Raffie Hosein, J Pet Environ Biotechnol 2014, 5:4
http://dx.doi.org/10.4172/2157-7463.S1.006

OMICS Group Conferences
Accelerating Scientific Discovery

2nd World Congress on
Petrochemistry and Chemical Engineering
October 27-29, 2014 Embassy Suites Las Vegas, USA

A four coefficient model for extending the heptanes-plus fraction for gas condensate systems

Raffie Hosein
The University of The West Indies, West Indies

An accurate description of pseudo-component compositions and properties provides the heart of Equation of State predictions for gas condensate systems. Very often these extended experimental data are unavailable and must be generated using mathematical models, of which the exponential and the three-parameter gamma distribution functions are the two most widely used. The development of these two techniques was based on the assumption of a continuous molar relationship for pseudo-components. However, experimental compositional data for gas condensate systems show discontinuities in this relationship at SCN8 and SCN13.

The above models when applied to extend the C_{7+} fraction under predict the SCN8 mole percent and over predict the SCN12 mole percent due to the aforementioned discontinuities. The Average Absolute Deviation between the predicted and experimental SCN8 and SCN12 data were both greater than 25 percent. The two coefficient method described by Ahmed et al. (1984) when applied to extend the C_{7+} fraction, reduced the discontinuity at SCN8 to less than 12 percent. However the SCN12 group still had a deviation greater than 18 percent. These results show that existing models were not designed to take care of these discontinuities and should be used with caution when extending experimental data beyond SCN 7.

The "Four Coefficient" model described in this study resolves these discontinuities in the molar relationships at both SCN8 and SCN12 with an Average Absolute Deviation between the predicted and experimental compositions of less than 10 percent. This model can quite easily be included in Equation of State packages for a more accurate description of compositions for gas condensate systems and for performing simulation studies. A partial analysis beyond the C_{7+} fraction is not required with this model.

Raffie.Hosein@sta.uwi.edu