High-pressure multiphase behavior of the ternary systems (ethene + water + acetone) and (ethane + water + acetone)

Tatiana Ulanova[†], Dirk Tuma[‡], and Gerd Maurer[*]

Department of Mechanical and Process Engineering,
University of Kaiserslautern,
P. O. Box 30 49, D-67653 Kaiserslautern, Germany

Supplementary Material

Submission 01.06.2010

[†] Present address: BASF SE, D-67056 Ludwigshafen, Germany

[‡] Present address: BAM Federal Institute for Materials Research and Testing, D-12200 Berlin, Germany

[*]Corresponding author.
Tel.: +49 631 205 2410, Fax: +49 631 205 3835,
E-mail: gerd.maurer@mv.uni-kl.de

The binary system (ethane + water)

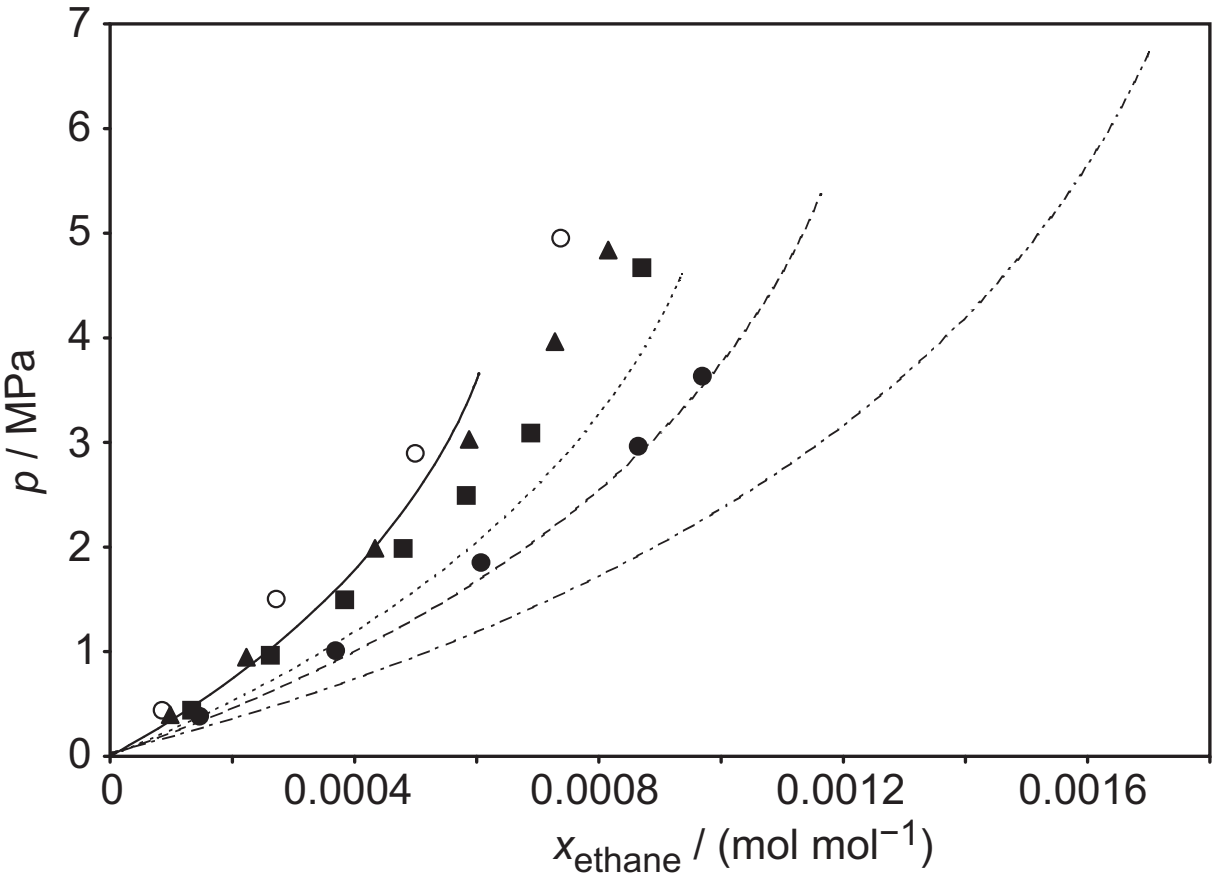

Figure S1. Vapor-liquid equilibrium of the binary system (ethane + water). Experimental results from Mohammadi et al. [28]: (●), 293 K; (■), 313 K; (▲), 323 K; (○), 343 K. Modeling results from the "bin" method employing the PaR mixing rule with *T*-independent binary interaction parameters: (——), 293 K; (- - - - -), 313 K; (– — — –), 323 K; (–·–·–·–), 343 K. For parameters see Table 7.

