

Supplementary material for  
Equations of state with group contribution binary interaction parameters for  
prediction of two-phase envelopes for real natural gas mixtures with heavy  
fractions

by

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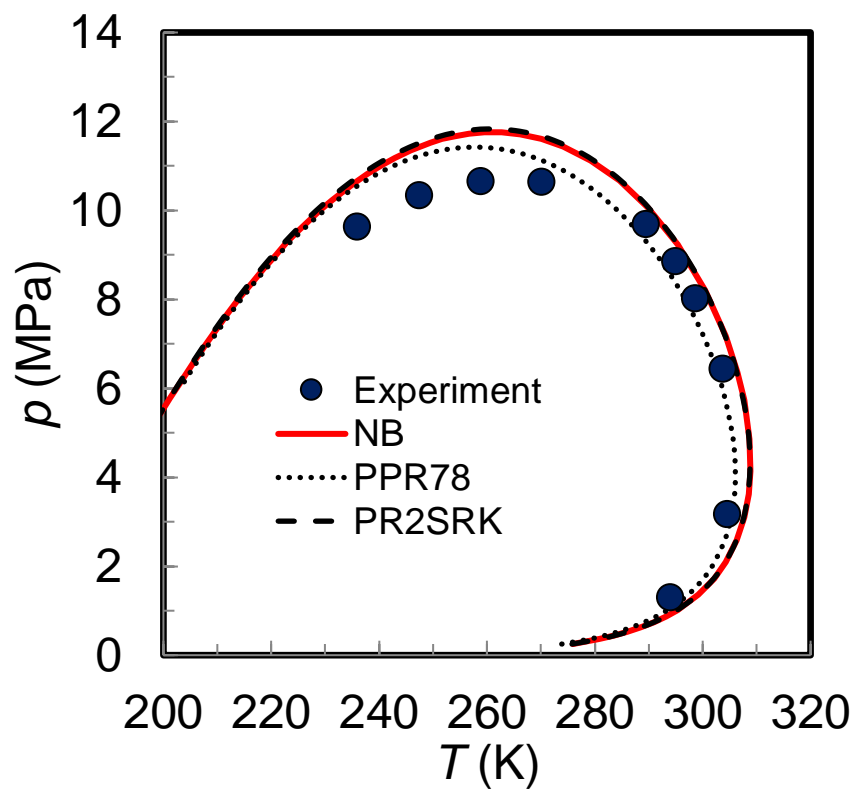


Fig. S1. Phase envelope for NG3. Experimental values is from Ref.[52].

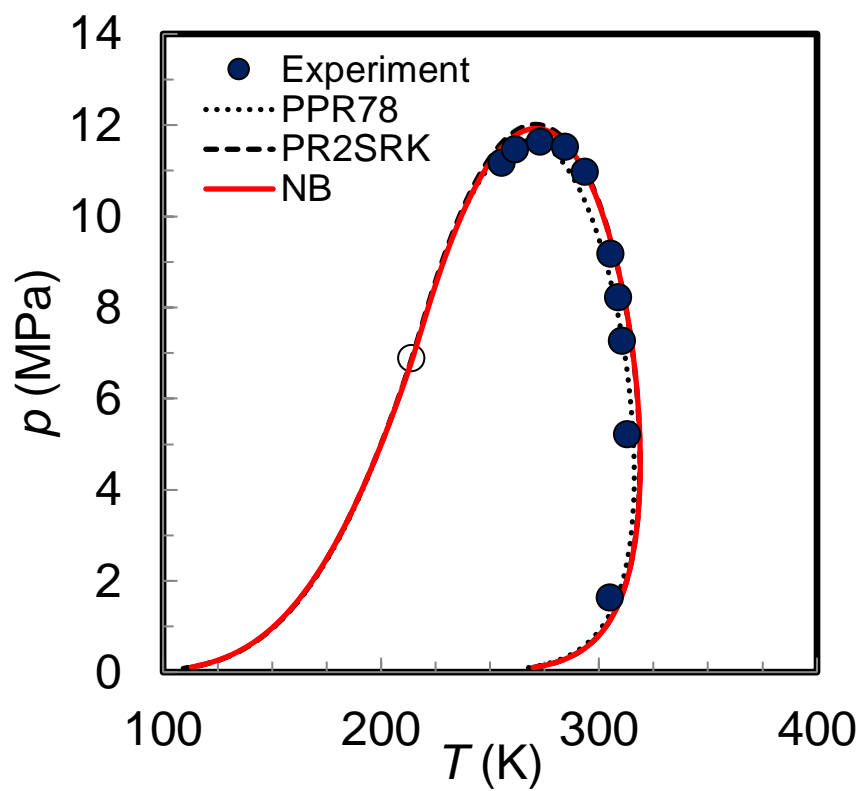


Fig. S2. Phase envelope for NG4. Experimental value is from Ref.[52].

