

عنوان مقاله:

Prediction of vapor liquid equilibrium of anCO 1 pent ol CO 2 + - and CO 2 pentanol 2 + - , using artificial neural network

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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خلاصه مقاله:

In this work, an artificial neural network (ANN) is used to predict the vapor liquid equilibrium (VLE) of CO₂ +1-pentanol and CO₂ + 2 - pentanol systems. A three-layer feed forward neural network, with twenty nodes in hidden layer, was constructed and tested to analyze the VLE predictability of CO₂ +1- pentanol and CO₂ + 2 - pentanol binary systems at supercritical conditions. The input data to the ANN are equilibrium temperature, the CO₂ mole fraction in the liquid phase, T_c and ω of each alcohol and the equilibrium pressure and CO₂ mole fraction in the vapor phase are selected as output variables. Training algorithm based on the Levenberg-Marquardt and between the input and the hidden layer tansig function and between the hidden and output layer a linear function is used as transfer functions. The mean square error (MSE) of the developed ANN model in prediction of the equilibrium pressure and vapor phase composition of two systems is very low. Some of thermodynamic models were used to compare the results of these models and ANN predictions. The ANN model is shown to be in excellent agreement with the experimental data.

کلمات کلیدی:

Artificial neural network, VLE, CO₂ +1- pentanol, CO₂ + 2 - pentanol

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