Supporting information file

Measurements and Correlation of Isobaric Vapor-Liquid Equilibria for the Binary Systems of Cyclohexanol + Cyclohexyl Formate and Cyclopentanol + Cyclopentyl Formate under various pressures

Tomáš Sommer, Martin Zapletal, Jiří Trejbal*

Department of Organic Technology, University of Chemistry and Technology Prague, Technická 5, 166 28 Prague 6, Czech Republic

*Corresponding Author

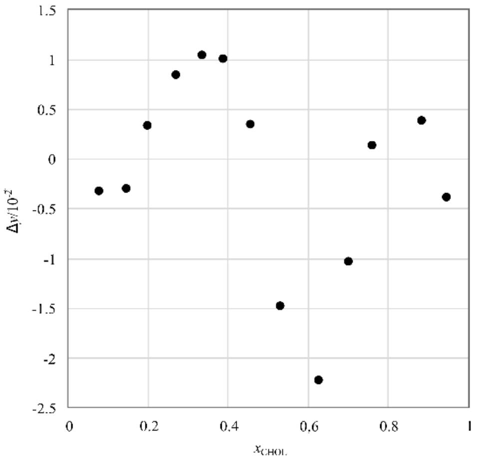
Email: Jiri.Trejbal@vscht.cz

Phone: +420220443689

Table S1: Comparison of experimental vapor pressure of pure water obtained in this work and calculated vapor pressure by the Antoine parameters from the literature.[1]

p^s/kPa	T_{exp}/K	T_{cal}/K[1]	σ_T/%
97.71	372.35	372.15	0.054
39.94	349.15	348.99	0.046
25.02	338.25	338.14	0.033
9.96	318.95	318.88	0.022

$\sigma_T = 100(T_{exp} - T_{cal})/T_{exp}$ [%]



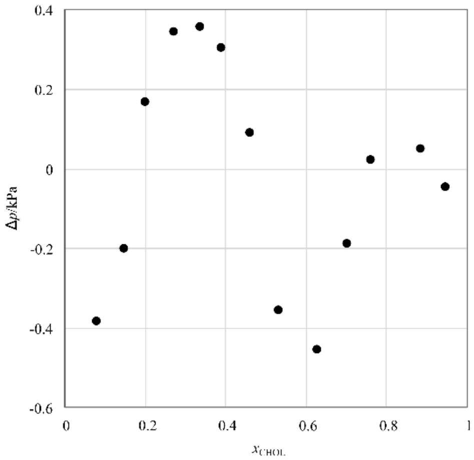
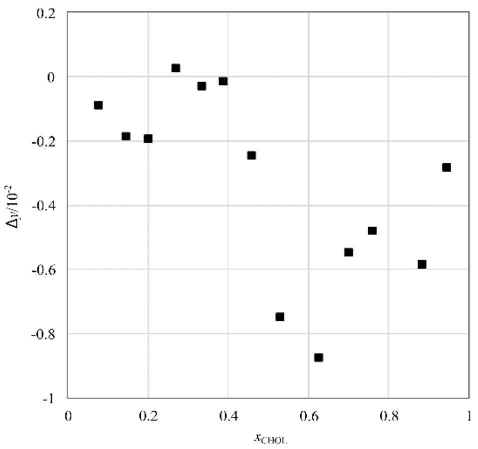


Figure S1: Distribution of residuals of vapor phase mole fraction and pressure under 10 kPa for cyclohexanol + cyclohexyl formate binary system.



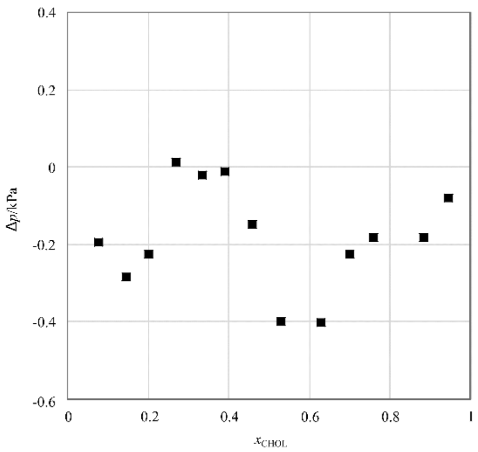


Figure S2: Distribution of residuals of vapor phase mole fraction and pressure under 25 kPa for cyclohexanol + cyclohexyl formate binary system.

