Problem Example 3.9 Smith

Given that vapor pressure of n-butane at 350K is 9.4573 bar, find the molar volume of: (a) **Saturated vapor (b)Saturated liquid** Use all four cubic EoS

i. **VanderWaals (vdW)**
ii. Redlich-Kwong(RK)
iii. Soave-Redlich-Kwong(SRK)
iv. Peng-Robinson(PR)

Experimental results:

$V^v = 2482\ cm^3/mol$ $V^l = 115\ cm^3/mol$

Given:

$T_c = 425.1\ K$ $P_c = 37.96\ bar$ $\omega = 0.200$

Problem Example 3.10 Smith

Determine the molar volume of n-butane at 510K and 25 bar by each of the following;

1. Ideal gas equation
2. The generalized compressibility correlation
3. The generalized virial coefficient correlation.

Home Work Problems

- ✓ Problem 3.34 Smith & Van Ness Chapter # 3, 7th Ed, Pg-118.
- ✓ Problem 3.48 Smith & Van Ness Chapter # 3, 7th Ed, Pg-120.
- ✓ Problem 3.49 Smith & Van Ness Chapter # 3, 7th Ed, Pg-120.
- ✓ Problem 3.51 Smith & Van Ness Chapter # 3, 7th Ed, Pg-120.
- ✓ Problem 3.61 Smith & Van Ness Chapter # 3, 7th Ed, Pg-121.