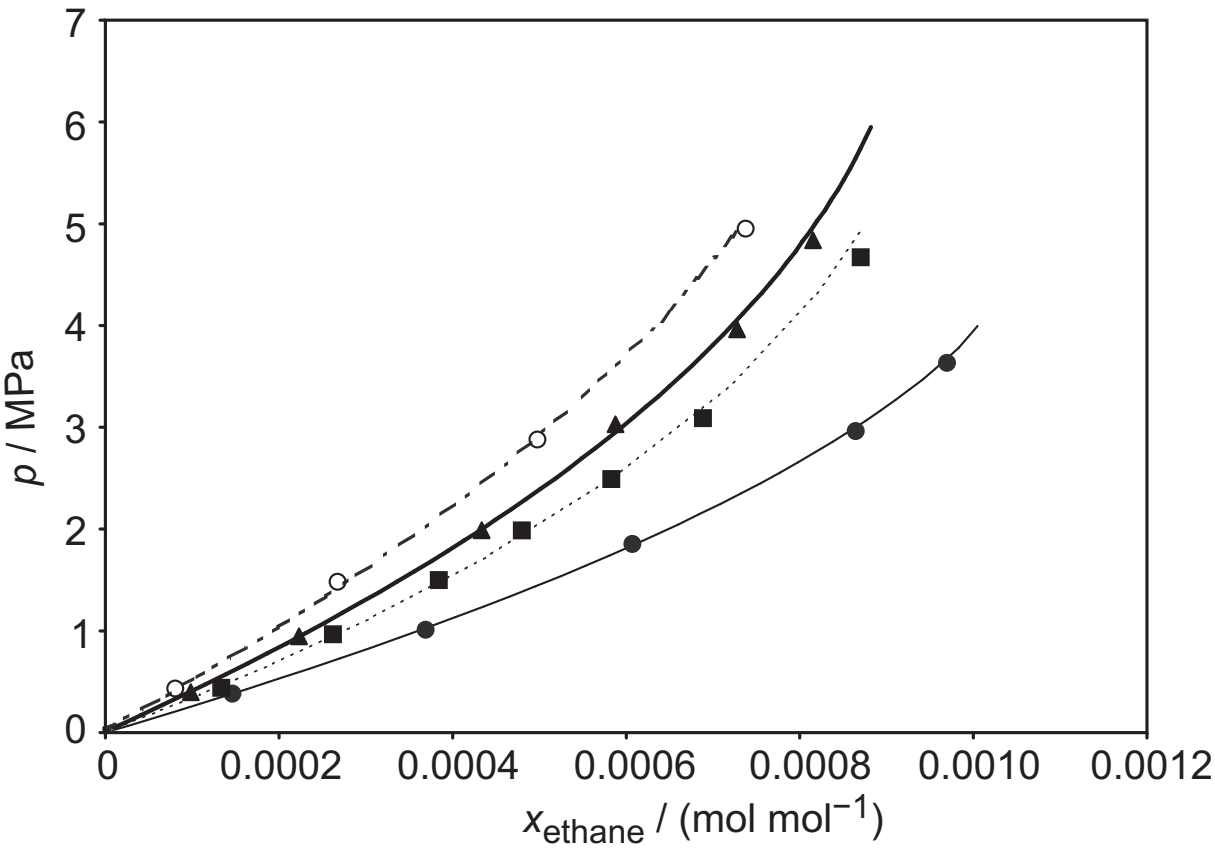

Figure S2. Vapor-liquid equilibrium of the binary system (ethane + water). Experimental results from Mohammadi et al. [28]: (●), 293 K; (■), 313 K; (▲), 323 K; (○), 343 K. Modeling results from the "bin" method employing the PaR mixing rule with *T*-dependent binary interaction parameters: (——), 293 K; (- - - - -), 313 K; (– — — –), 323 K; (–·–·–·–), 343 K. For parameters see Table 7.