Table S1

The specifications of rich gases (RG) used in this study

Component	mol%											
	RG1 [60]	RG2 [59]	RG3 [64]	RG4 [62]	RG5 [64]	RG6 [57]	RG7 [64]	RG8 [64]	RG9 [58]	RG10 [64]	RG11 [61]	RG12 [63]
CO <sub>2</sub>		8.64	0.82	2.44	3.47		0.45	0.97	0.10	0.18	0.61	2.17
N <sub>2</sub>		0.71	0.87	0.08	0.39		0.38	0.41		0.15	0.46	0.34
C <sub>1</sub>	91.35	70.85	64.04	82.10	80.19	82.38	83.00	86.16	95.22	86.57	68.64	70.64
C <sub>2</sub>	4.03	8.53	10.57	5.78	6.28	4.28	3.76	3.55	1.68	3.83	13.90	10.76
C <sub>3</sub>	1.53	4.95	5.75	2.87	2.75	3.51	1.44	1.54	0.91	1.97	6.89	4.94
i-C <sub>4</sub>		0.75	1.35	0.56	0.43	1.61	0.89	0.46	0.26	0.49	0.66	
n-C <sub>4</sub>	0.82	1.26	2.37	1.23	0.88	3.03		0.46	0.33	0.72	2.66	3.02
i-C <sub>5</sub>		0.41	1.06	0.52	0.31	0.60	4.36	0.26	0.16	0.34	0.62	
n-C <sub>5</sub>	0.34	0.40	0.98	0.60	0.35	0.68		0.20	0.11	0.40	0.94	1.35
C <sub>6</sub>	0.39	0.46	1.01	0.72	0.53	0.99	3.08	0.35	0.25	0.57	1.14	0.90
C <sub>7+</sub>	1.54	3.04	11.18	3.10	4.42	2.92	2.63	5.64	0.98	4.78	3.48	5.88
<i>MW</i> <sub>C<sub>7+</sub></sub>	138.78	155.3	186	132	171	125	106	253	122.6	200	152.3	153
<i>SPGR</i> <sub>C<sub>7+</sub></sub>	0.7961	0.8311	0.807	0.774	0.813	0.74	0.733	0.850	0.723	0.820	0.7763	0.81
<i>T</i> <sub>dew</sub> (K)	367	392.04	394.82	355.6	422.04	277.59	288.71	405.93	377.59	379.82	363	408.7
<i>P</i> <sub>dew</sub> (MPa)	26.46	39.851	36.053	28.1	54.268	21.339	18.278	81.565	23.063	60.329	23.53	33.47

