

Surface modification of polysulfone by plasma technique

Wednesday, 20 May 2015 14:00 (3h 30m)

This project studied on the asymmetric polysulfone (PSF) membranes surfaces were modified by DC plasma at low pressure using argon as working gas in this project. The main objective of this project is to increase the hydrophilic property of the polysulfone (PSF) membrane surface. Samples of asymmetric PSF membrane were modified by DC plasma at low pressure using argon (Ar) as working gas. Plasma process conditions such as treatment time and discharge power were varied. PSF membranes both before and after plasma treatment were characterized by using several analytical techniques. The alteration of hydrophilic property was analyzed through the measurement of contact angle and surface free energy calculation. The surface morphology and structure of PSF membrane was evaluated by scanning electron microscope (SEM), while the creation of functional group and the change of mechanical strength were studied by Fourier Transform Infrared Spectroscopy (FTIR) and dynamical mechanical thermal analysis (DMTA). Results showed that the hydrophilicity of PSF membrane surface clearly increased after plasma treatment. In addition to the hydrophilic property, the mechanical properties of PSF membrane surfaces in term of storage modulus were changed and some of functional group may introduce to the plasma treated PSF membranes.

Summary

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Session Classification: Poster-1

Track Classification: Surface, Interface and Thin Film