

Supplementary Information File for

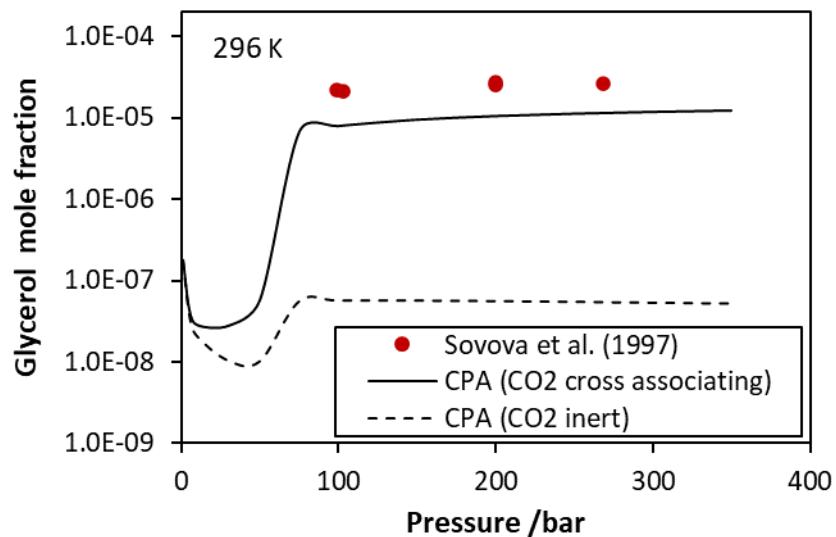
## Modeling Binary and Multicomponent Systems Containing Supercritical CO<sub>2</sub> with Polyethylene Glycols and Compounds Relevant to the Biodiesel Production

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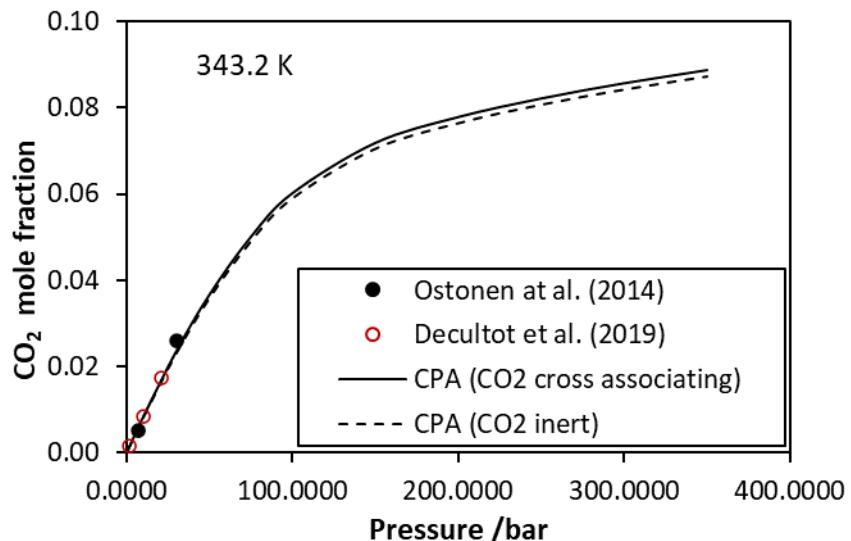
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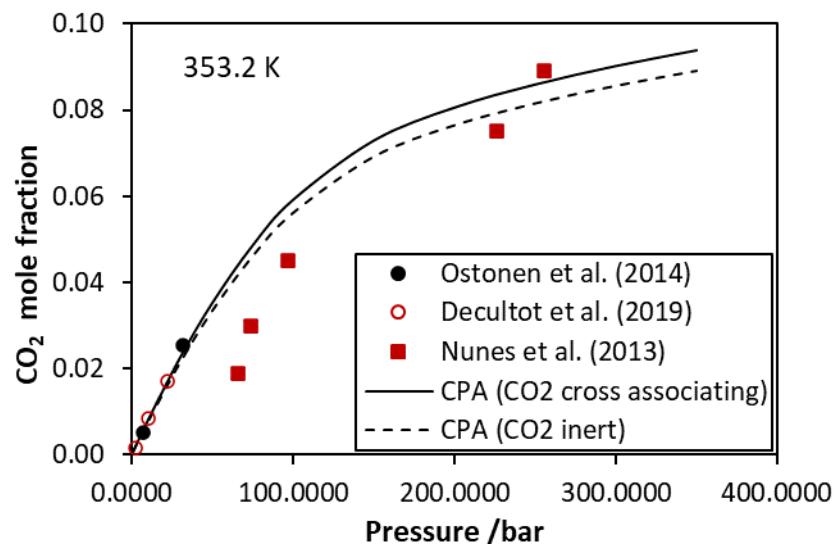
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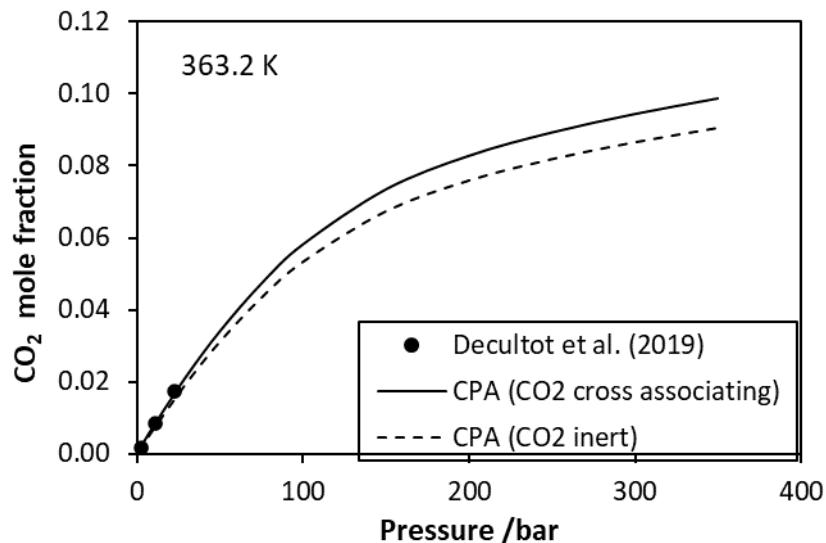
**Figure S1.** CO<sub>2</sub> - glycerol VLE. Glycerol mole fraction in the vapor phase. Experimental data [40] and CPA correlations using the interaction parameters of Table 4 of the main article.