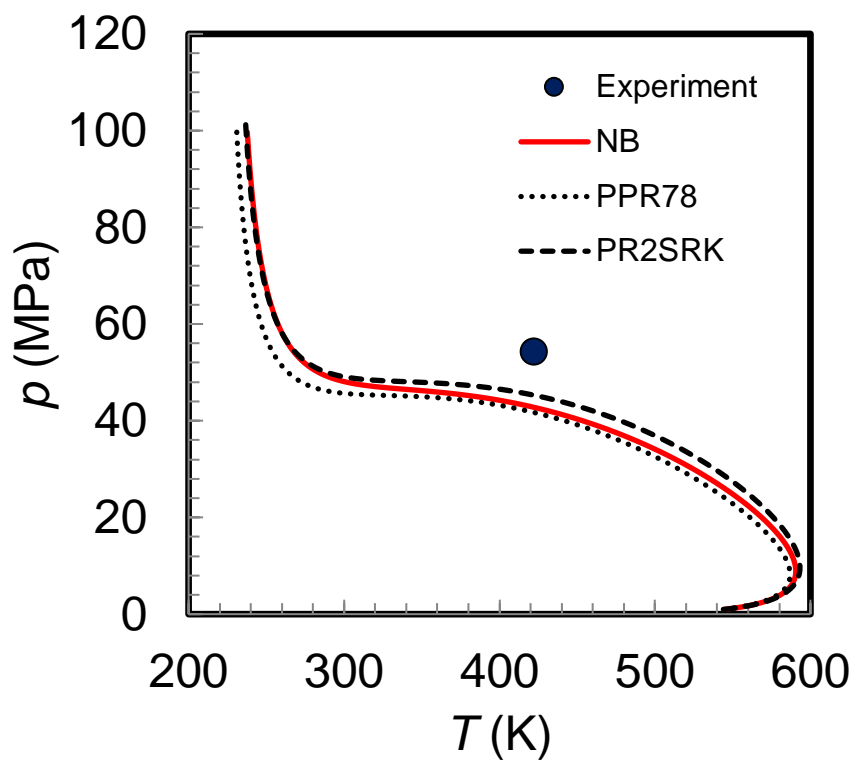


Fig. S3. Phase envelope for RG5 (experimental value from Ref.[64])

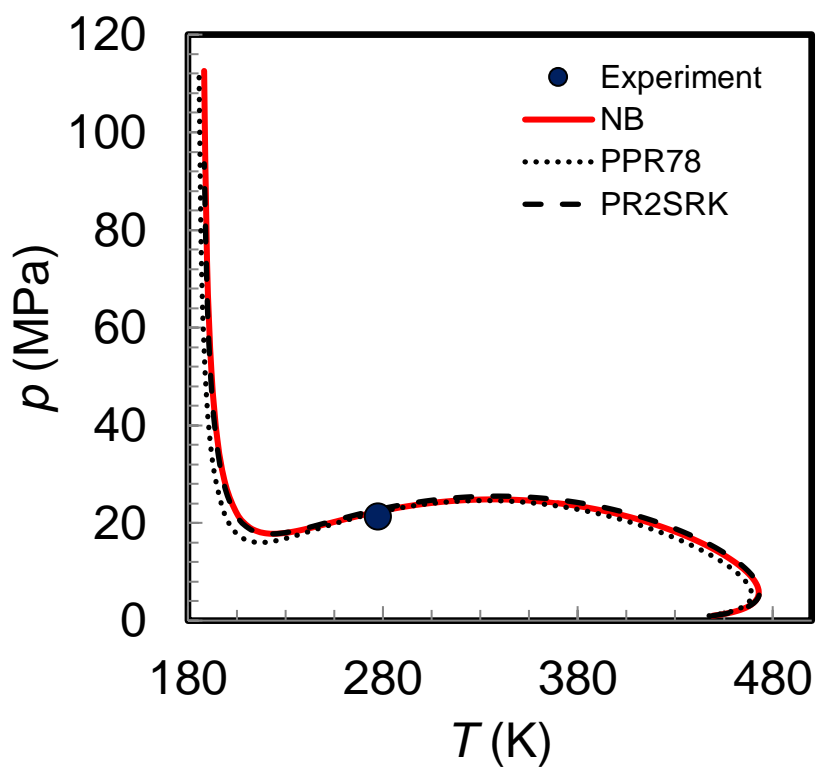


Fig. S4. Phase envelope for RG6 (experimental value from Ref.[57])

