

Supplementary Information for:

Article

Solubility of CO₂ in 2-amino-2-methyl-1-propanol (AMP) and 3-(methylamino)propylamine (MAPA): Experimental investigation and modeling with the Cubic-Plus-Association and the modified Kent-Eisenberg models

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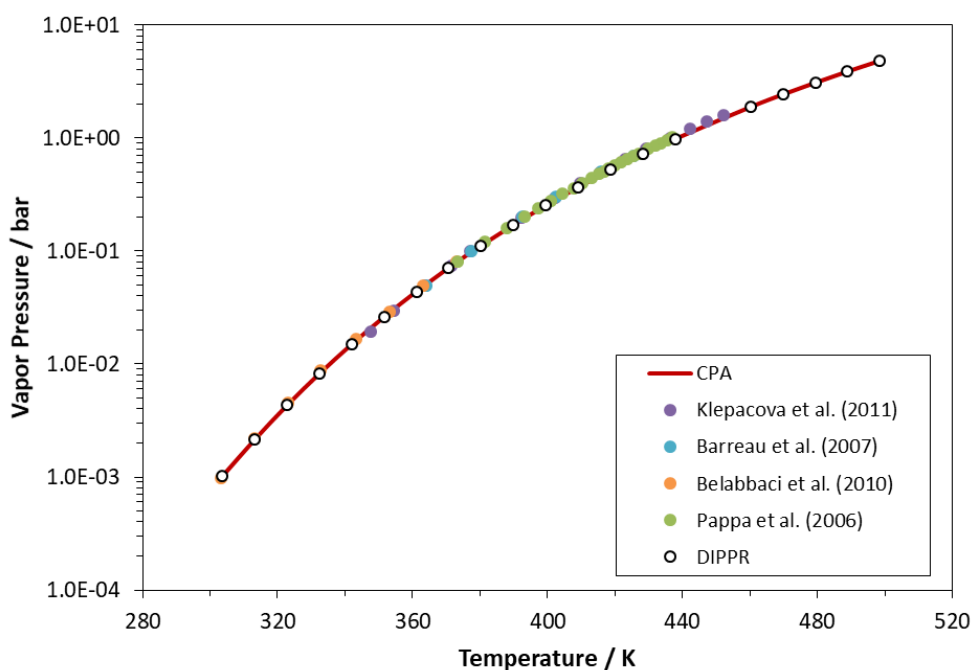


Figure S1. Vapor pressure of AMP. Experimental data (points, [54, 62-65]) and CPA correlations (lines).

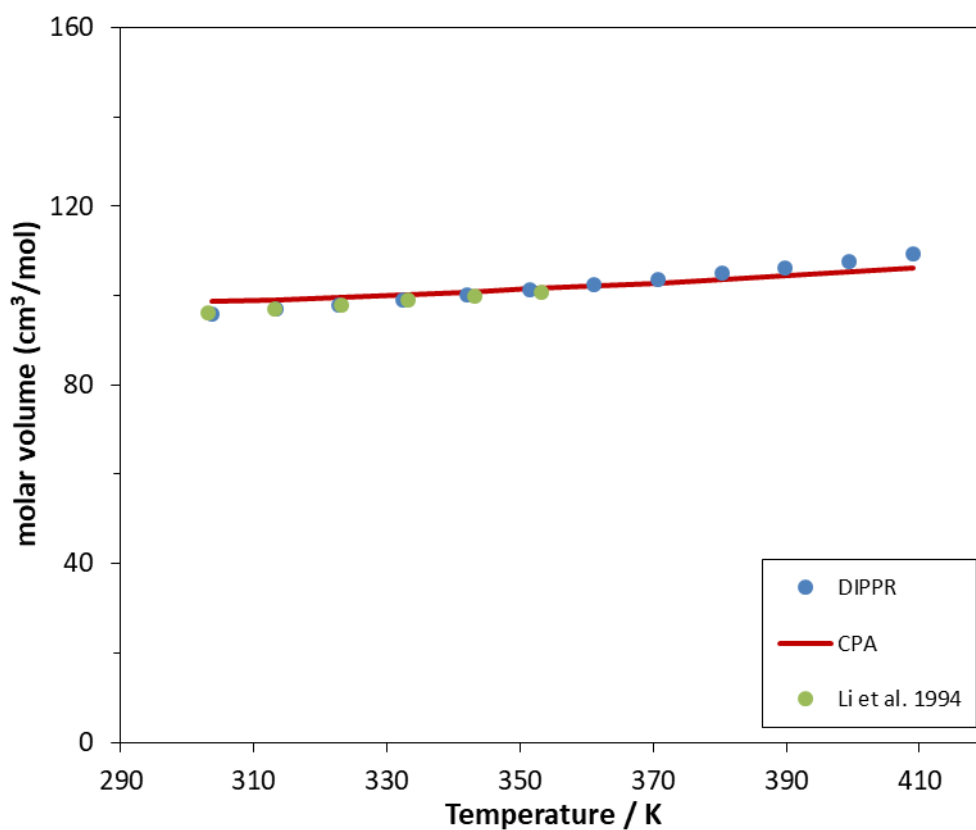


Figure S2. Molar Volume of AMP. Experimental data (points, [54, 66]) and CPA correlations (lines).