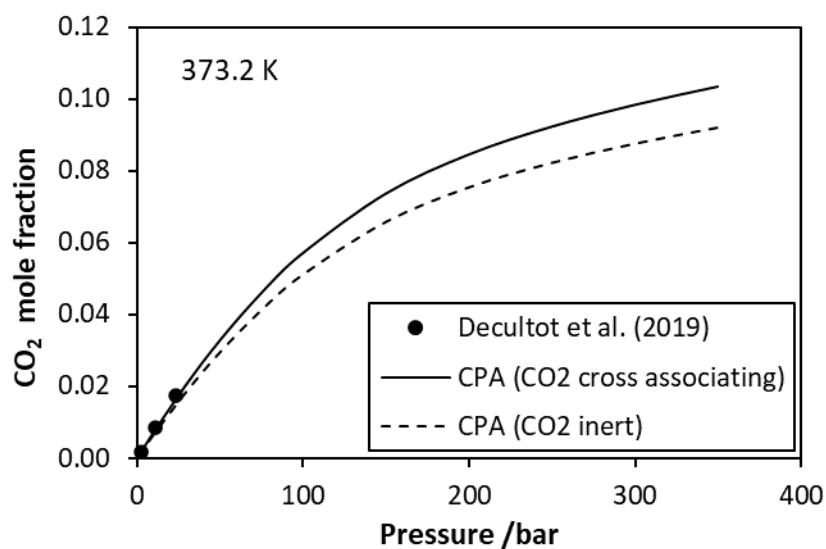
**Figure S2.** CO<sub>2</sub> - glycerol VLE. CO<sub>2</sub> mole fraction in the liquid phase. Experimental data [41,42] and CPA correlations using the interaction parameters of Table 4 of the main article.



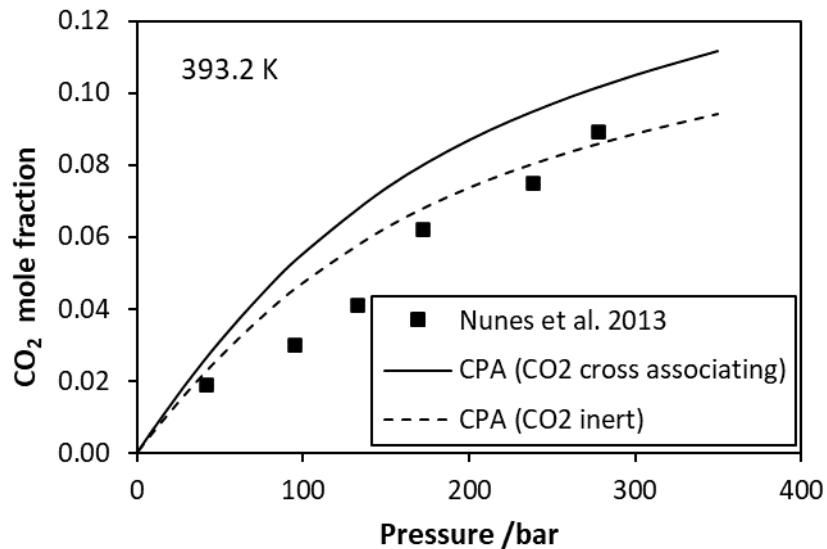
**Figure S3.** CO<sub>2</sub> - glycerol VLE. CO<sub>2</sub> mole fraction in the liquid phase. Experimental data [39,41,42] and CPA correlations using the interaction parameters of Table 4 of the main article.



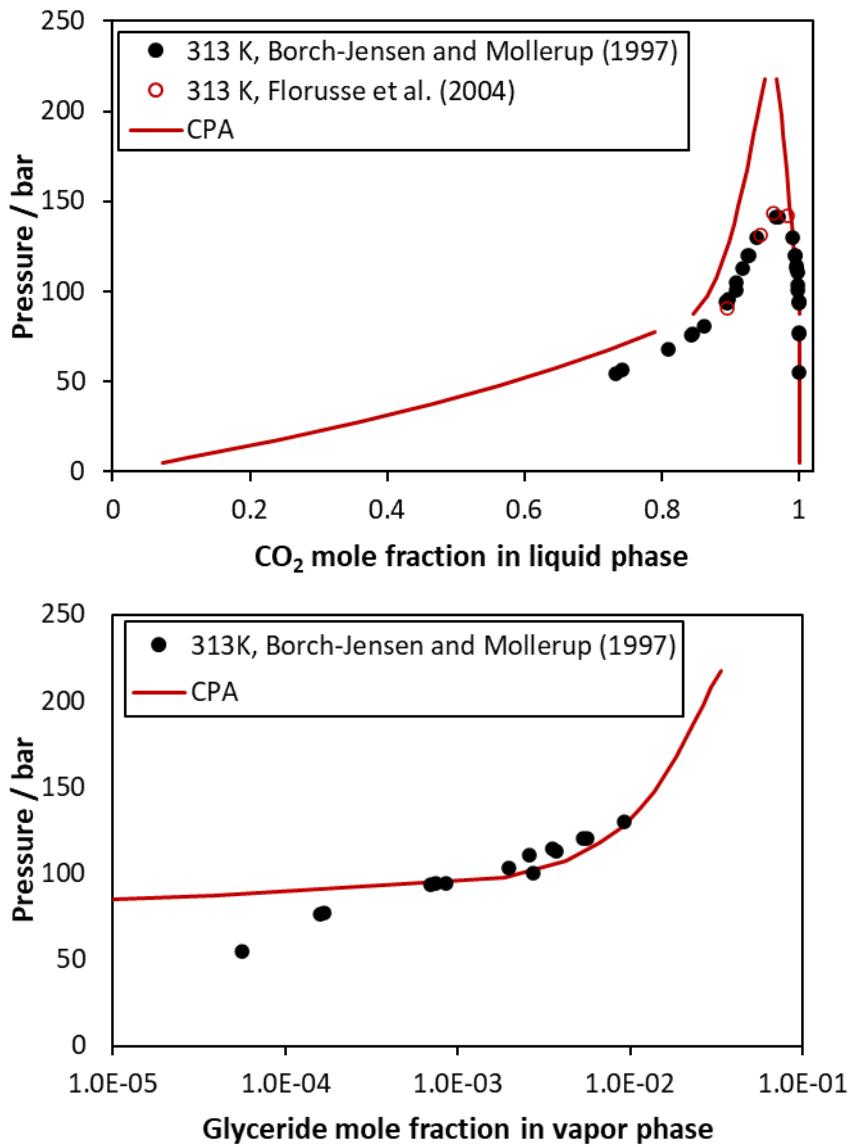
**Figure S4.** CO<sub>2</sub> - glycerol VLE. CO<sub>2</sub> mole fraction in the liquid phase. Experimental data [42] and CPA correlations using the interaction parameters of Table 4 of the main article.