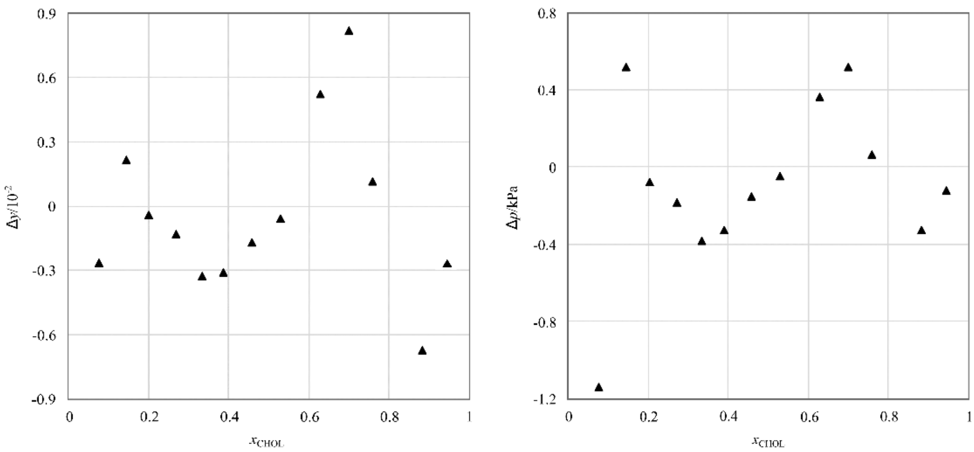


Figure S3: Distribution of residuals of vapor phase mole fraction and pressure under 40 kPa for cyclohexanol + cyclohexyl formate binary system.

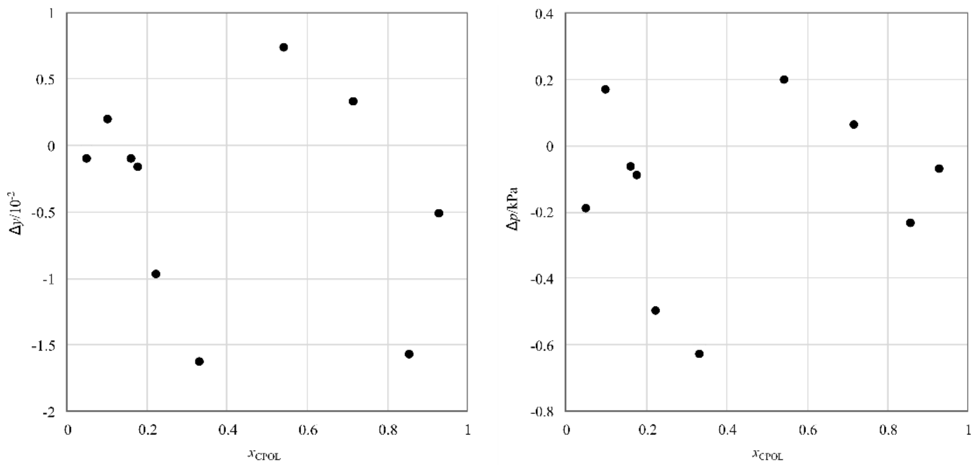


Figure S4: Distribution of residuals of vapor phase mole fraction and pressure under 10 kPa for cyclopentanol + cyclopentyl formate binary system.

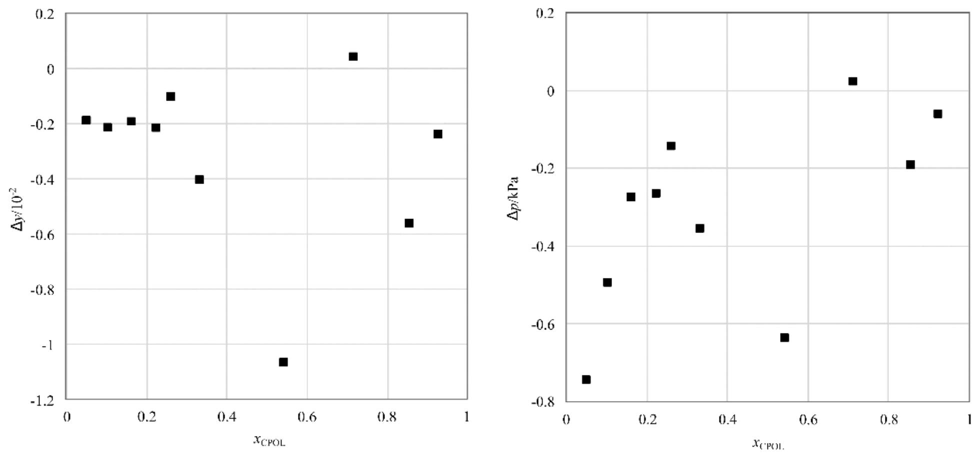


Figure S5: Distribution of residuals of vapor phase mole fraction and pressure under 25 kPa for cyclopentanol + cyclopentyl formate binary system.

