Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Coating mechanism of polybenzoxazine onto tubular alumina support for ethanol-water separation SUJITRA WONGKASEMJIT, PANUPONG CHUNTANALERG, NI-ON SAELIM, Chulalongkorn University, SANTI KULTHIPPANJA, UOP, A Honeywell Company, Des Plaines, Illinois, USA, THANYALAK CHAISUWAN, Chulalongkorn University — Tubular α-Al_2O_3 supported polybenzoxazine (PBZ) membranes were prepared by dip-coating technique for ethanol-water separation via pervaporation. The effect of PBZ concentration on number of dipping cycle requirement and separation performance was studied. Based on the obtained results, a possible mechanism of the membrane formation was investigated and proposed. It was founded that two membrane preparation steps were involved, viz. transition layer accumulation and layer formation. The membrane prepared by using 25 wt% PBZ needed the shortest preparation time and provided the highest separation factor. Moreover, the prepared membrane had excellent stability in every feed ethanol concentration with the separation factor higher than 10,000. The study of a long-term pervaporation in 90:10 ethanol:water feed was also carried out and the results showed the excellent durability during 11 days of operation with 99.45 wt% of ethanol..

Sujitra Wongkasemjit
Chulalongkorn University

Date submitted: 07 Nov 2013 Electronic form version 1.4