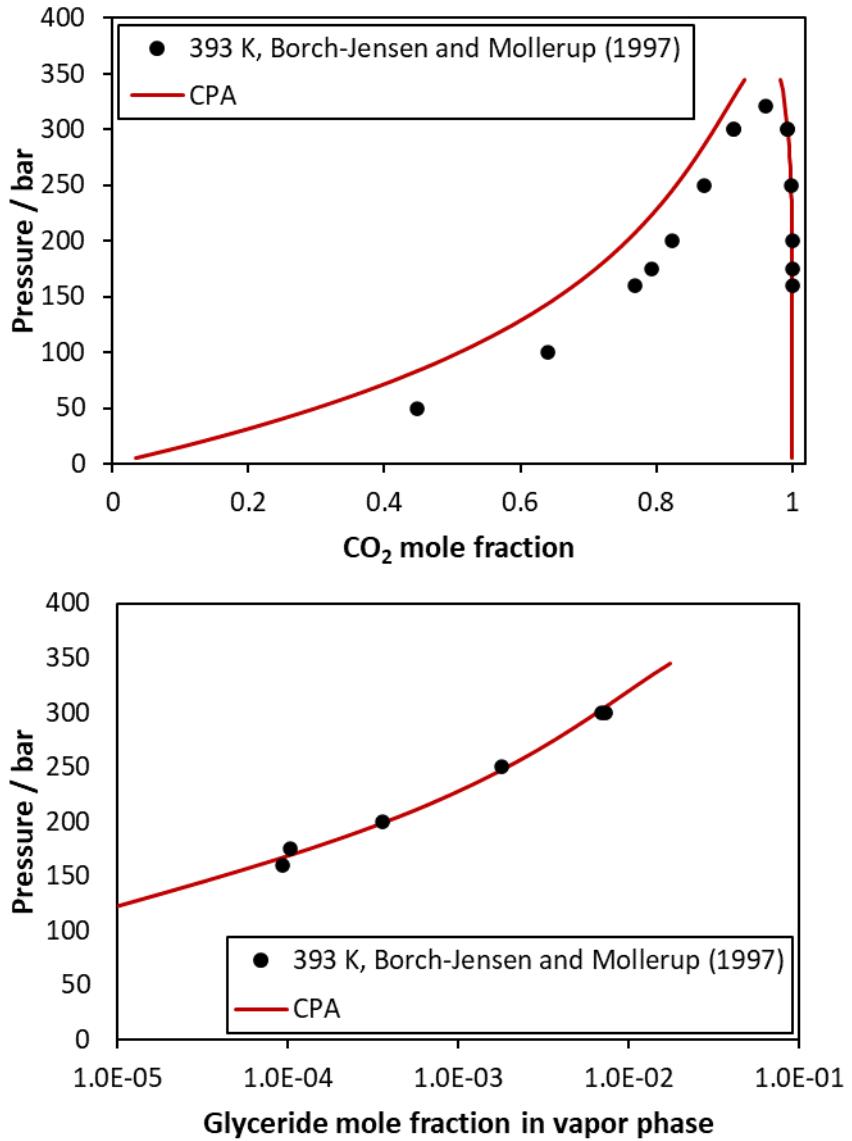
**Figure S5.** CO<sub>2</sub> - glycerol VLE. CO<sub>2</sub> mole fraction in the liquid phase. Experimental data [42] and CPA correlations using the interaction parameters of Table 4 of the main article.



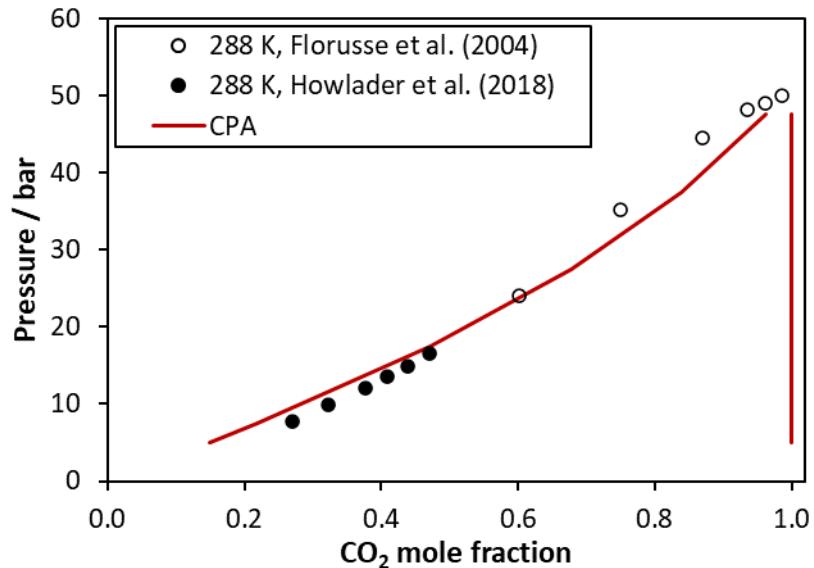
**Figure S6.** CO<sub>2</sub> - glycerol VLE. CO<sub>2</sub> mole fraction in the liquid phase. Experimental data [39] and CPA correlations using the interaction parameters of Table 4 of the main article.



