

CHAPTER VII

CONCLUSION

The result of this study reveals that the sensitivity of the thermodynamic properties due to the variation of the parameter values in each equation of state studied is about the same. However, it can be concluded that the magnitude of the sensitivity in the equations of state of the thermodynamic properties in decreasing order is: SBC > ALS \geq PR \geq SRK > TCC.

In general, the values of the thermodynamic properties are more sensitive to the energy parameter $a(T)$, except in the liquid phase in which Z^L is more sensitive to co-volume parameter b in SRK and PR, b_1 in ALS, b in TCC, and $\beta(T)$ in SBC equations of state.

Table 7.1 Summarized the Effect on Thermodynamic Properties by -20% Deviation in Parameter $a(T)$ of Each Equations of State.

| EOS | Z^V | Z^L | dH^V | dS^V | dH^L | dS^L | ϕ_i^V | ϕ_i^L | K_i |
|-----|-------|-------|--------|--------|--------|--------|------------|------------|-------|
| SRK | 1.17 | 10.32 | 21.69 | 21.17 | 23.83 | 13.93 | 1.08 | 187.94 | 181.4 |
| PR | 1.21 | 10.83 | 21.64 | 21.22 | 24.06 | 13.75 | 1.11 | 197.33 | 190.8 |
| ALS | 1.23 | 10.95 | 21.63 | 21.24 | 24.15 | 13.69 | 1.12 | 200.92 | 194.3 |
| TCC | 1.23 | 10.98 | 16.23 | 13.09 | 17.14 | 6.808 | 1.13 | 202.56 | 195.9 |
| SBC | 1.32 | 20.46 | 18.56 | 0.61 | 25.52 | 17.02 | 1.21 | 269.61 | 257.5 |