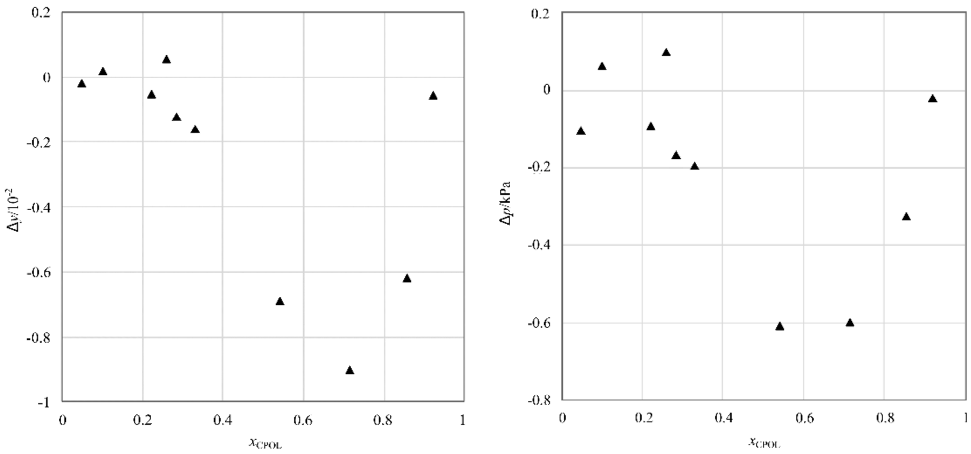


Figure S6: Distribution of residuals of vapor phase mole fraction and pressure under 40 kPa for cyclopentanol + cyclopentyl formate binary system.

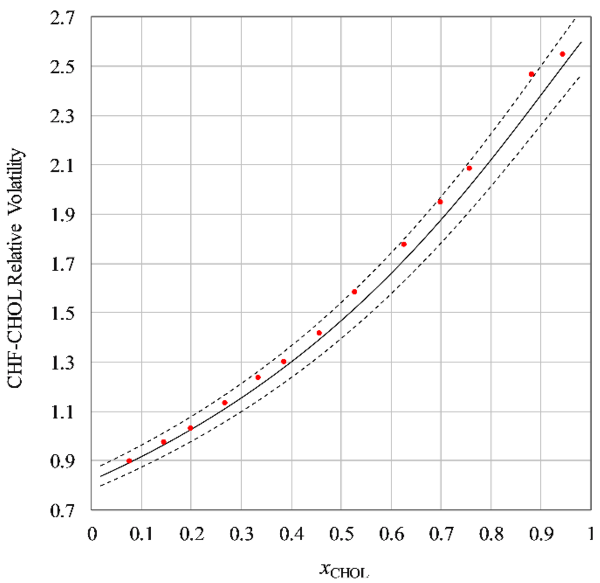


Figure S7: Relative volatilities of the cyclohexanol + cyclohexyl formate binary system under 10 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

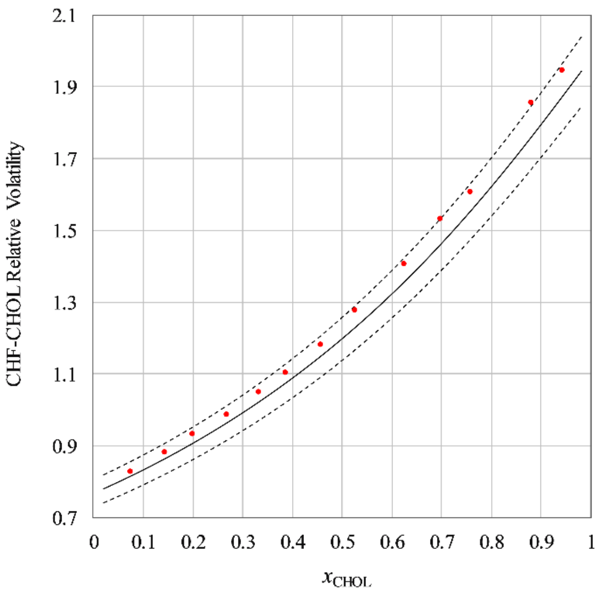


Figure S8: Relative volatilities of the cyclohexanol + cyclohexyl formate binary system under 25 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