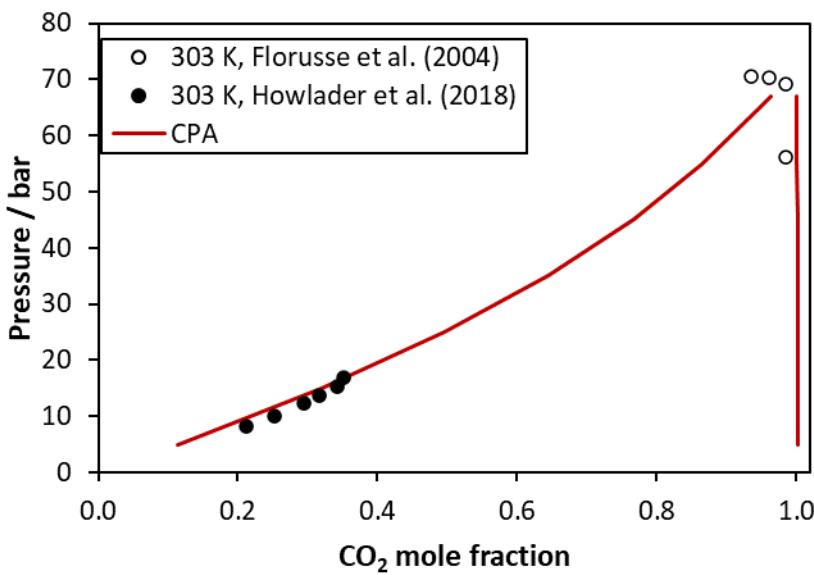
**Figure S7.** CO<sub>2</sub> - tricaprylyn VLE at 313 K. Experimental data [43,44] and CPA correlations using the binary parameter of Table 5 of the main article.



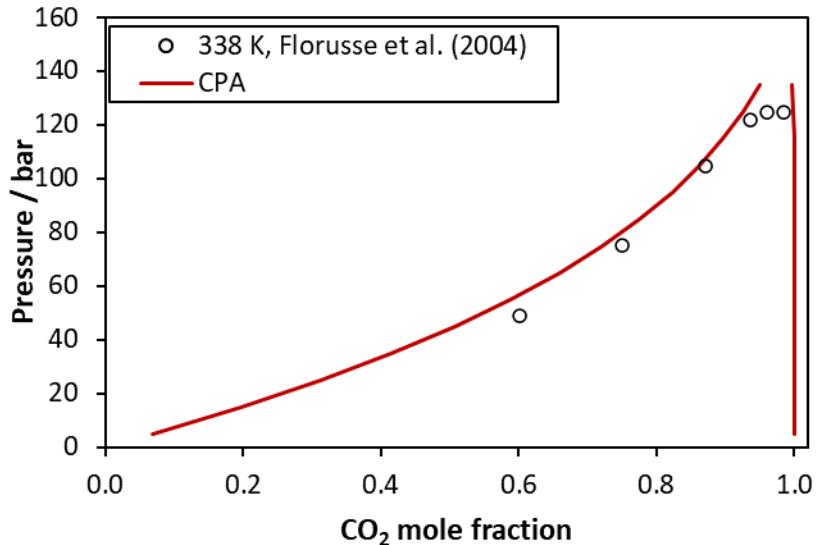
**Figure S8.** CO<sub>2</sub> - tricaprylyn VLE at 393 K. Experimental data [43] and CPA correlations using the binary parameter of Table 5 of the main article.



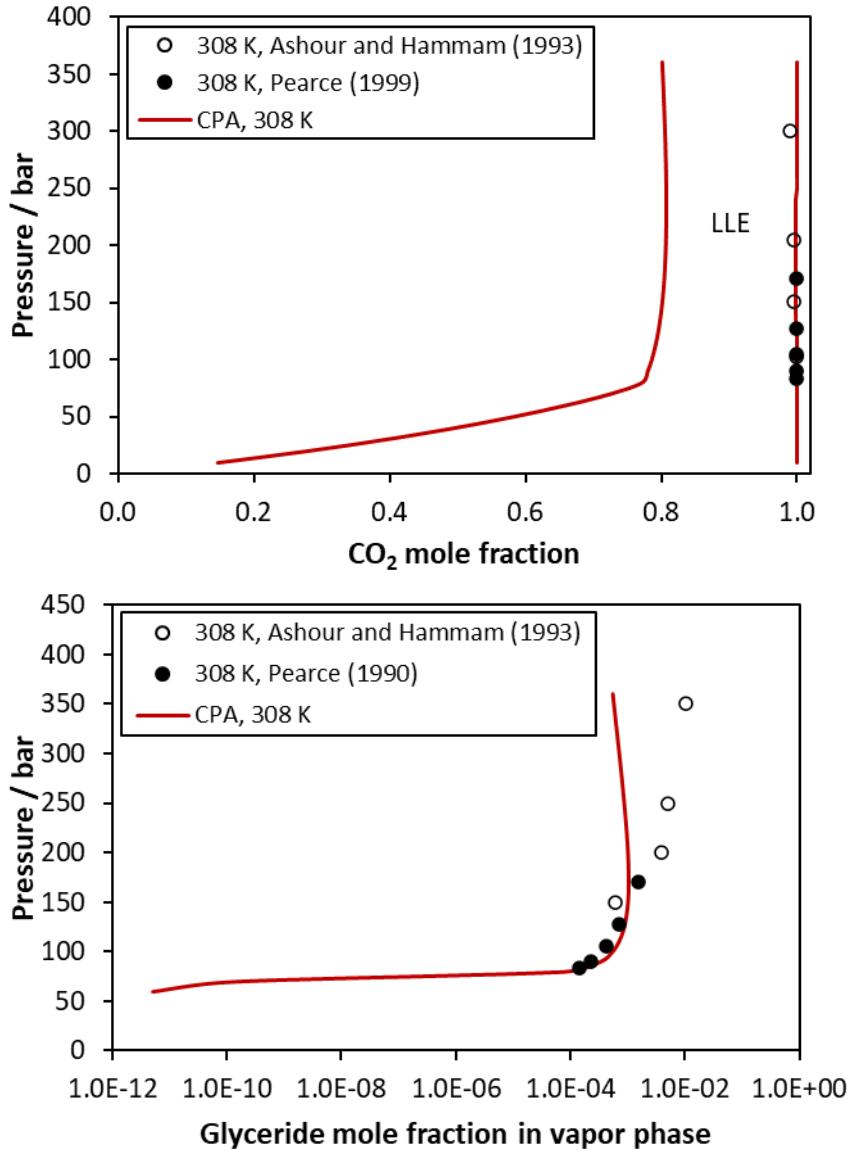
**Figure S9.** CO<sub>2</sub> - tributyrin VLE at 288 K. Experimental data [44,45] and CPA correlations using the binary parameter of Table 5 of the main article.



