Modeling of Excess Surface Tension of Binary Liquid Mixtures by Newly Modified Models

Behzad Khodakarami - Hamid Modarress

**Department of Chemical Engineering, Amir Kabir
University of Technology, Tehran, Iran**
Email: khodakarami@khodakarami.com

Abstract

Excess surface tension of 58 binary mixtures are calculated by two newly modified models presented in this work and the results are compared with those calculated by two previous models. The calculated AAD% for the four models indicated the superiority of the two newly modified models in calculation of surface tension of the binary mixtures.

Introduction

The surface tension of liquids and the variation of surface tension of liquid mixtures with composition are often required for a rational chemical process equipment design involving interface heat and mass transfer. Although surface tension are important physical properties when one is dealing with processes such as distillation, gas absorption, liquid-liquid extraction, and condensation. The experimental values for surface tension are not always available and there is a need to have a simple and reliable method for their predictions. Both classical and statistical thermodynamics have been employed to derive expressions for surface tension of mixtures. Sprow and Prausnitz [1] derived the relation between mixtures surface tension and pure components by assuming an ideal liquid mixtures. Surface tension data of binary liquid mixtures have been analyzed using the Bertrand-Acree-