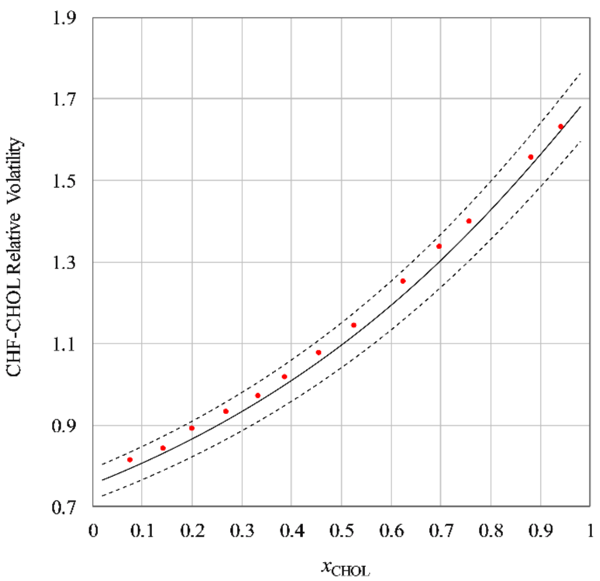


Figure S9: Relative volatilities of the cyclohexanol + cyclohexyl formate binary system under 40 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

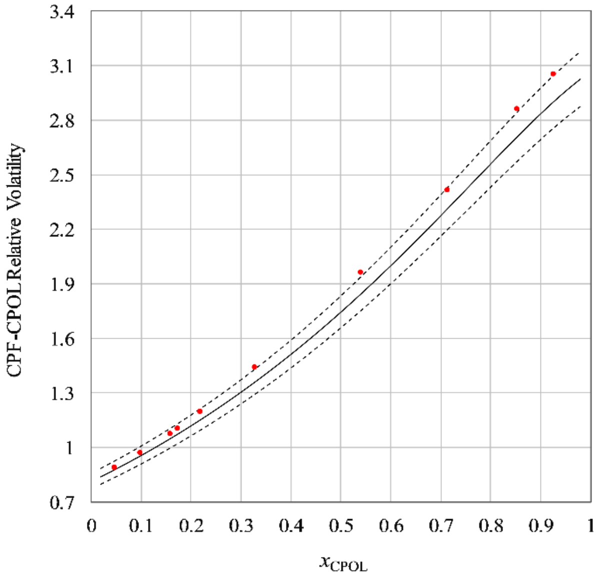


Figure S10: Relative volatilities of the cyclopentanol + cyclopentyl formate binary system under 10 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

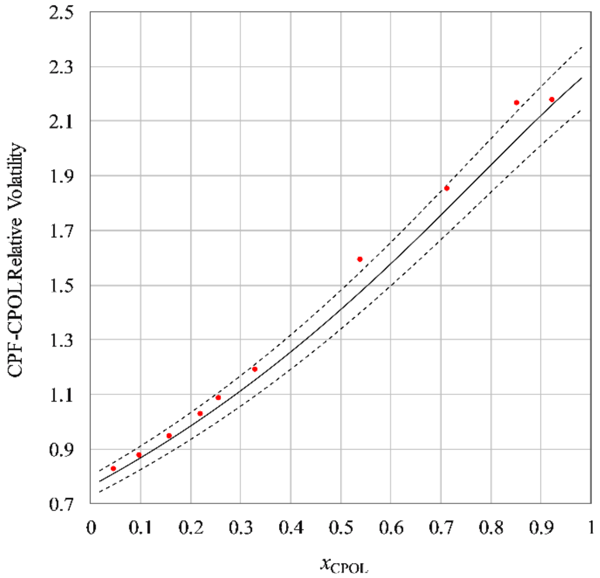


Figure S11: Relative volatilities of the cyclopentanol + cyclopentyl formate binary system under 25 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

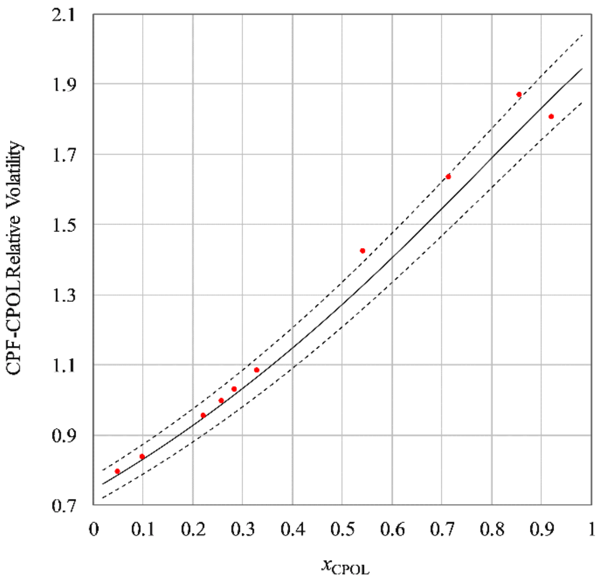


Figure S12: Relative volatilities of the cyclopentanol + cyclopentyl formate binary system under 40 kPa: red ●, exp. data this work; black solid line, NRTL model this work, black dashed lines, ± 5 % deviations from the calculated relative volatility.