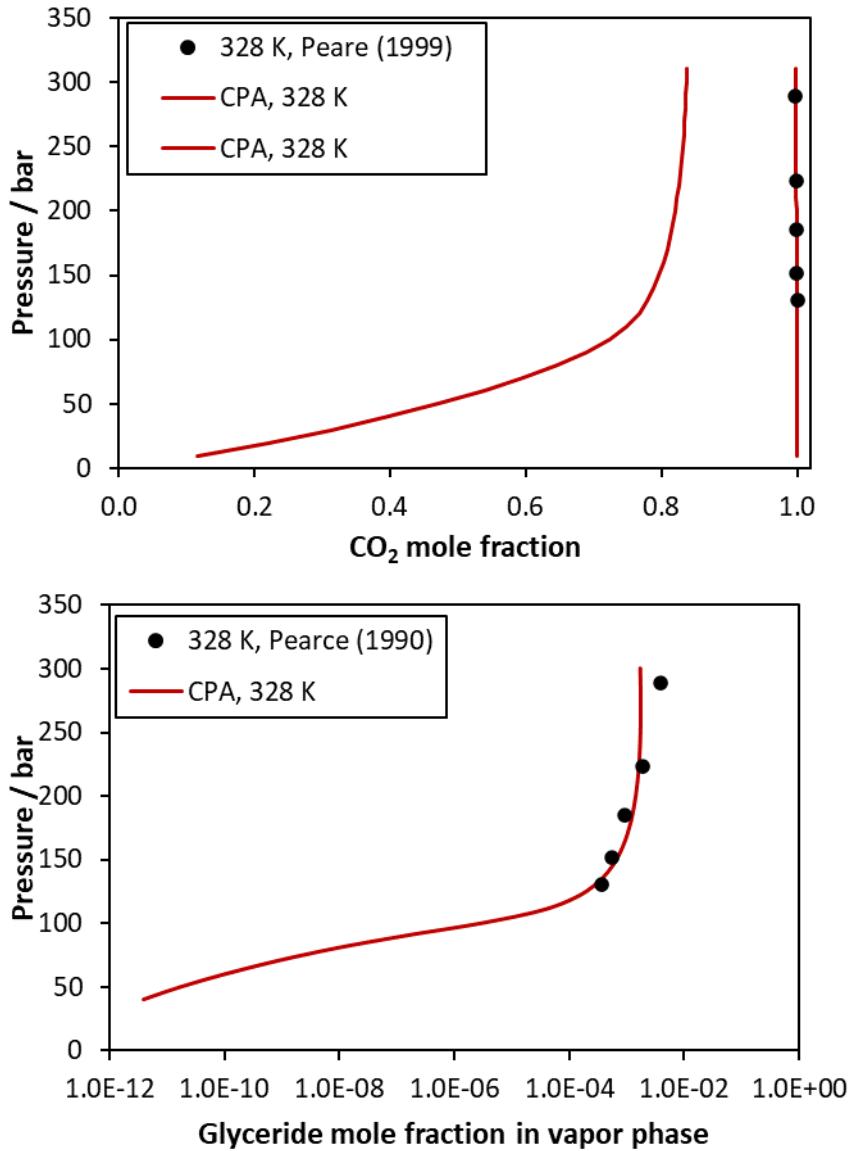
**Figure S10.** CO<sub>2</sub> - tributyrin VLE at 303 K. Experimental data [44,45] and CPA correlations using the binary parameter of Table 5 of the main article.



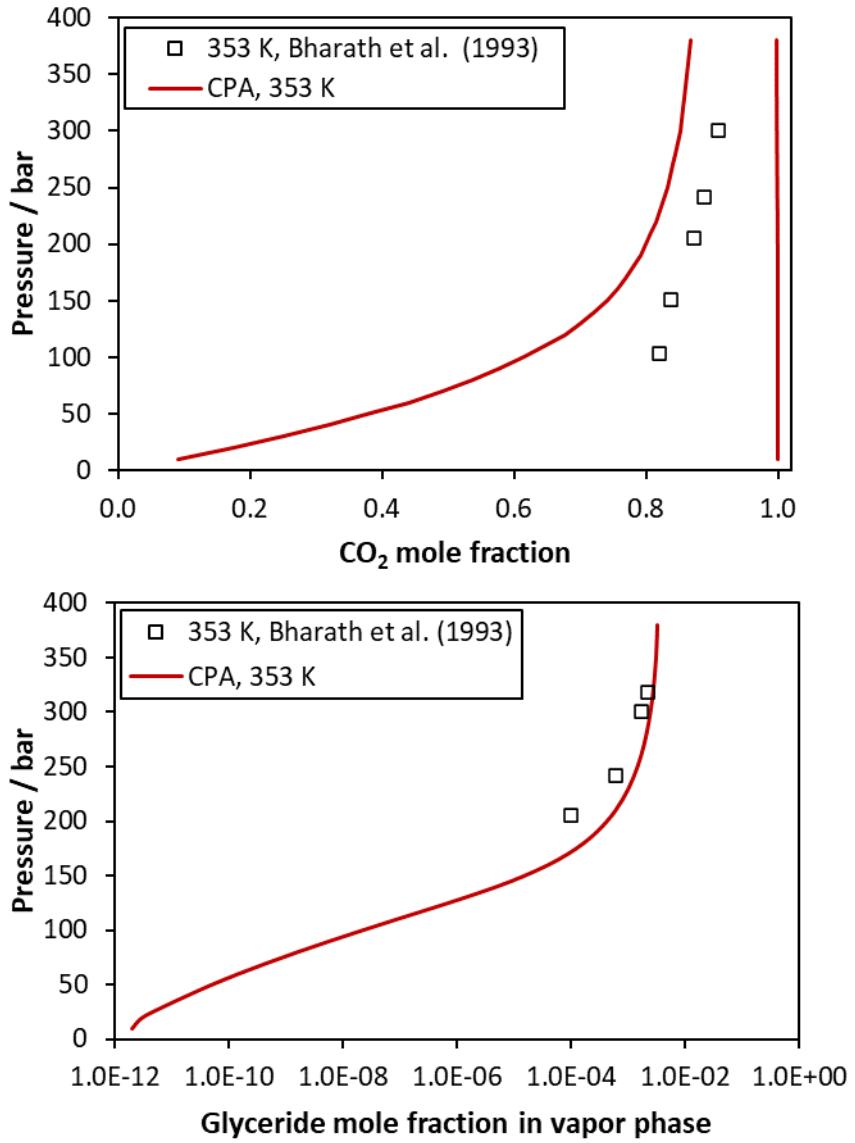
**Figure S11.** CO<sub>2</sub> - tributyrin VLE at 338 K. data [44,45] and CPA correlations using the binary parameter of Table 5 of the main article.



