

عنوان مقاله:

Prediction of PVT properties of Ammonia by using Artificial Neural Network and equations of state

محل انتشار:

دوازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1387)

تعداد صفحات اصل مقاله: 17

نویسندگان:

Amir Sharifi - Department of Chemical Engineering, Faculty of Engineering, Farahan branch, Azad University, Arak

Abdolreza Moghadassi - Department of Chemical Engineering, Faculty of Engineering, Arak University, Arak

Fahime Parvizian - Department of Chemical Engineering, Faculty of Engineering, Arak University, Arak

SayedMohsen Hosseini - Department of Chemical Engineering, Faculty of Engineering, Arak University, Arak

خلاصه مقاله:

In this work a new method based on Artificial Neural Networks (ANN) for prediction of thermodynamic properties has been proposed for Ammonia. Knowledge of the thermodynamic properties of Ammonia is necessary for the interpretation of physical and chemical processes; because of it is an important gas that plays significant roles in many processes. For this development, the data sets that collected from Ammonia thermodynamic table [Perry's Chemical Engineering Handbook] were used. After training the networks, the models were tested by unseen data to evaluate their accuracy and trend stability. Among this training the back-propagation learning algorithm with various training such as Scaled Conjugate Gradient (SCG), Levenberg-Marquardt (LM) and Resilient Backpropagation (RP) methods were used. The best suitable algorithm with appropriate number of seven neurons in the hidden layer which provides the minimum Mean Square Error (MSE), 0.0000900135, is found to be the SCG algorithm. Then ANN's results were compared with results of some equations of state such as Lee Kesler, NRTL, Soave-Redlich-Kwong and Peng Robinson. Comparisons showed the ANN capability for prediction of the thermodynamic properties of Ammonia

کلمات کلیدی:

Ammonia, Artificial Neural network, Thermodynamic, Equation of State

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/58485>

