Tatcha Sonjui 2009: Sericin Recovery from Silk Cocoon Degumming Wastewater by Membrane Process. Master of Science (Chemistry), Major Field: Chemistry, Department of Chemistry. Thesis Advisor: Associate Professor Cholticha Noomhorm, Ph.D. 91 pages.

Flat sheet asymmetric polymeric membranes were prepared from the homogeneous solution of polysulfone (PSF) in N-methyl pyrrolidone by phase inversion process with the various concentration and molecular weights of poly(dioxolane) (PDXL) ($\overline{M}_n$ = 10,000 Da and 200,000Da) and polyethylene glycol (PEG) ($\overline{M}_n$ = 300, 2000, 4600 and 10,000 Da) as the polymeric additives. Surface morphology of membranes was investigated. The performance of all the prepared PSF membranes was used to recover sericin from the silk cocoon degumming wastewater. The effect of polymeric additives and transmembrane pressure (200, 300 and 400 kPa) was studied in term of permeate flux (PF), protein retention, solid retention and molecular weight cut-off (MWCO) of sericin retention. The results showed that permeate flux and molecular weight cut off (MWCO) of the permeate increases but protein retention and solid retention decreases with increasing concentration, molecular weight and transmembrane pressure of both polymeric additives. At 200 kPa with the same 2% concentration of PEG and PDXL, the steady state permeate flux was increased in PSF/NMP/PEG300 to PSF/NMP/PEG10,000 from 9.7 l/m^{2}h to 19.5 l/m^{2}h and in PSF/NMP/PDXL10,000 to PSF/NMP/PDXL200,000 from 22.4 l/m^{2}h to 28.5 l/m^2 h but the percent protein retention was decreased from 75.4% to 60.8% and from 60.6% to 52.4%, respectively. Hence it clearly revealed that the morphological parameters and flux performance of the membranes have a significant inter-relationship with the concentration, molecular weight and transmembrane pressure of both polymeric additives.

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