NBR composites were studied by soil burial test. Effect of soil burial on the rubber was primarily followed by quantitatively observing the change in their mechanical properties.
Results and Discussion: Tensile strength, moduli at 10 and 20 % elongation and hardness of the composites decreased after ageing under soil due to the degradability of fibre. ACF- NBR composite shows highest drop in tensile strength and modulus. This is due to the degradation of fibres which easily takes place in the ACF composites by the direct involvement of micro-organisms. As the loading of fibre increases, the swelling coefficient value decreases in all solvents except in water. This is due to the increased hindrance exerted by the fibre at higher loading. It can be seen that the composites with ACF shows higher values of swelling coefficient than the gum sample.
Conclusions: The investigation shows that the addition of chicken feather to NBR improves its biodegradability as indicated by the decrement in values of mechanical properties. The solvent resistance of the composites also increaes upon the incorporation of fibres.

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LUMINESCENT POLY (VINYL ALCOHOL) COMPOSITES CONTAINING SULPHUR-DOPED GRAPHENE QUANTUM DOTS FOR ULTRASENSITIVE DETECTION OF ENVIRONMENTAL POLLUTANTS

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Background: Optical methods based on photoluminescence properties of fluorescent probesprovide an ideal approach for the facile and ultra-trace detection of environmental pollutants like pesticides. When compared to other fluorescent probes, graphene quantum dots (GQDs) show superior properties such as high photostability, aqueous dispersibility,