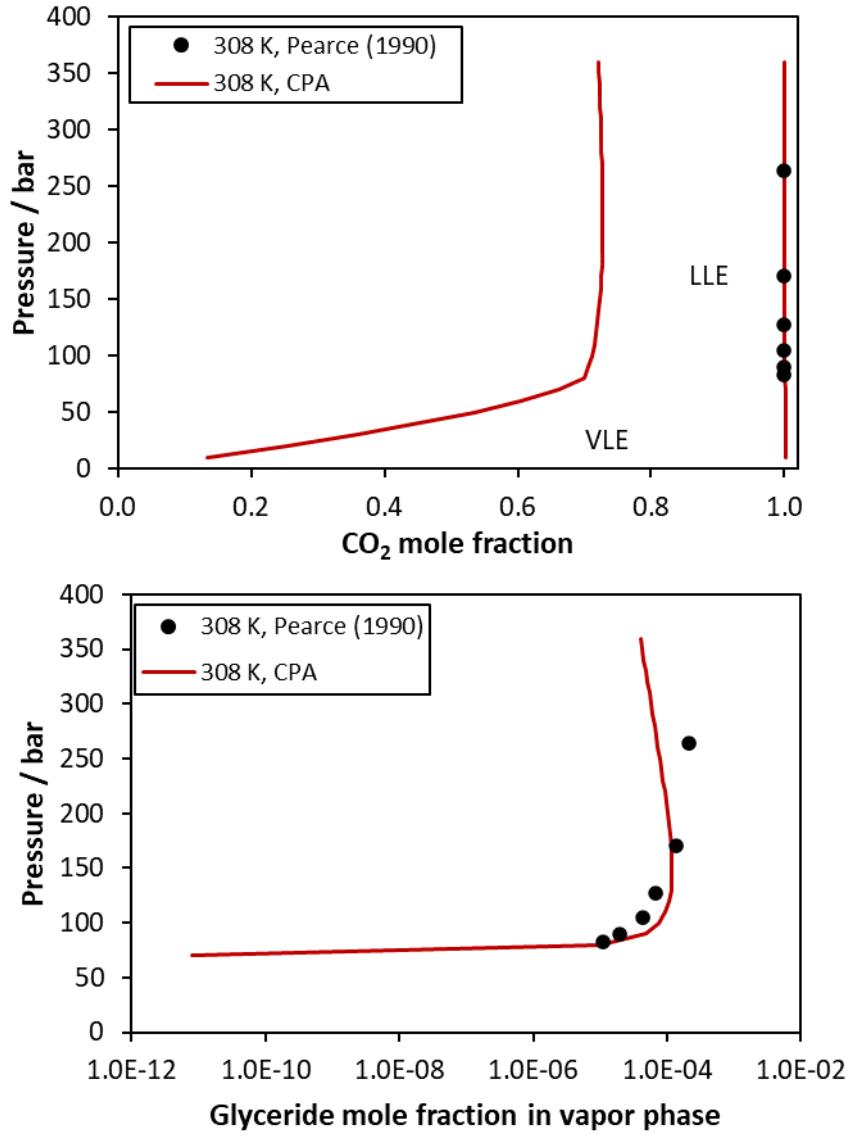
**Figure S12.** CO<sub>2</sub> - trilaurin VLE and LLE at 308 K. Experimental data [48,49] and CPA correlations using the binary parameter of Table 5 of the main article.



