

## PR-EOS REQUIRED COEFFICIENTS

	Tr	b	30	alpha	at
0	0.846695	0.902356	37889.693154	1.098625	41626.552197

## The Iteration results

	zg	zi	fg	fl	fg - fi	pressure	Vmg	VmI	P9	ρΙ
0	0.8938	0.0247	90.2763	156.9837	66.7074	100.00	54.0677	1.4953	0.033785	0.532202
1	0.8938	0.0247	90.2844	155.9787	66.6942	100.01	54.0616	1.4952	0.033785	0.532202
2	0.8938	0.0247	90.2927	158.9970	66.7043	100.02	54.0557	1.4953	0.033785	0.532202
3	0.8937	0.0247	90.2998	156.9478	66.6480	100.03	54.0489	1.4951	0.033785	0.532202
4	0.8937	0.0247	90.3081	158.9882	66.6581	100.04	54.0429	1.4052	0.033785	0.532202
-										
9889	0.7657	0.0488	160.8098	160.8341	0.0243	198.89	23.2893	1.4781	0.033785	0.532202
9890	0.7657	0.0488	160.8161	160.8315	0.0154	198.90	23.2877	1.4780	0.033785	0.532202
9891	0.7657	0.0488	160.8228	160.8414	0.0188	198.91	23.2862	1.4781	0.033785	0.532202
9892	0.7657	0.0488	160.8271	160.8159	0.0112	198.92	23.2841	1.4780	0.033785	0.532202
9893	0.7656	0.0488	160.8337	160.8257	0.0079	198.93	23.2826	1.4780	0.033785	0.532202

9894 rows × 10 columns

## **Calculated results**

	zg	zi	fg	fl	fg - fi	pressure	Vmg	VmI	PB	ρί
9893	0.7658	0.0488	160.8337	160.8257	0.0079	198.93	23.2826	1.478	0.033785	0.532202

