Abstract

Gas-liquid reactions occupy a large share of the chemical reactions that are carried out industrially. The estimation of reaction rate is the most primary but complex task and is a prerequisite in design & scaling up of reactors. Reaction rate is a function of number of parameters that include flow rates of gas and liquid phases, concentration of reactants and interfacial surface area, among others. Artificial Neural Network (ANN) is viewed as a black box modeling tool and has been applied for modeling of several chemical engineering operations. The present work is aimed at developing artificial neural network model for estimation of interfacial area as a function of gas & liquid flow rates and inlet concentrations of gas & liquid phases. Fifteen ANN models with different topologies have been developed and three models S-20, M-20 and C-50 are shortlisted based on better RMSE values. Further, model C-50 has been observed to be highly acceptable based on comparison of relative error for all the data points.

References

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