

## Development of Generalized Correlation for Liquid Thermal Conductivity of N-Alkane and Olefin

**Authors :** A. Ishag Mohamed, A. A. Rabah

**Abstract :** The objective of this research is to develop a generalized correlation for the prediction of thermal conductivity of n-Alkanes and Alkenes. There is a minority of research and lack of correlation for thermal conductivity of liquids in the open literature. The available experimental data are collected covering the groups of n-Alkanes and Alkenes. The data were assumed to correlate to temperature using Filippov correlation. Nonparametric regression of Grace Algorithm was used to develop the generalized correlation model. A spread sheet program based on Microsoft Excel was used to plot and calculate the value of the coefficients. The results obtained were compared with the data that found in Perry's Chemical Engineering Hand Book. The experimental data correlated to the temperature ranged "between" 273.15 to 673.15 K, with  $R^2 = 0.99$ . The developed correlation reproduced experimental data that which were not included in regression with absolute average percent deviation (AAPD) of less than 7 %. Thus the spread sheet was quite accurate which produces reliable data.

**Keywords :** N-Alkanes, N-Alkenes, nonparametric, regression

**Conference Title :** ICESET 2015 : International Conference on Energy Systems Engineering and Technology

**Conference Location :** London, United Kingdom

**Conference Dates :** August 20-21, 2015