

PREDICTIONS OF VAPOR PRESSURES OF TEN IONIC LIQUIDS USING PATEL TEJA EQUATIONS OF STATE

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ABSTRACT

Ionic liquids are considered as green solvents. They are useful in many aspects. Thermodynamic data are required for proper simulation of the processes. Prediction of properties using Cubic Equations of State (CEOS) is an attractive option as it requires only pure component data. Ionic liquids have very low vapor pressure and hence estimating vapor pressure is very challenging. Zero pressure fugacity approach was used in the present work. For ten ionic liquids vapor pressure predictions were carried out using Patel-Teja equation of state. This CEOS was used with six different cohesion factor models. Optimized parameters were generated for all the IL's for six cohesion factors and are provided in the paper. Generalization was also done using acentric factor and mass connectivity index for all the models and the comparison was done. It was found that exponential form of cohesion factor gave the highest accuracy for generalized model.

KEYWORDS: Ionic Liquid, Vapor Pressure, Cohesion Factor, Mass Connectivity Index, PT EOS