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

References

- Noelia Calvar, Elena Gomez, Begoña Gonzalez and Angeles Dominguez
- Jhoany Acosta-Esquijarosa, Ivonne Rodriguez-Donis, Eladio Pardillo-Fontdevila Centro de Química Farmacéutica, 200 y 21, Atabey, Apdo 16042, Playa, Ciudad de la Thermochimica Acta Volume 443, Issue 1, 1 April 2006, Pages 93–97

Index Terms

Computer Science

Artificial Intelligence

Keywords

Artificial Neural Network Refractive Index Ph Conductivity