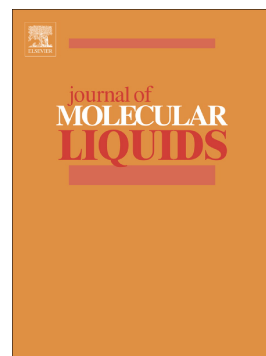


Accepted Manuscript

Thermodynamic, transport and optical properties of formamide+1,2-ethanediol, 1,3-propanediol and poly (ethylene glycol) 200 binary liquid mixtures

Meysam Hemmat, Mehrdad Moosavi, Marzieh Dehghan, Esmaeel Mousavi, Abbas Ali Rostami



PII: S0167-7322(16)33991-5
DOI: doi: [10.1016/j.molliq.2017.03.008](https://doi.org/10.1016/j.molliq.2017.03.008)
Reference: MOLLIQ 7041

To appear in: *Journal of Molecular Liquids*

Received date: 11 December 2016

Accepted date: 2 March 2017

Please cite this article as: Meysam Hemmat, Mehrdad Moosavi, Marzieh Dehghan, Esmaeel Mousavi, Abbas Ali Rostami , Thermodynamic, transport and optical properties of formamide+1,2-ethanediol, 1,3-propanediol and poly (ethylene glycol) 200 binary liquid mixtures. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Molliq(2017), doi: [10.1016/j.molliq.2017.03.008](https://doi.org/10.1016/j.molliq.2017.03.008)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Thermodynamic, transport and optical properties of Formamide + 1,2-Ethanediol, 1,3-Propanediol and Poly (ethylene glycol) 200 binary liquid mixtures

Meysam Hemmat^a, Mehrdad Moosavi^{b,*}, Marzieh Dehghan^a, Esmaeel Mousavi^a, Abbas Ali Rostami^b

^aFaculty of Chemical Engineering, Shomal University, P.O. Box 731, Amol, Mazandaran, Iran

^bFaculty of Chemistry, University of Mazandaran, P.O. Box 453, Babolsar, Mazandaran, Iran

Abstract

Densities and viscosities of formamide (FA) + 1,2-ethanediol (1,2-ED), 1,3-propanediol (1,3-PD) and poly (ethylene glycol) 200 (PEG 200) binary liquid mixtures at temperatures of 293.15, 298.15 and 303.15 K and refractive indices at $T = 298.15$ K were measured over the entire range of composition and atmospheric pressure (0.1 MPa). From the experimental measurements, several thermophysical properties including the excess molar volumes (V_m^E), coefficient of thermal expansion α_P , excess coefficient of thermal expansion α_P^E , partial molar volume $\bar{V}_{mi}$, excess refractive index n^E and excess viscosity η^E were calculated. The obtained excess parameters were used to discuss the inter-intra molecular interactions in the liquid mixtures. Moreover, the excess properties were correlated with Redlich-Kister polynomial equation and the viscosities were correlated with Eyring–Margules, McAllister and Andrade models. Finally, Soave-Redlich-Kwong (SRK) and Peng-Robinson (PR) equation of state were applied to the densities of studied binary mixtures to examine the ability of these models to predict thermodynamic properties.

Keywords: Formamide, Diols, Excess properties, Prediction equations

* Corresponding author: Tel: (+1) 832-282-2947

E-mail: mehrdadmoosavi@hotmail.com (M. Moosavi).

Download English Version:

<https://daneshyari.com/en/article/5408637>

Download Persian Version:

<https://daneshyari.com/article/5408637>

[Daneshyari.com](https://daneshyari.com)