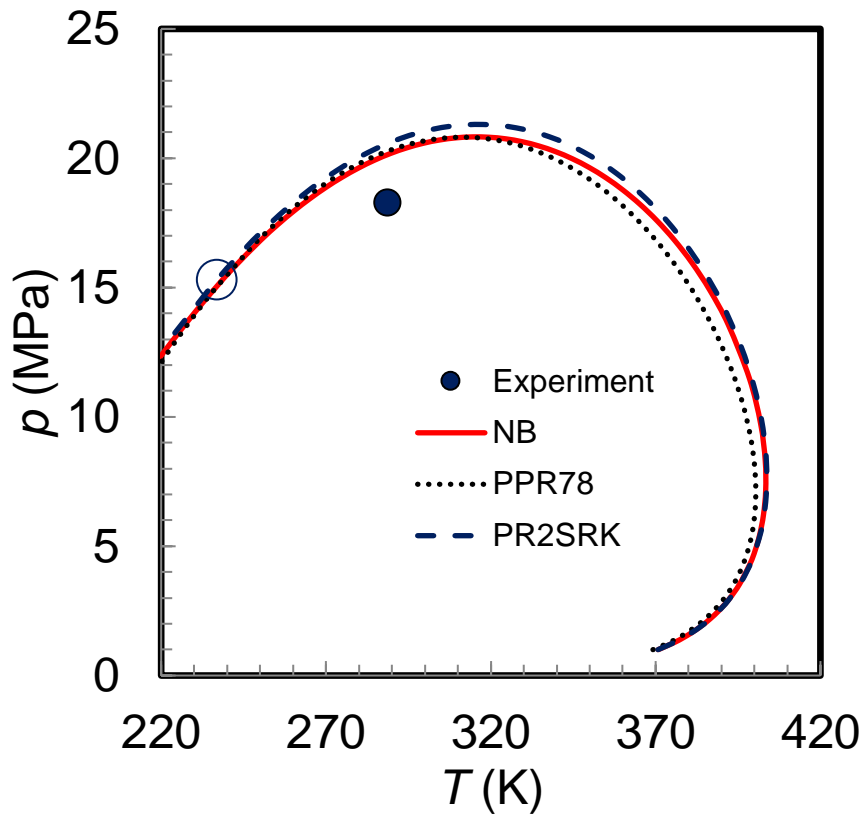


Fig. S5. Phase envelope for RG7 (experimental value from Ref.[64])

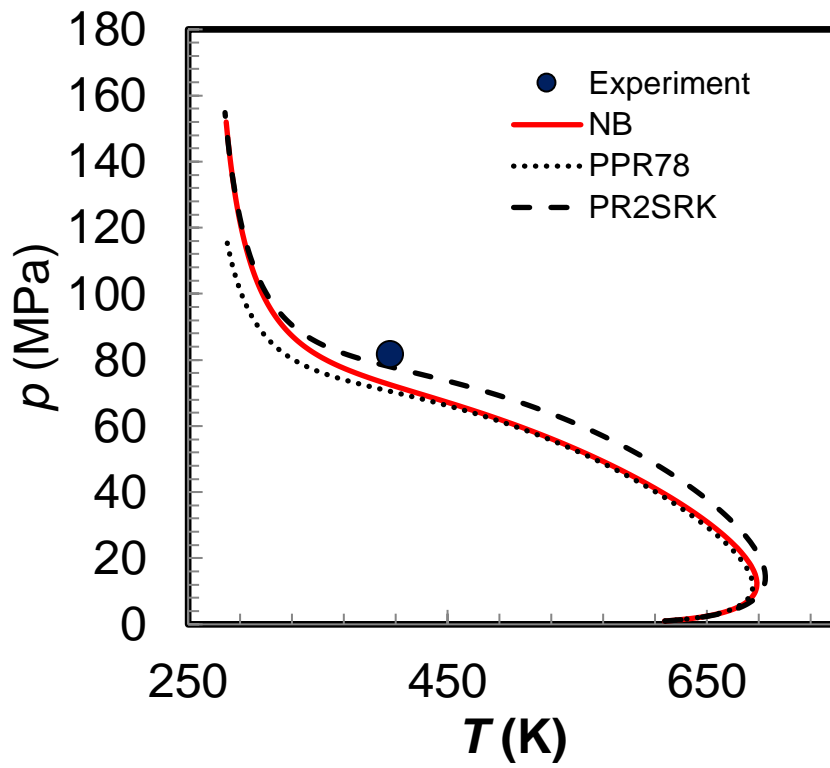


Fig. S6. Phase envelope for RG8 (experimental value from Ref.[64])

