

ABSTRACT

Characterization of Trinidad Crudes:
A Compositional Approach

Lesley L. Mike

Despite a long history of oil production in Trinidad, very little research into the characterization of indigenous crudes has been done.

The objectives of this study were:

- (i) to develop a crude oil characterization scheme for use with the Peng-Robinson and Soave-Redlich-Kwong equations of state;
- (ii) to assess the suitability of selected empirical correlations for the evaluation of physical properties of single carbon number hydrocarbon fractions derived from Trinidad crudes.

In this thesis, a characterization scheme incorporating C7+ pseudoization using statistical semicontinuous thermodynamics is presented. Peng-Robinson and Soave-Redlich-Kwong equation of state predictions of bubble-point pressures using data derived from the characterization scheme were shown to be more accurate than the widely used Standing and Glaso correlations.

In this study, the following physical property correlations, which have gained wide acceptance in industry and research, were tested:

- (i) the generalized specific gravity correlations of Katz and Firoozabadi;
- (ii) molecular weight correlations of Twu, Riazi and Daubert, and Katz and Firoozabadi;
- (iii) the refractive index correlation of Riazi and Daubert.

and appropriate recommendations were made.

A generalised specific gravity correlation, and a refractive index correlation for predominantly aromatic fractions were also developed.