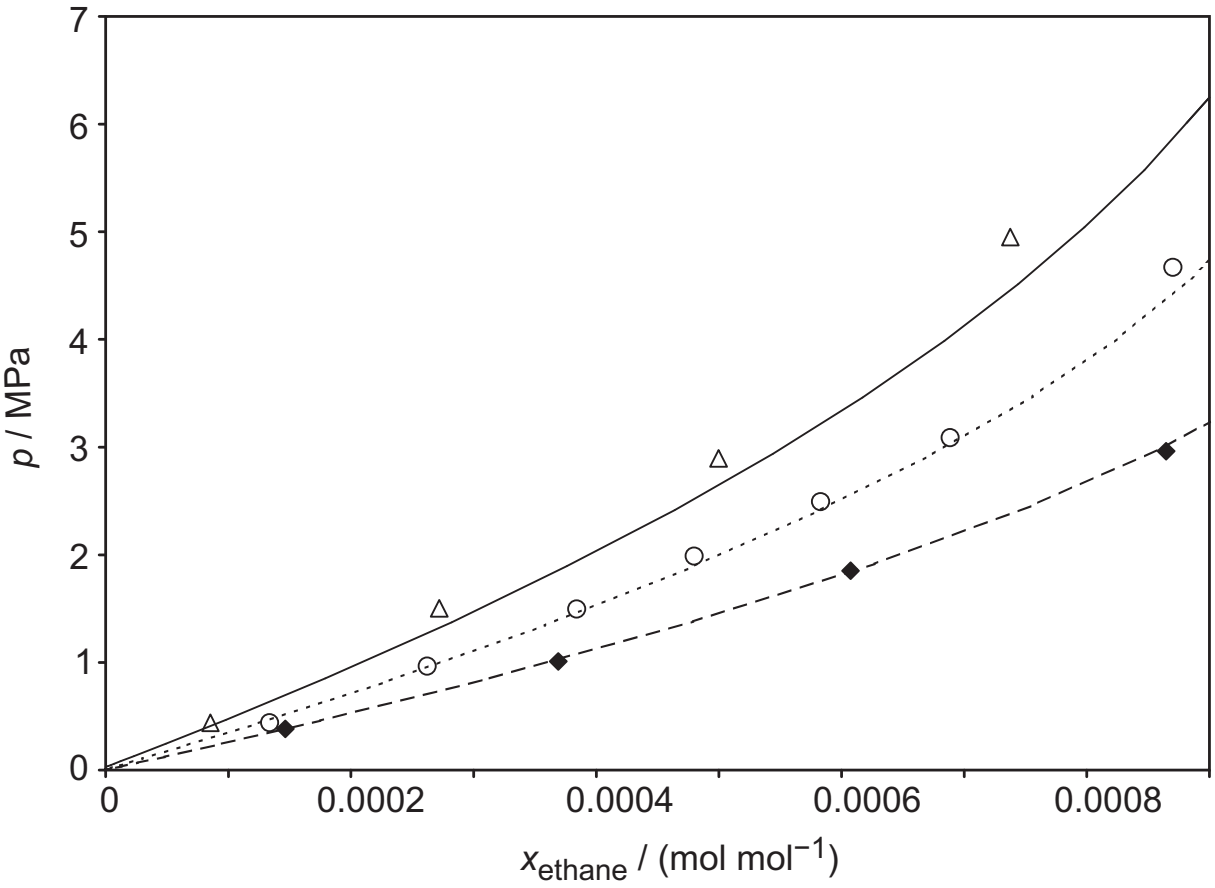

Figure S3. Vapor-liquid equilibrium of the binary system (ethane + water). Experimental results from Mohammadi et al. [28]: (♦), 293 K; (○), 313 K; (Δ), 343 K. Modeling results from the "bin" method employing the HV2 mixing rule: (– — — –), 293 K; (- - - - -), 313 K; (——), 343 K. For parameters see Table 7.

The binary system (ethene + acetone)