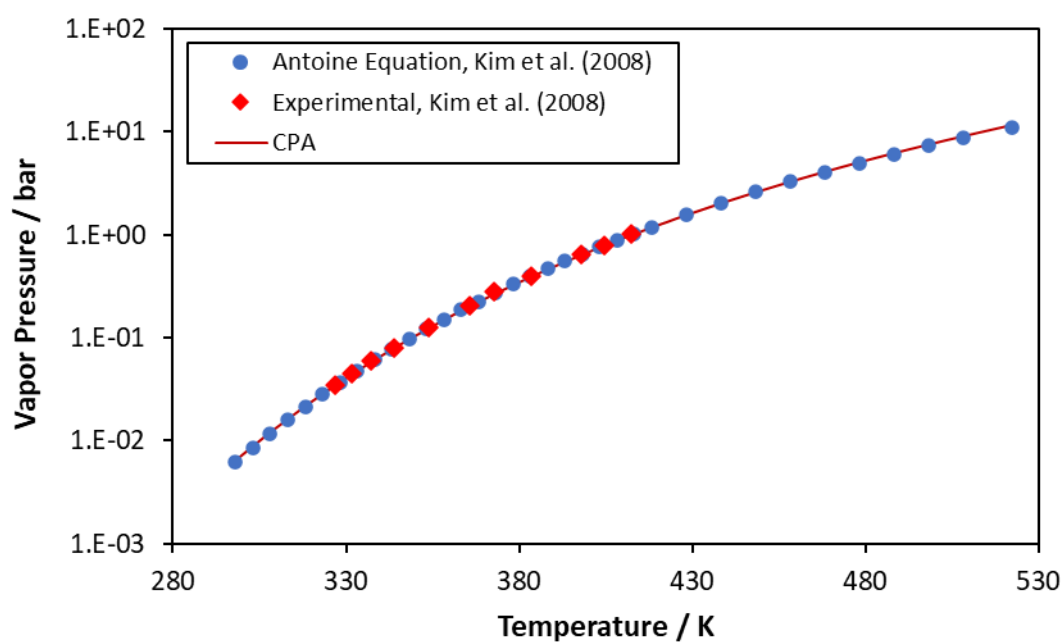


Figure S3. Vapor pressures of MAPA. Experimental data (points, [67]) and CPA correlations (lines).

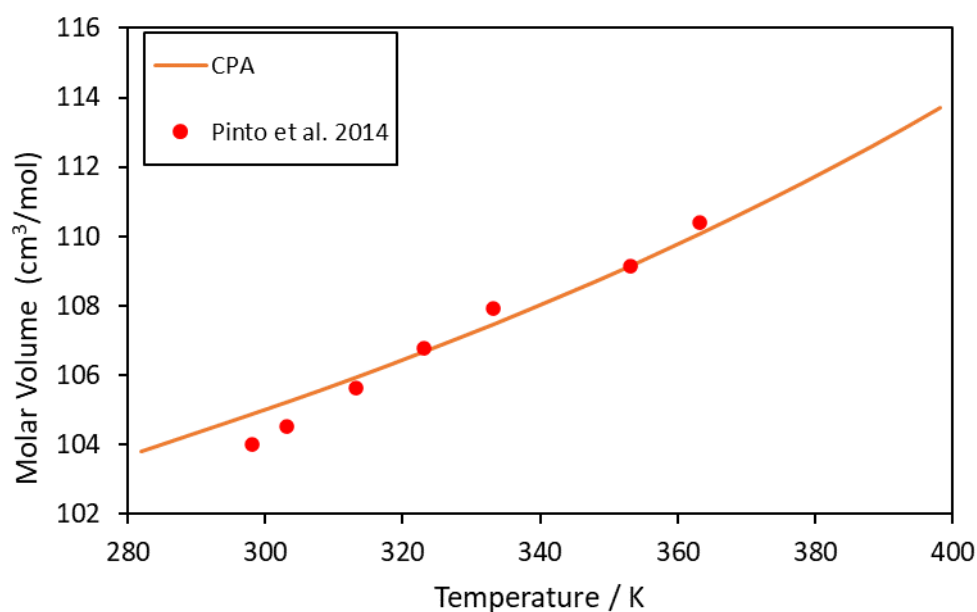


Figure S4. Molar Volume of MAPA. Experimental data (points, [68]) and CPA correlations (lines).