## Reading from the charts

	10	z	pressure	PØ	ρΙ
0	0.75	0.05	200	0.03	0.475

Fig 1: Vapour pressure of pure substance

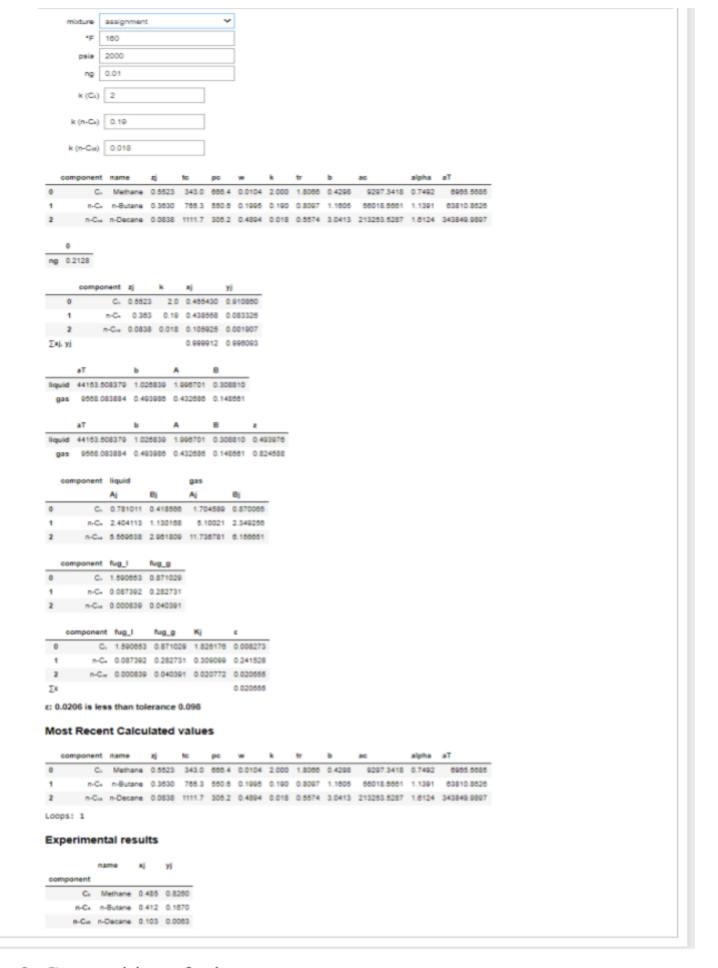


Fig 2: Composition of mixture

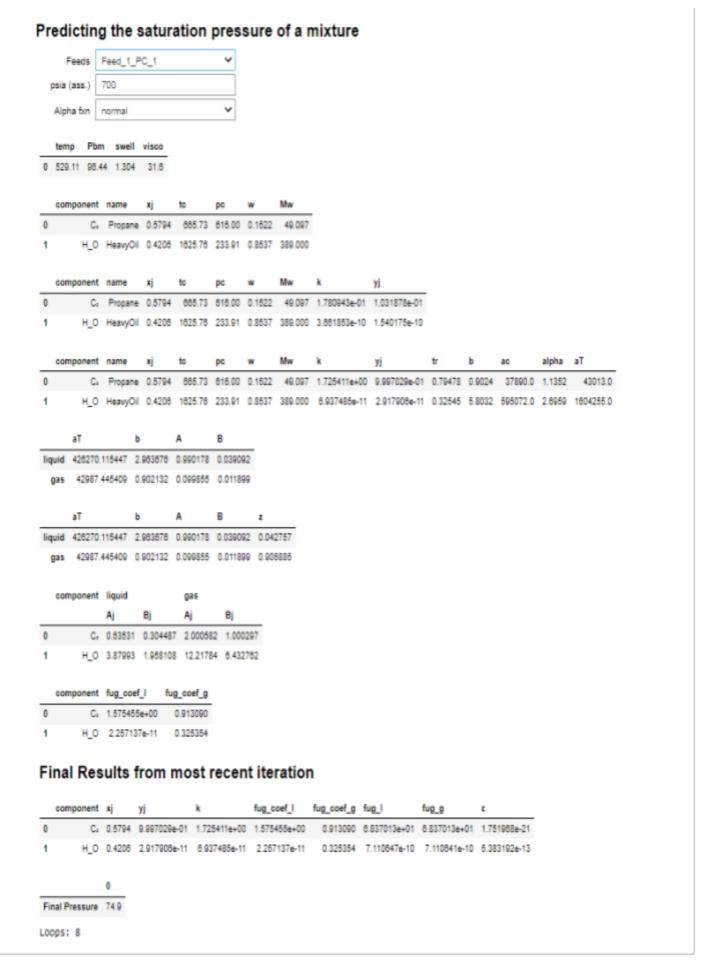


Fig 3: Normal alpha function with heavy oil as one PC

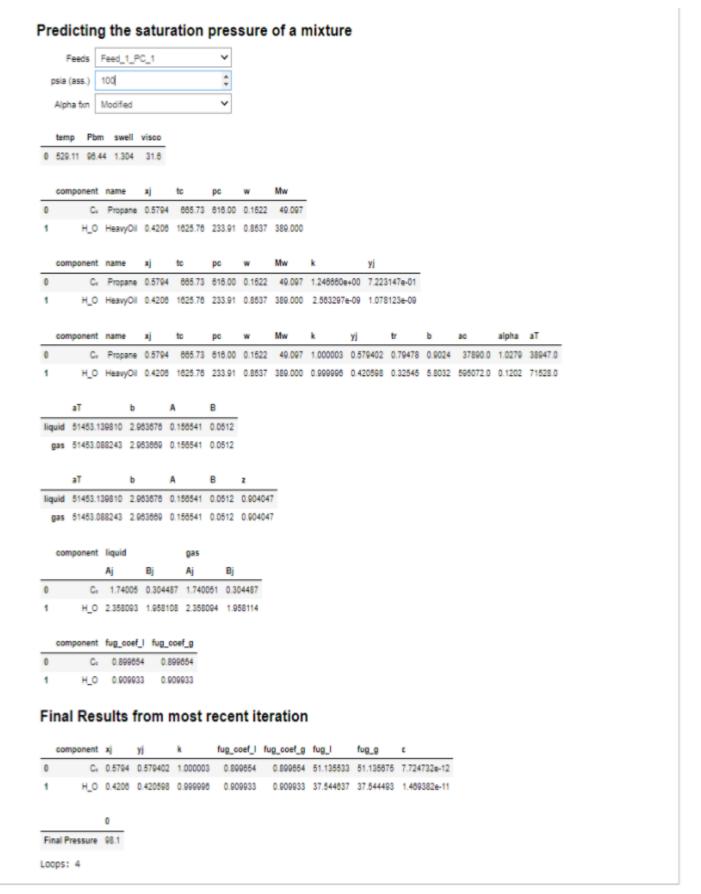


Fig 4: Modified alpha function with heavy oil as one PC

bacar actors pressure carearactors							
Equilibrium Properties at 109.088 psia and 69.260 deg F Phase Split: Liquid-Vapour							
Peng-Robinson Equations of State							
	mole percent						
component	Feed Phase01	Phase02					
C3H8 Heavy_oi	57.94000 57.94000 42.06000 42.06000						
Phase Mole %	100.00000						
	mass percent						
C3H8 Heavy_oi	13.50675 13.50675 86.49325 86.49325						
Phase Mass %	100.00000						
	volume perce	nt					
C3H8 Heavy_oi	18.74901 81.25099						
Phase Volume %	100.00000	0.00000					
component	ln (fug, atm)	K-values w	v.r.t. phase 1				
		Phase01/02	Phase02				
C3H8 Heavy_oi	1.86974E+00 -3.04384E+01	5.79400E-01 6.41465E+12	1.72592E+00 2 1.55893E-13				
MW, g/mol Ideal H,BTU/lbmol Enthalpy,BTU/lbmol - Ideal Cp, BTU/lbmol-R Cp, BTU/lbmol-R Ideal S, BTU/lbmol-R Entropy, BTU/lbmol-R Density, lb/ft3 Viscosity, cp	11757.412 -11757.41	vapour 0.8573 2.78497 44.10 6216.22 5802.90 17.5007 18.9911 64.3313 63.8178 0.9885 .767E-03 10.0294 0.0000					