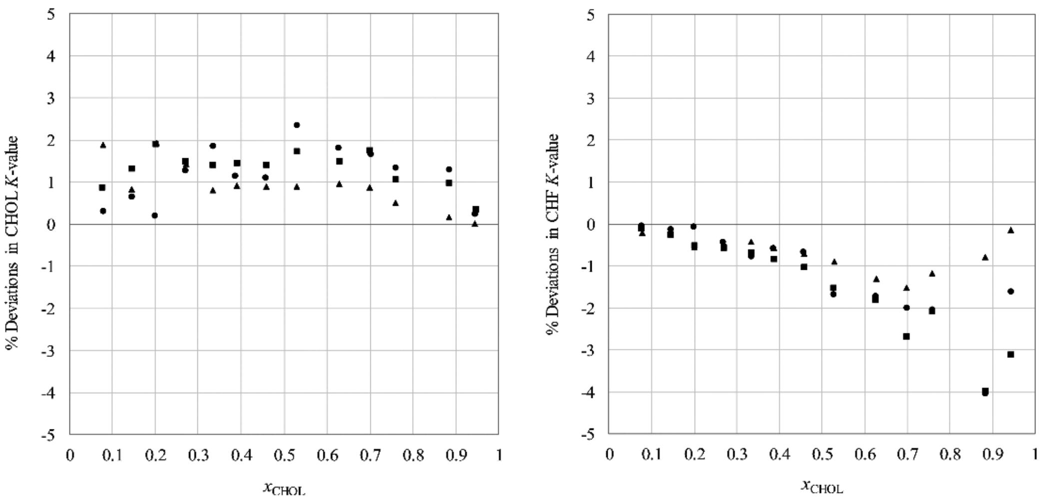


Figure S13: Percent deviations in *K*-values corresponding to cyclohexanol and cyclohexyl formate, respectively, between experimental and calculated data by NRTL model under various pressures: ●, 10 kPa; ■, 25 kPa; ▲, 40 kPa.

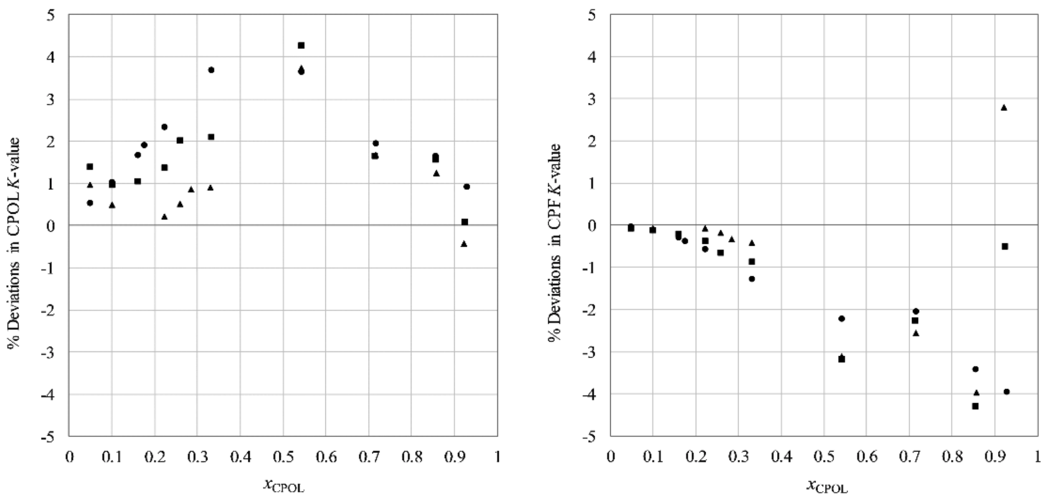


Figure S14: Percent deviations in *K*-values corresponding to cyclopentanol and cyclopentyl formate, respectively, between experimental and calculated data by NRTL model under various pressures: ●, 10 kPa; ■, 25 kPa; ▲, 40 kPa.

REFERENCES

(1) Design Institute for Physical Properties, Sponsored by AIChE. *DIPPR Project 801 - Full Version.* Design Institute for Physical Property Research/AIChE. Retrieved from https://app.knovel.com/hotlink/toc/id:kpDIPPRPF7/dippr-project-801-full/dippr-project-801-full (accessed October 2019).