عنوان مقاله:

Dye pollutant removal from water by membrane filtration using a membrane made by mlectrospinning of submicron nylon 6 fibers

محل انتشار:

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خلاصه مقاله:

Textile processing industries generally use significant amount of process water for cleaning, rinsing and dyeing purposes, and therefore release considerable amount of dye polluted waste streams to the environment. In recent years researchers have made great attempts to remove pollutants from these waste streams. One of the successful processes could be used to reach this aim is membrane filtration. To use this separation method it is necessary to manufacture effective membranes. A group of membranes are made from submicron fibers. Electrospinning is a relatively simple method to produce submicron fibers from solutions of different polymers and polymer blends. The present paper presents the results of a research work on manufacturing a membrane filter by electrospining of submicron Nylon 6 fibers on a carbon coated polyurethane substrate and implementing this membrane for dye removal in a filtration system. To evaluate the fabricated membrane a membrane filtration system was designed and built. Experiments were run with C.I.Direct yellow 12 as a typical dye pollutant. The effect of time of electrospinning, filtration hydrodynamic pressure difference and amount of used chemical coagulant were investigated and it was discovered that by application of 150ppm coagulant material at 1.75 bar pressure the filtration efficiency was 98%.

کلمات کلیدی:

Dye Removal, Coagulant, Electrospinning, Filtration, Nylon 6

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