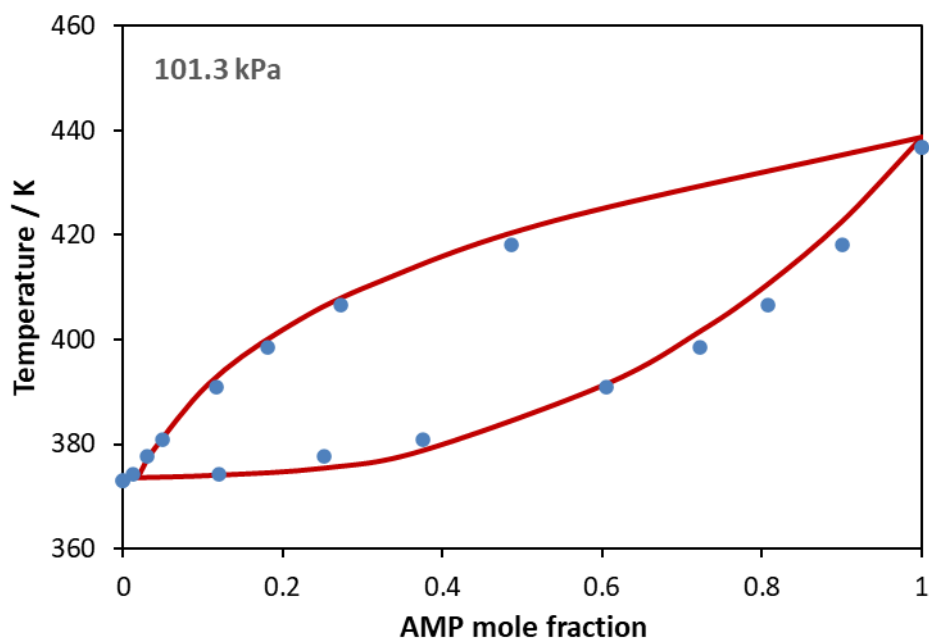


Figure S5. AMP- water VLE. Experimental data from Pappa et al. [65] (points) and CPA correlations (lines).

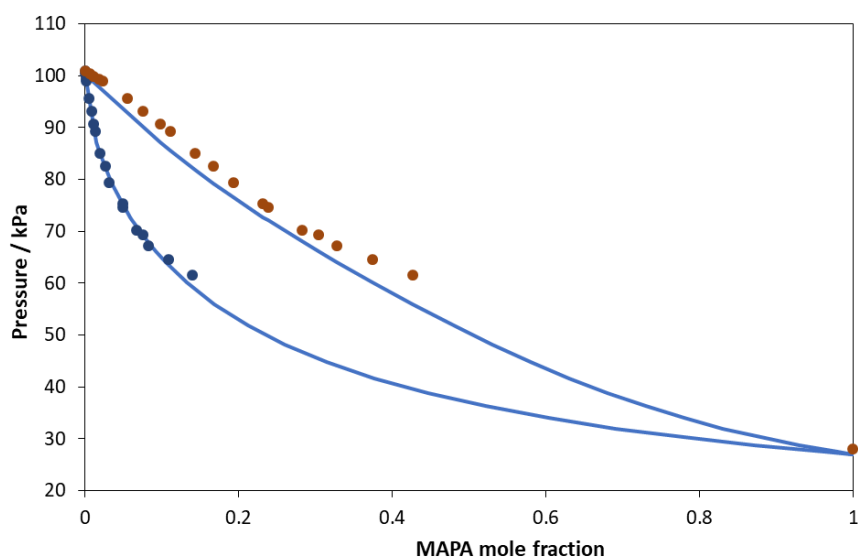


Figure S6. MAPA- water VLE. Experimental data from Kim et al. [67] (points) and CPA correlations (lines).

Table S1. Summary of literature sources of experimental solubility data used for adjusting the parameters A and D (equations (36)) for AMP-CO₂-H₂O system.

