Nurettin Sahiner et al., J Material Sci Eng 2016, 5:6(Suppl)
http://dx.doi.org/10.4172/2169-0022.C1.043

Conductive PEI semi-IPN cryogels: Synthesis and characterization

Nurettin Sahiner and Sahin Demirci
Canakkale Onsekiz Mart University, Turkey

As special types of hydrogels that are known as cryogels are super porous network of hydrophilic polymer chains and are prepared at cryogenic conditions (below the freezing point of solvent). Here, we report the preparation of polyethyleneimine (PEI) cryogel, and its use as a template for conductive polymers (CPs) synthesis. The synthesis of CPs such as p(Aniline) (p(An)), p(Pyrolle) (p(Py)) and p(Thiophene) (p(Th)) were accomplished by loading PEI cryogels with the corresponding monomers and then employing oxidative polymerization technique. The synthesized PEI/CPs cryogel composites denoted as PEI/P(An), PEI/P(Py) and PEI/P(Th) as semi interpenetrating network (IPN) were characterized spectroscopically by using FT-IR, thermally by means of TGA, and morphologically via SEM imaging. Various parameters such as the types and the effects of number of loading monomers into PEI cryogel networks, polymerization time and doping agents on conductivities of PEI/CPs semi-IPN composites were investigated. Furthermore, various applications of PEI/CPs semi-IPN composites for sensor and environment were also investigated.

Biography

Nurettin Sahiner has completed his PhD in 2005 from Tulane University and did Post-doctoral studies at University of Delaware in Materials Science and Engineering, and at Tulane University School of Medicine, Biochemistry. He is the Director of Nanoscience and Technology Research and Application Center. He has published more than 150 papers in reputed journals and has been serving as an Editorial Board Member for few journals.

sahiner71@gmail.com

Notes: