

## **Investigating Polymeric Entrainers for Azeotropic Distillation of the Ethanol/Water and MTBE/Methanol Systems.**

Al-Amer, Adnan M.

Department of Chemical Engineering, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia.

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### **Abstract**

In this work, selected polymeric entrainers were investigated to assess their capability of breaking the azeotrope of ethanol/water and MTBE/methanol systems. Soly. testing and group contribution model calcns. were used to guide in the initial selection of potential polymers. Exptl. VLE measurements were performed to det. whether the selected polymers are capable of breaking the azeotrope. The polymeric entrainers capable of breaking the azeotrope for the ethanol/water system are found. Poly(ethylene glycol) at 10 wt. % and poly(acrylic acid) at 0.45 wt. % did break the azeotrope for the ethanol/water system. This conclusion is based on compn. and temp. data. Other polymers used with the ethanol/water system might be capable of breaking the azeotrope, but can not conclusively be detd. from the collected data. From the results obtained for the MTBE/methanol system, it is not possible to definitively identify such entrainers. This is because of the difficulty in finding a polymer that will substantially dissolve in both MTBE and methanol and, at the same time, will provide the required specific interaction with each component. The exptl. VLE data for selected systems were fit to the UNIQUAC model. A satisfactory fit was obtained, and the parameters are reported.