The analysis of a ternary mixture can be done by using analytical instruments like TLC, GLC, HPLC, GC etc. which is time consuming & expensive. In the present work Artificial neural network modeling has been applied to estimate composition of a ternary liquid mixture with its physical properties such as refractive index, pH & conductivity. The work is extended in developing ANN model for estimation of composition of a known ternary mixture for the experimentally determined physical properties, refractive index, pH & conductivity. Samples having known compositions of a ternary liquid mixture, acetic acid-water-ethanol have been prepared & analysed for the physical properties, refractive index, pH & conductivity. ANN models 1 & 2 with different topologies have been developed based on the generated data. The predicted & the actual values using ANN models 1 & 2 have been compared based on the % relative error. The novel feature of this work has been the development of ANN model 1 with the accuracy of prediction between 0-3 % for output parameter, mole % water & 0-5% for output parameter, mole % acetic acid for training data set & ANN model 1 having accuracy level of 0-10% for output parameter, mole % water & 0-3% for output parameter, mole % acetic acid for test data set.
Artificial Neural Network Modeling for Estimation of Composition of a Ternary Liquid Mixture with its Physical Properties such as Refractive Index, pH and Conductivity

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Index Terms

- Computer Science
- Artificial Intelligence

Keywords

Artificial Neural Network Refractive Index Ph Conductivity