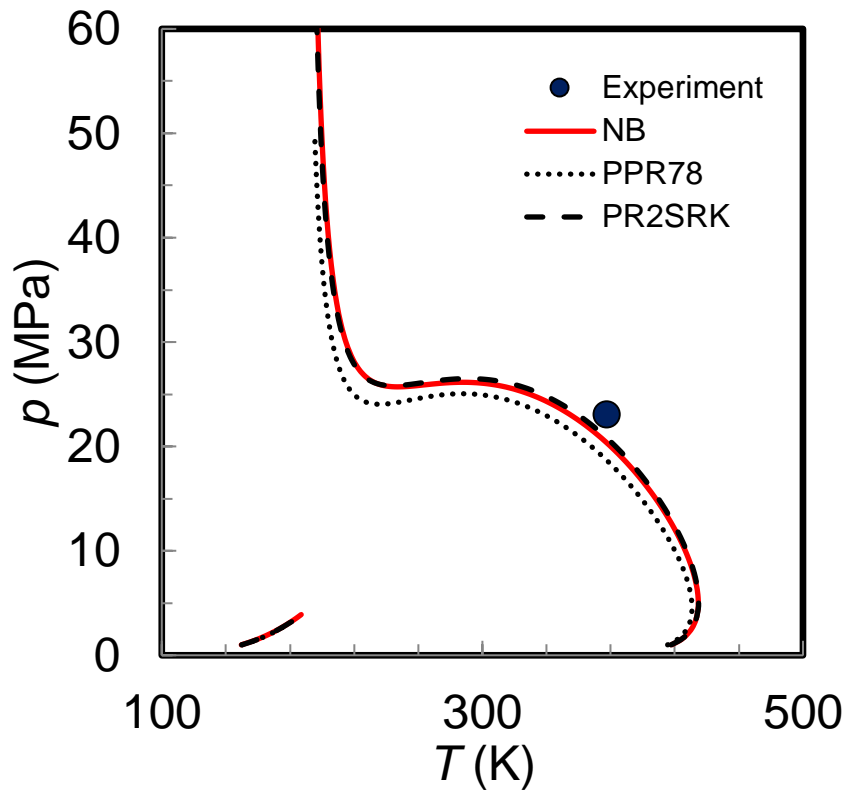


Fig. S7. Phase envelope for RG9 (experimental value from Ref.[58])

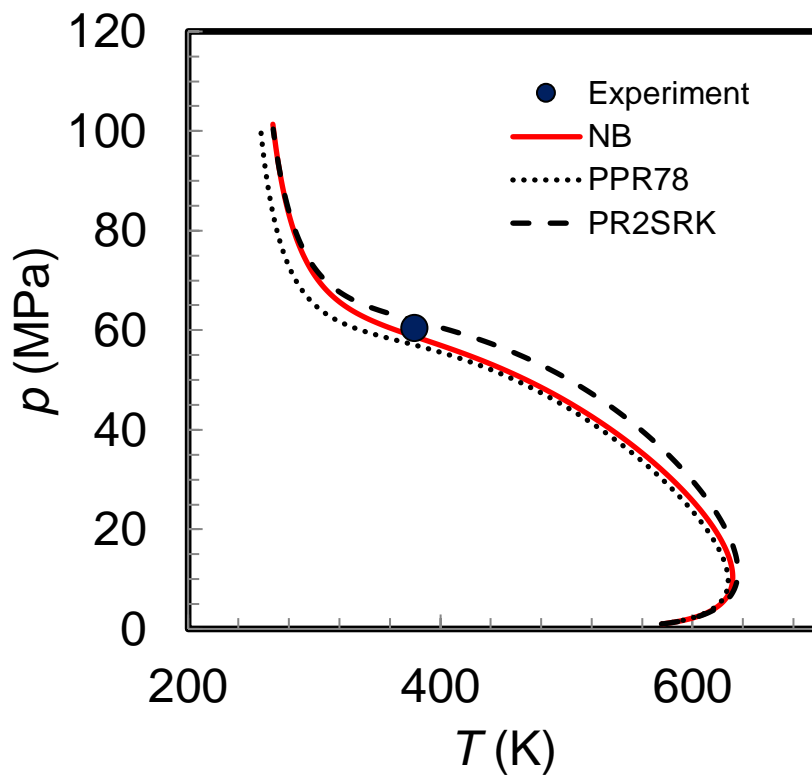


Fig. S8. Phase envelope for RG10 (experimental value from Ref.[64])

