

Novel, well aligned continuous nanofibers of PAI/PTACM coated with silver nanoparticles via new route

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Nanofibers of Poly (amide-co-imide) PAI (torlon)/Poly (trimellitic anhydride chloride-co-4,4'-methylene dianiline) (PTACM) blends have been prepared by using mechano-electrospinning. Employing mixed solvent systems of DMSO and THF and water coagulation bath as a medium, continuous fibers with improved mechanical properties have been obtained. The continuity of the fibers was strongly dependent on the solvent mixing ratio of DMSO and THF (6:4). Continuous fibers with the most uniform diameter were obtained when a 30% weight ratio of PAI and PTACM (1:1) resins were used in the blending solution. Further these continuous nanofibers were coated with silver nanoparticles via new route using PEG as a binding agent. The mechanical and electrically properties of these fibers dramatically enhanced after coating with silver nanoparticles. The properties of these blends were investigated using a rotational rheometer (AR 2000), SEM, Surface Tension Analyzer, and Universal Testing Machine in an attempt to understand the relationships between their rheological, morphological and mechanical properties.

Biography

Bharat Bajaj has been a Ph.D. student in Dr. Jae Rock Lee lab in Energy Material research center at Korea Research Institute of Chemical Technology and Department of Nanomaterial science and Engineering at University of Science and Technology (South Korea) since 2010. He completed his Masters in Nanotechnology from Chungnam National University (South Korea) in 2008. His research focuses on synthesis of polymeric fibers for application in solar cells, fuel cell, super capacitors and biomolecular devices.

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