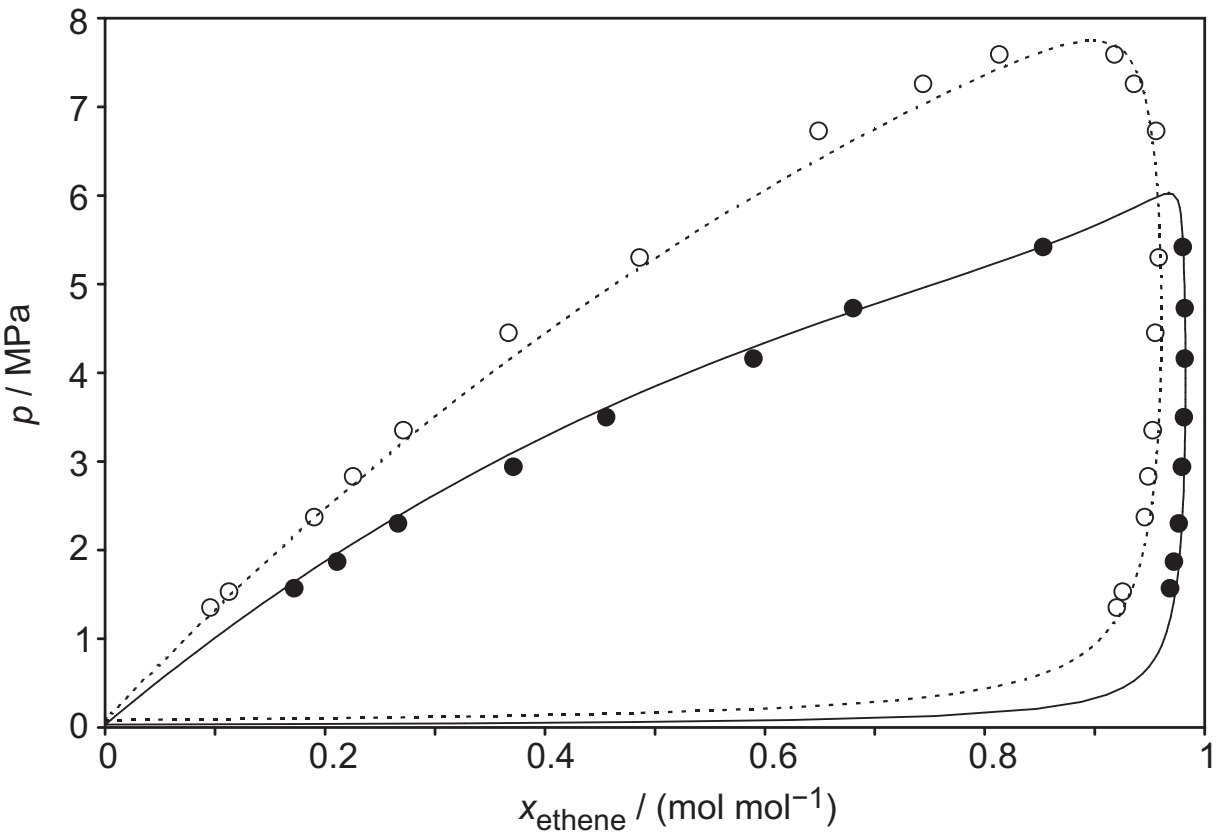

Figure S4. Vapor-liquid equilibrium of the binary system (ethene + acetone). Experimental results from Yokoyama et al. [30]: (●), 298 K; (○), 323 K. Modeling results from the “bin” method employing the PaR mixing rule: (——), 298 K; (- - - - -), 323 K. For parameters see Table 7.

The binary system (ethane + acetone)

