CHAPTER V
CONCLUSIONS AND RECOMMEDATIONS FOR FUTURE WORK

Highly crosslink polybenzoxazine membranes were successfully synthesized from bisphenol-A, formaldehyde, and tetraethylenepentamine(tepa)/diethylenetriamine (deta). The optimum poly(BA-deta) and poly(BA-tepa) concentrations for preparation of the membranes on α-Al_2O_3 support were 40 and 25 wt%, respectively. The dipping cycles of both polymers were found to be 2, giving the membranes thickness of about 12 μm. Performance of the α-Al_2O_3 supporting poly(BA-deta)/poly(BA-tepa) membranes under recycle-continuous mode of 50:50 water:ethanol separation via pervaporation technique gave the total permeation flux of 17.77 and 25.90 $g/m^2 h$, respectively, with the separation factor of higher than 10,000 at the feed temperature of 70 °C. The synthesized membranes had excellent separation ability at both low and high ethanol concentration (10-90%) in pervaporation process with a good stability.

Recommendations for future work

Possible direction for future work in the area of the membrane separation is to improve the permeation flux.