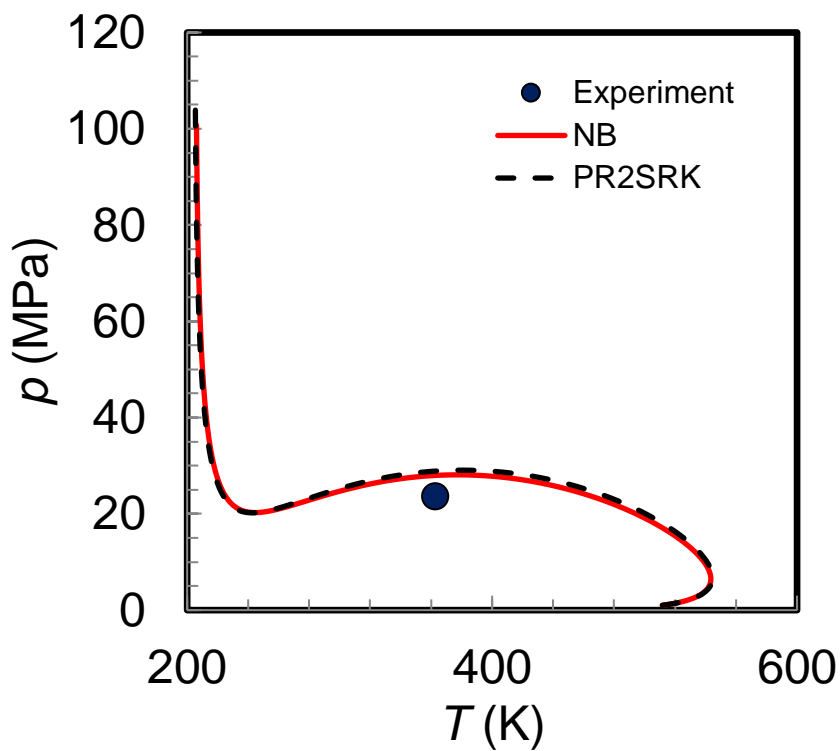


Fig. S9. Phase envelope for RG11 (experimental value from Ref.[61])

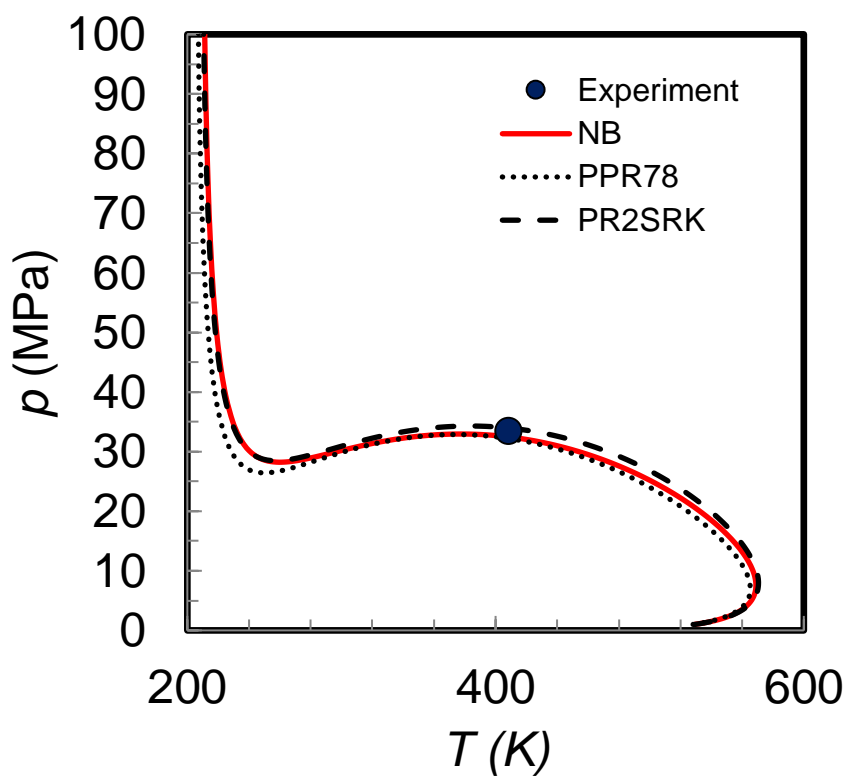


Fig. S10. Phase envelope for RG12 (experimental value from Ref.[63])