Fig 5: Winprop results with one PC

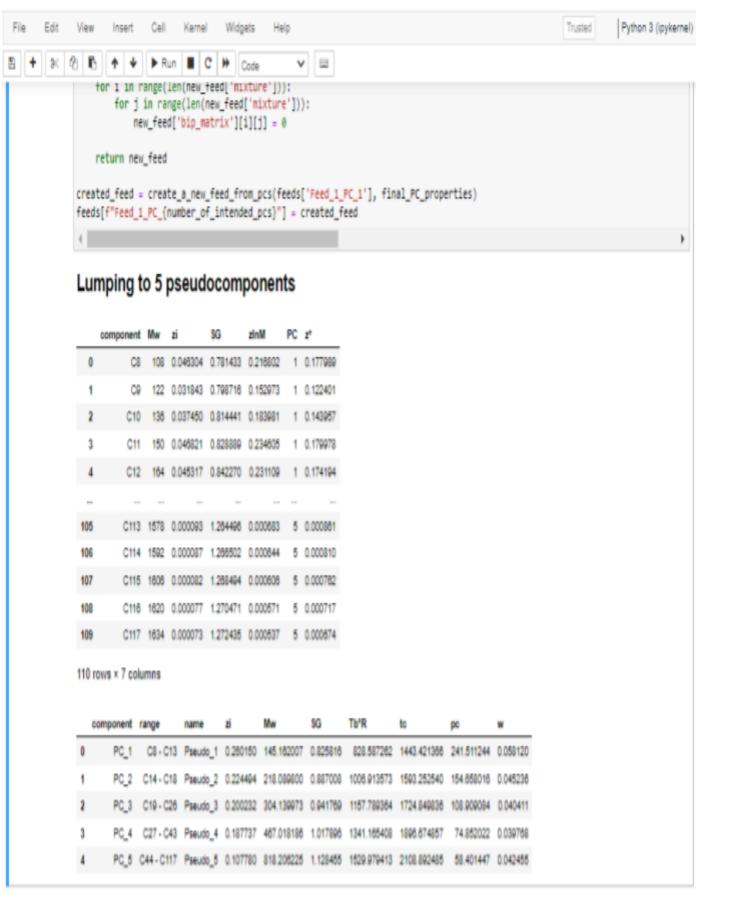


Fig 6: Lumping results

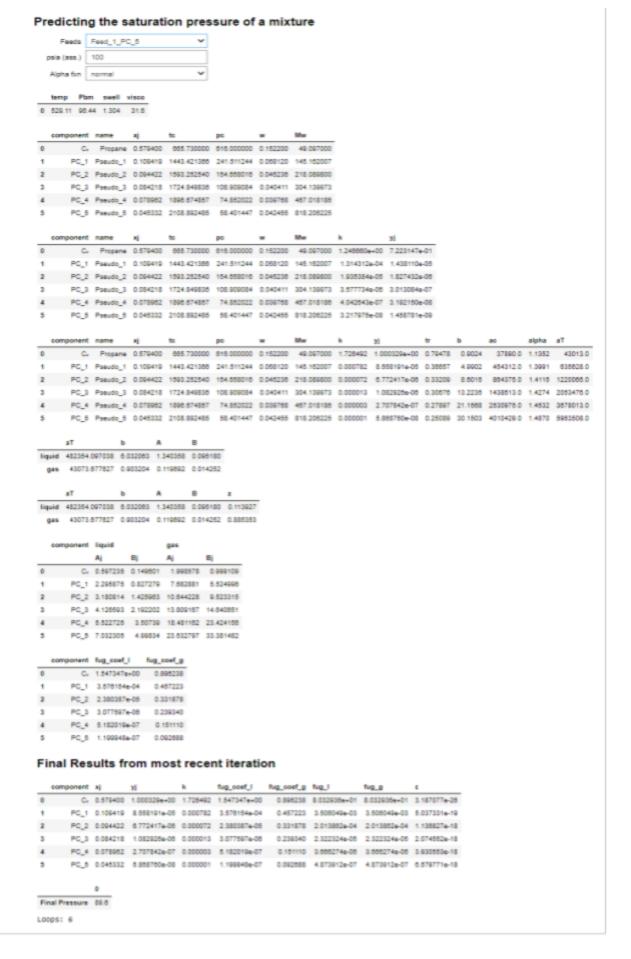


Fig 7: Five (5) PCs with normal alpha function

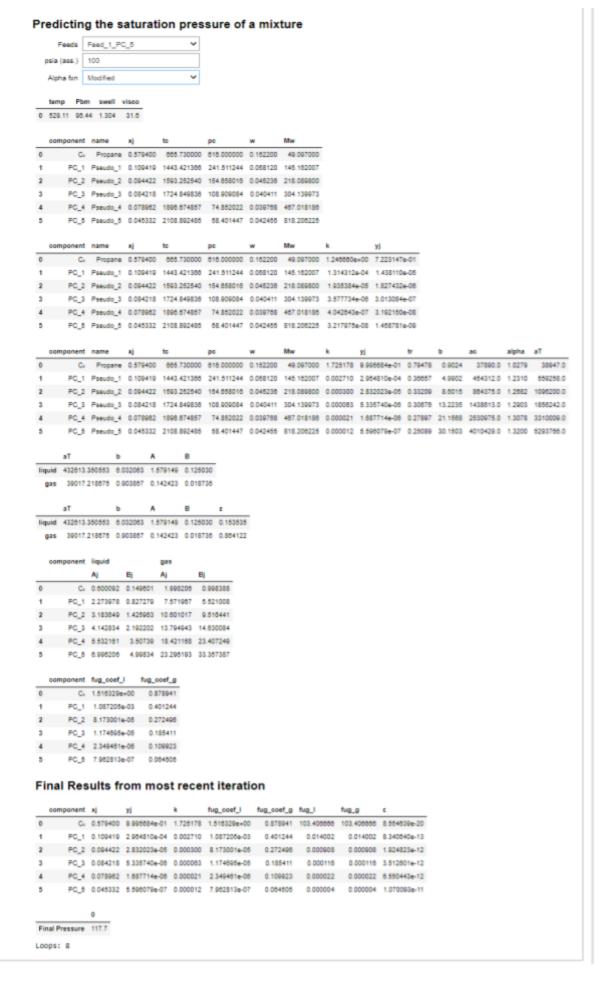


Fig 8: Five (5) PCs with modified alpha function

Equilibrium Properties at 93.604 psia and 69.260 deg F Phase Split: Liquid-Vapour

Peng-Robinson Equations of State

		ole percent		
component		Phase01		
Component	reeu	Filascol	FIIdSC02	
C3H8		58.42180		
PC1	11.03289	11.03289	0.00277	
PC2	9.52072	9.52072	0.00001	
PC3	8.49183	8.49183	0.00000	
PC4	7.96186	7.96186		
PC5	4.57090	4.57090	0.00000	
Phase Mole %		100.00000	0.00000	
		ass percent		
C3H8	15.80979	15.80979	99.99084	
PC1	9.82844	9.82844	0.00912	
PC2	12.74228	12.74228	0.00004	
PC3	15.84956	15.84956	0.00000	
PC4	22.81868	22.81868	0.00000	
PC5	22.95125	22.95125	0.00000	
Phase Mass %		100.00000	0.00000	
	,	olume percer	nt	