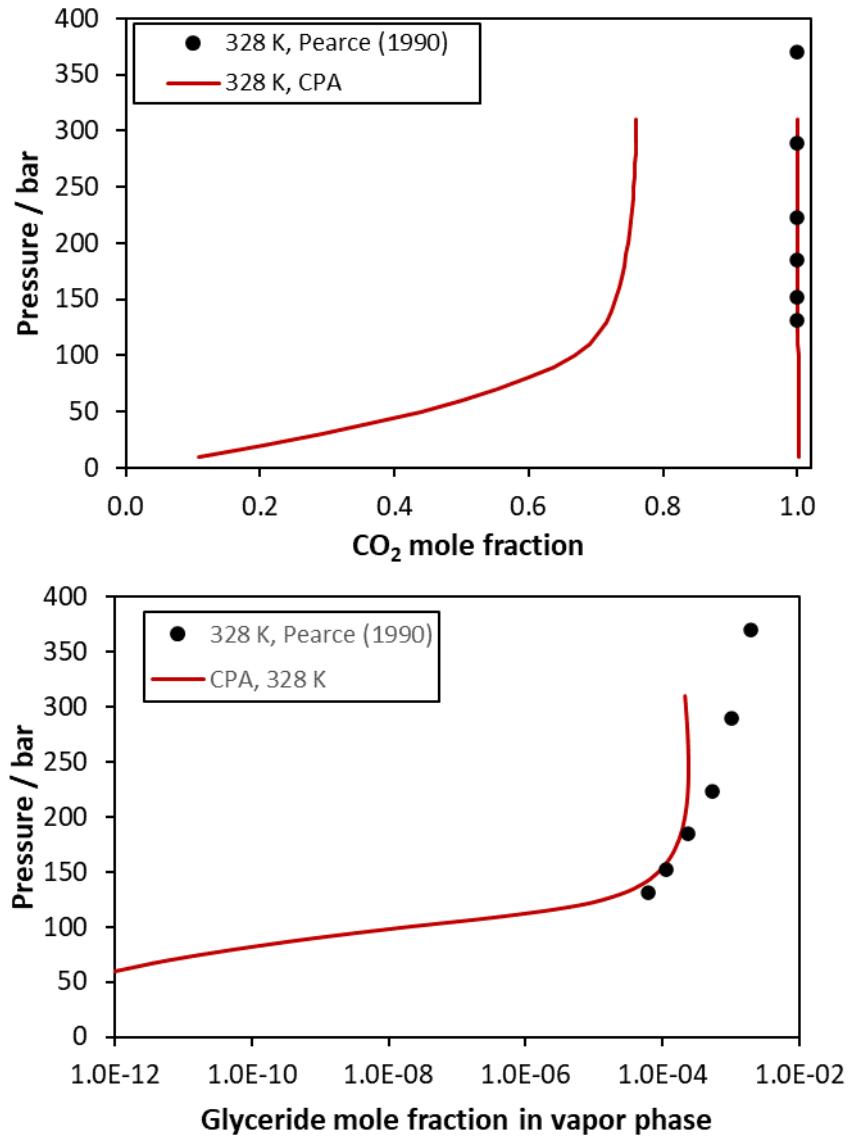
**Figure S13.** CO<sub>2</sub> - trilaurin VLE at 328 K. Experimental data [48] and CPA correlations using the binary parameter of Table 5 of the main article.



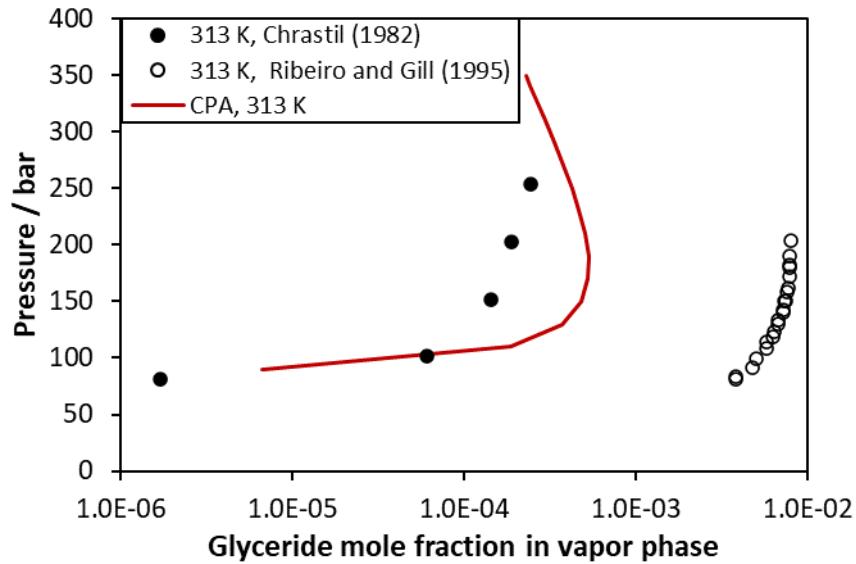
**Figure S14.**  $\text{CO}_2$  - trilaurin VLE at 353 K. Experimental data [47] and CPA correlations using the binary parameter of Table 5 of the main article.



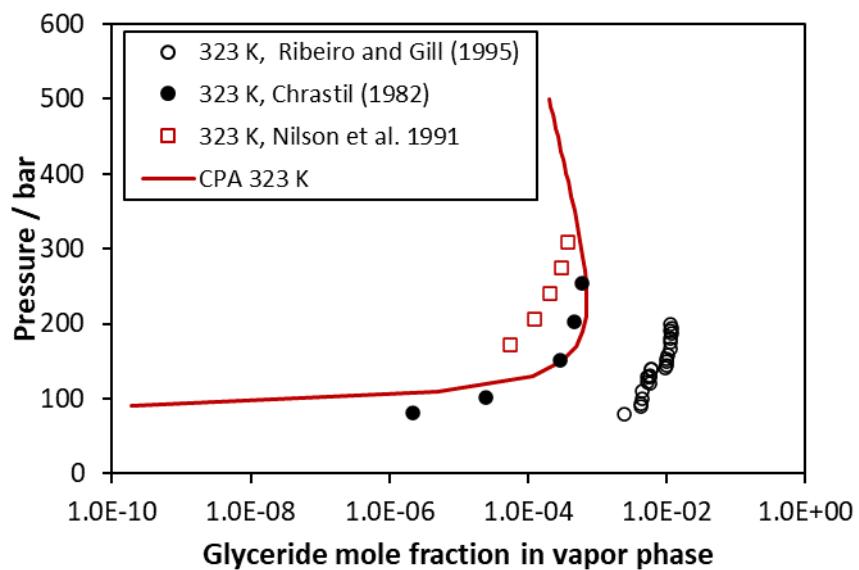
**Figure S15.** CO<sub>2</sub> – trimyristin VLE at 308 K. Experimental data [48] and CPA correlations using the binary parameter of Table 5 of the main article.