Composition (molality)	Temperature (K)	No. of data points	Reference
1.98	322.5	4	Arcis et al. [39]
2.46	313, 323, 333, 353	8	Haji-sulaiman and Aroua [32]
4.80	373, 383	8	Li et al. [46]
2.46	313, 333, 363	9	Narku-Tetteh et al. [49]
4.81	313, 333, 353	20	Park et al. [36]
2.46	313, 373	20	Roberts and Mather [28]
2.46	313, 343	11	Teng and Mather [30]
4.81	313, 333, 353	28	Tong et al. [43]
2.46	313, 353	10	Tontiwachwuthikul et al. [31]
Total		111	

Table S2. Summary of literature sources of experimental solubility data used for adjusting the parameters A and D (equation (36)) for MAPA-CO₂-H₂O system.

Composition (molality)	Temperature (K)	No. of data points	Reference
1.11, 2.47	313, 353, 393	94	Arshad et al. [10]
Total		94	

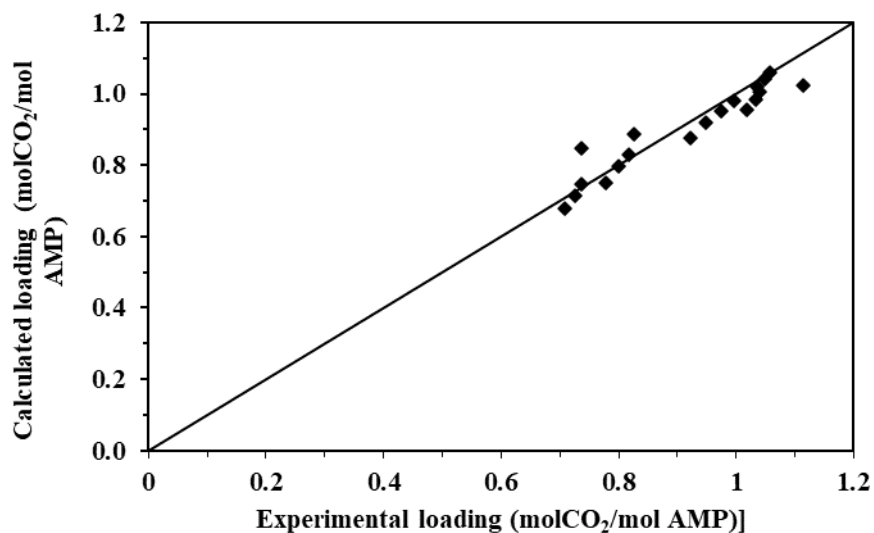


Figure S7. Parity plot of calculated (with the Kent Eisenberg model) against experimental (this work) loadings of aqueous AMP solutions.

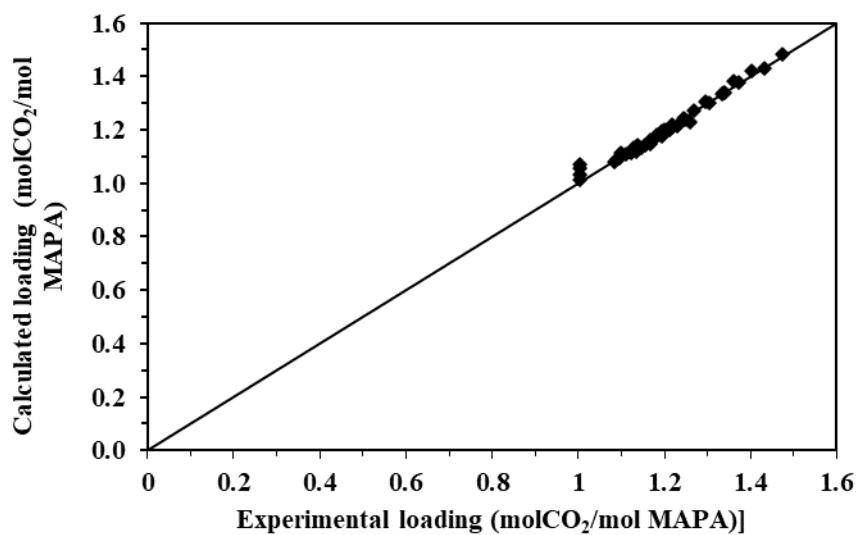


Figure S8. Parity plot of calculated (with the Kent Eisenberg model) against experimental (this work) loadings of aqueous MAPA solutions.