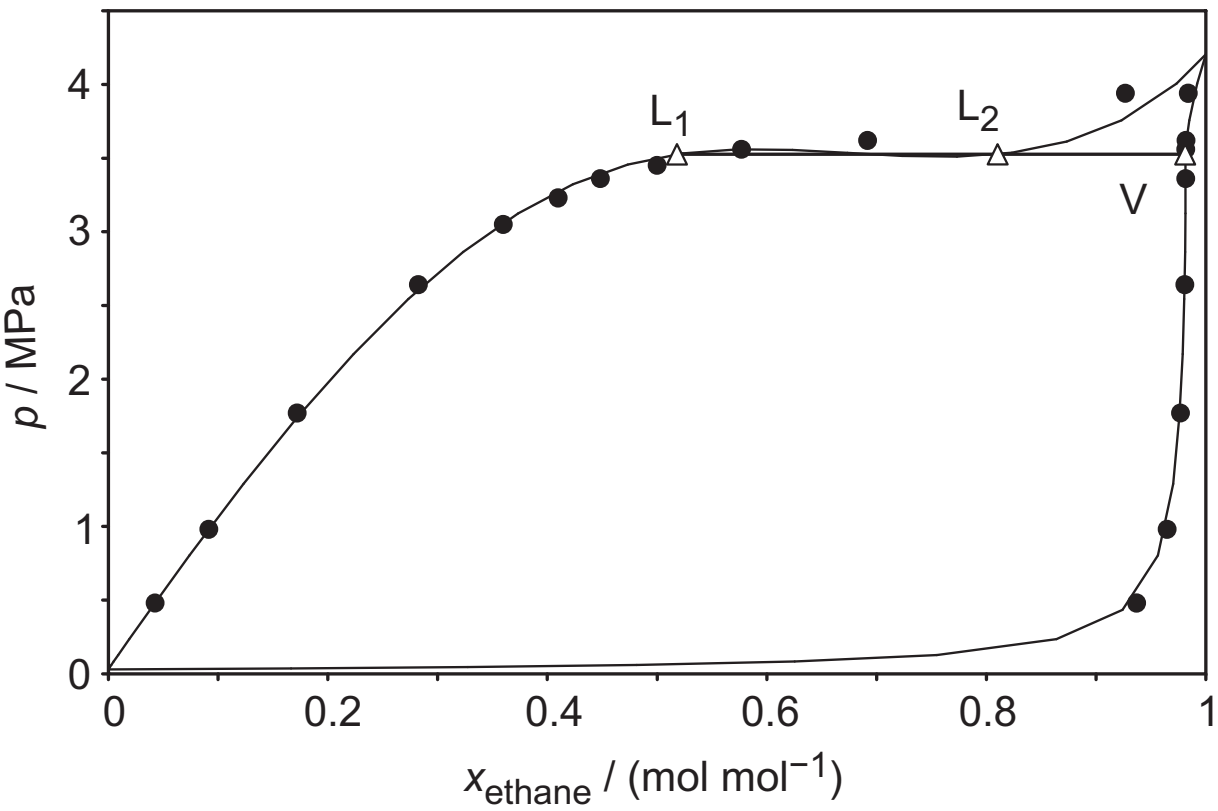

Figure S5. Vapor-liquid equilibrium of the binary system (ethane + acetone). Experimental results from Ohgaki et al. [31]: (●), 298 K. Modeling results from the "bin" method employing the PaR mixing rule: (——), 298 K; (—Δ—), three-phase L_1L_2V equilibrium at 298 K. For parameters see Table 7.