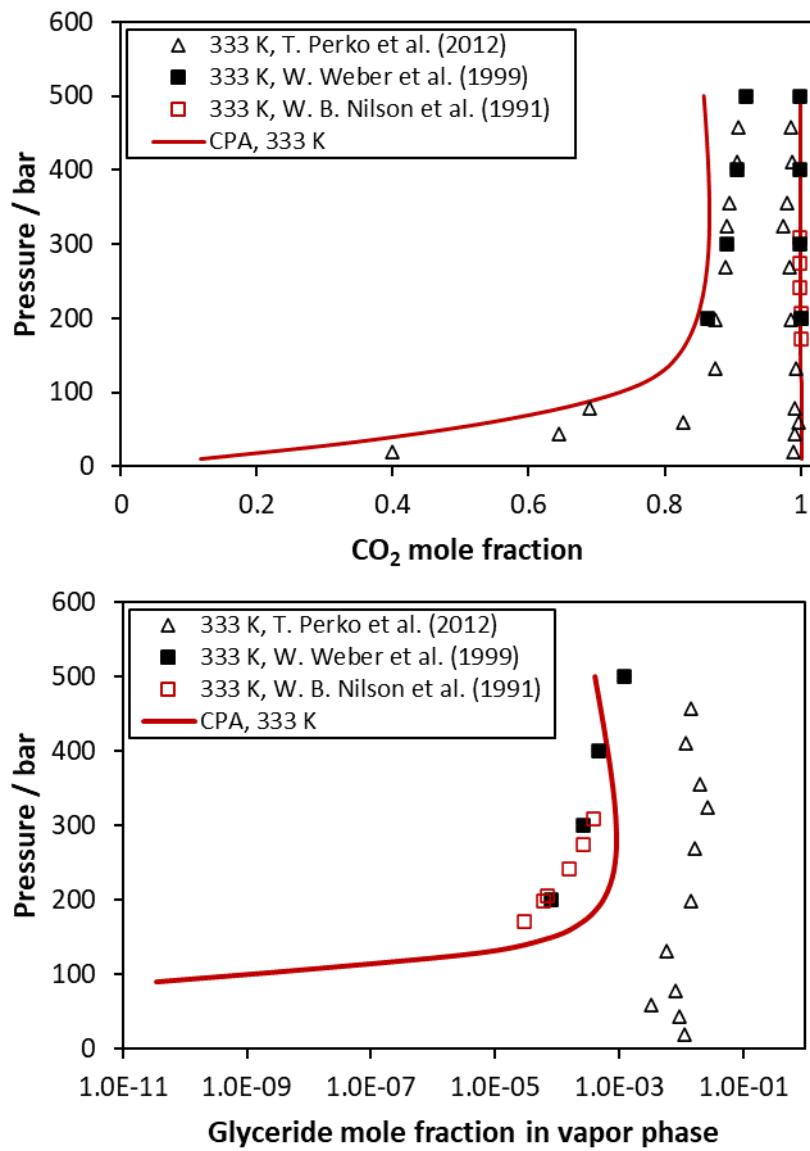
**Figure S16.** CO<sub>2</sub> – trimyristin VLE at 328 K. Experimental data [48] and CPA correlations using the binary parameter of Table 5 of the main article.



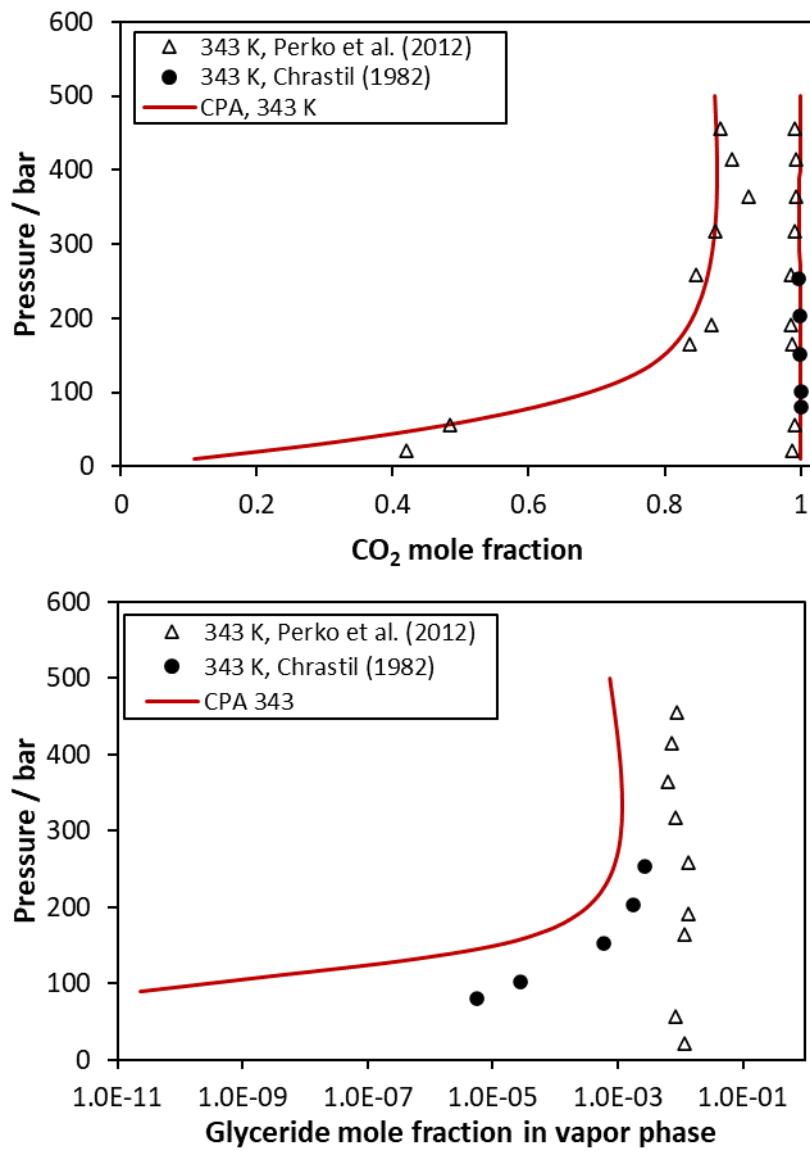
**Figure S17.**  $\text{CO}_2$  – triolein VLE at 313 K (vapor phase compositions). Experimental data [53,54] and CPA correlations using the binary parameter of Table 5 of the main article.



**Figure S18.**  $\text{CO}_2$  – triolein VLE at 323 K (vapor phase compositions). Experimental data [50,53,54] and CPA correlations using the binary parameter of Table 5 of the main article.



**Figure S19.**  $\text{CO}_2$  – triolein VLE at 333 K. Experimental data [51-53] and CPA correlations using the binary parameter of Table 5 of the main article.



**Figure S20.**  $\text{CO}_2$  – triolein VLE at 343 K. Experimental data [52,53] and CPA correlations using the binary parameter of Table 5 of the main article.