C3H8		27.01388	99.99985	
PC1			0.00015	
PC2				
PC3		15.89607	0.00000	
PC4		19.60616	0.00000	
PC5			0.00000	
Phase Volume %		100.00000	0.00000	
component	ln (f	ug, atm)		.r.t. phase 1
				Phase02
C3H8		36705+00	E 94224E 01	1 711645+00
PC1	-9.2	1615E+00	3.98215E+03	1.71164E+00 2.51121E-04
PC2				9.30263E-07
PC3		4193E+01	3.27525E+08	
PC4		9377E+01	1.00685E+12	
PC5		0997E+01	3.73263E+15	
		liquid	vapour	
z-factor		0.0470	0.8798	
Molar vol, m3/kmol	0.17811	0.17811	3.33063	
MW, g/mol	162.951	162.95	44.10	
Ideal H,BTU/lbmol	13486.045	13486.04	6216.35	
	-7316.047		5869.05	
Ideal Cp, BTU/lbmol-R	t .	52.0919	17.5016	
Cp, BTU/lbmol-R		65.6574	18.6894	
<pre>Ideal S, BTU/lbmol-R</pre>		46.7718	64.3296	
Entropy, BTU/lbmol-R		23.2697	63.9011	
Density, 1b/ft3		57.1156	0.8266	
Viscosity, cp		2.992E-01 8.		
	, dyne/cm		20.7793	
Phase Volume % Phase Mole %		100.0000	0.0000	

Fig 9: Five(5) PCs using Winprop