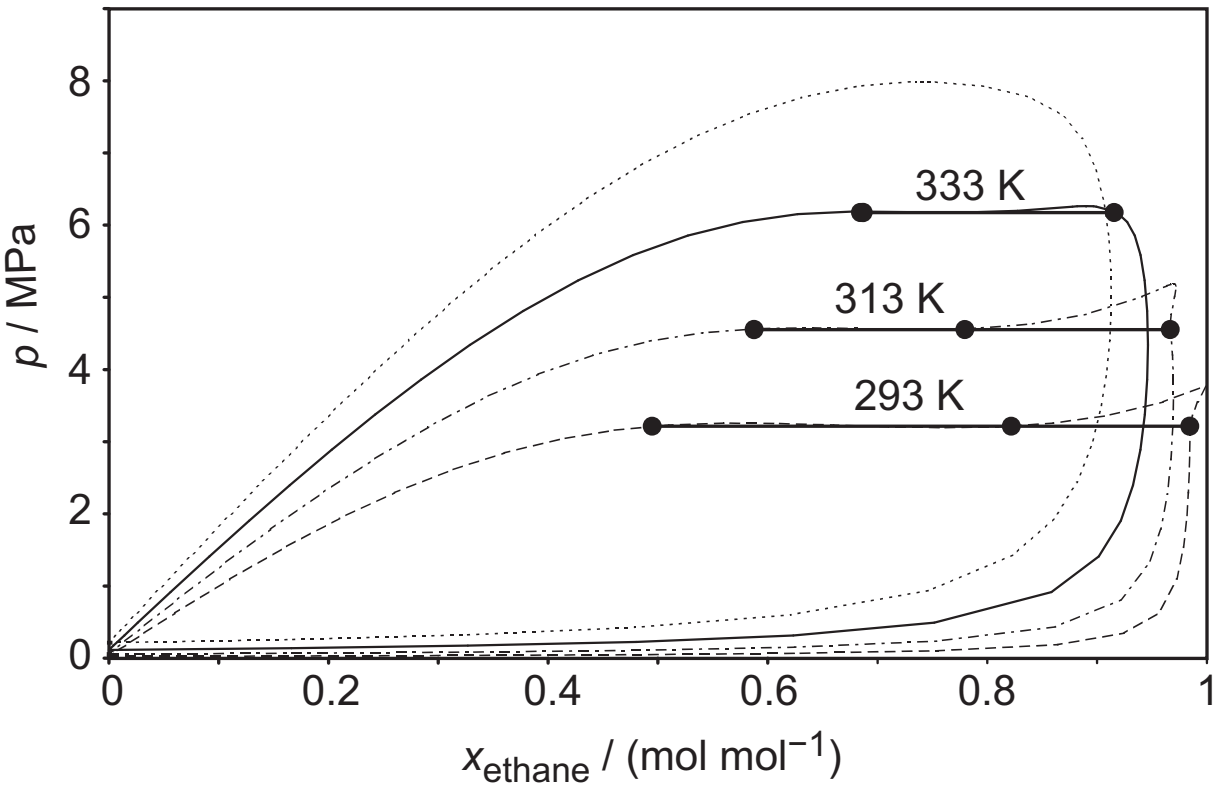

Figure S6. Vapor-liquid equilibrium of the binary system (ethane + acetone). Modeling results from the "bin" method employing the PaR mixing rule: (– – –), 293 K; (–·–·–·–), 313 K; (——), 333 K; (- - - - -), 353 K; (—•—), three-phase L_1L_2V equilibrium at (293, 313, and 333) K. For parameters see Table 7.