



Preparation and Characterization of Electrospun Scaffolds by using RIG Method

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Abstract:

Preparation of polyurethane (PU) nanofibers with enhanced hydrophilic properties was carried out by electrospinning of PU followed by modification of the obtained PU nanofibrous scaffold with 2-hydroxyethyl methacrylate (HEMA) by radiation induced grafting (RIG) method. The effect of electrospinning parameters on fibre diameters was optimized using the response surface method (RSM). The surface modification of PU scaffolds was performed by simultaneous irradiation method with an electron beam (EB) for the first time. The changes in the morphology, chemical structure, thermal stability and surface wettability of poly(2-hydroxyethyl methacrylate) (PHEMA) grafted PU samples (PU-g-PHEMA) were evaluated using scanning electron microscope (SEM), Fourier transform infrared spectroscopy (FTIR), thermal gravimetric analyser (TGA) and water contact angle analyser, respectively. An average fiber diameter of 560 nm was predicted at optimum electrospinning parameters of 10 wt% PU concentration, 1ml/h flow rate and 22cm distance between the needle tip and collector, which was found to deviate from the experimental value by 1.9%. Degrees of grafting (DG) in the range of 7-30% were achieved in PU-g-PHEMA scaffolds and the DG was found to be a function of absorbed dose and monomer concentration. The incorporation of PHEMA grafts was verified and found to improve the hydrophilicity of electrospun PU to a remarkable extent.

Biography:

Zatil Izzah Ahmad Tarmizi has completed her PhD in 2019 at Department of Environmental Engineering and Green Technology, Malaysia-Japan International Institute



of Technology (MJIIT). Now, she is researcher in Chemical Energy Conversion and Application i-kohza in MJIIT. She has published five papers in reputed journals.

Publication of speakers:

1. Effect of degree of deacetylation of chitosan on thermal stability and compatibility of chitosan-polyamide blend; AH Zainoha Zakaria, Zatil Izzah, Mohammad Jawaid.
2. Preparation and characterization of hydrophilic polyurethane scaffolds by electrospinning and radiation induced grafting of 2-hydroxyethylmethacrylate; ZI Tarmizi, MM Nasef, ML Nallappan, NBA Khairudin, RR Ali, A Ahmad.
3. Fabrication and Characterization of PU-g-poly (HEMA) Film for Clotting Time and Platelet Adhesion; ZI Tarmizi, RR Ali, MM Nasef, AM Akim, Z Eshak, SM Noor.
4. A Study on Biological Sample Preparation for High Resolution Imaging of Scanning Electron Microscope; SR Aid, NNAAN Zain, NNM Rashid, H Hara, K Shameli, I Koji.
5. Fabrication of hydrophilic silica coating varnish on pineapple peel fiber based biocomposite; ZI Tarmizi, AN Maski, RR Ali, NWC Jusoh, AM Akim, Z Eshak, SM Noor.

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