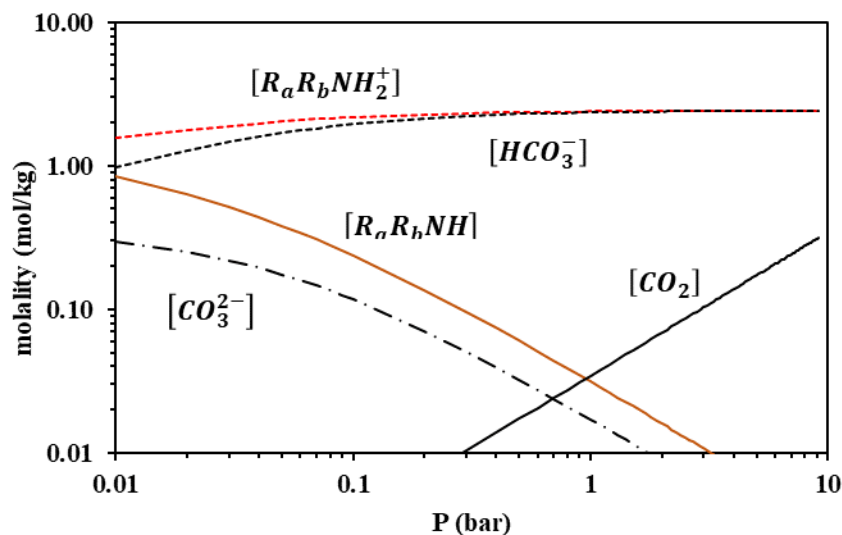


Figure S9. Liquid-phase speciation for AMP-CO₂-H₂O system at 298 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 17.7% wt. AMP aqueous solutions).

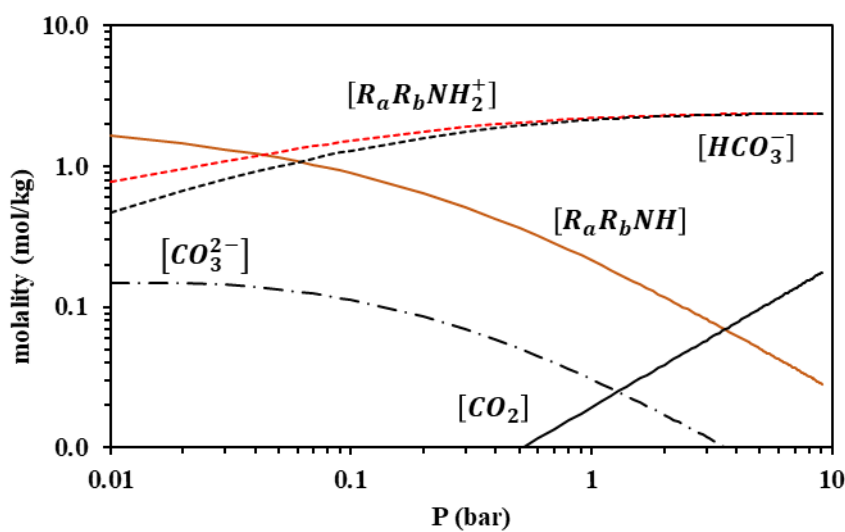


Figure S10. Liquid-phase speciation for AMP-CO₂-H₂O system at 323 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 17.7% wt. AMP aqueous solutions).

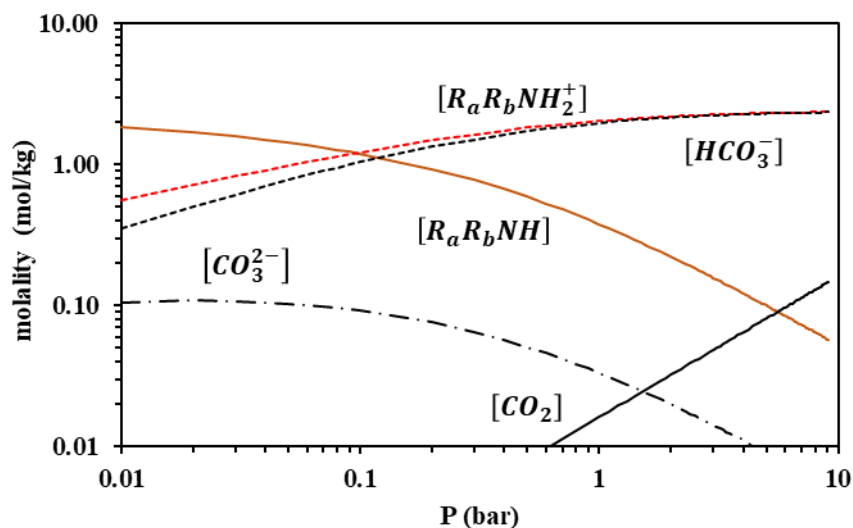


Figure S11. Liquid-phase speciation for AMP-CO₂-H₂O system at 333 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 17.7% wt. AMP aqueous solutions).

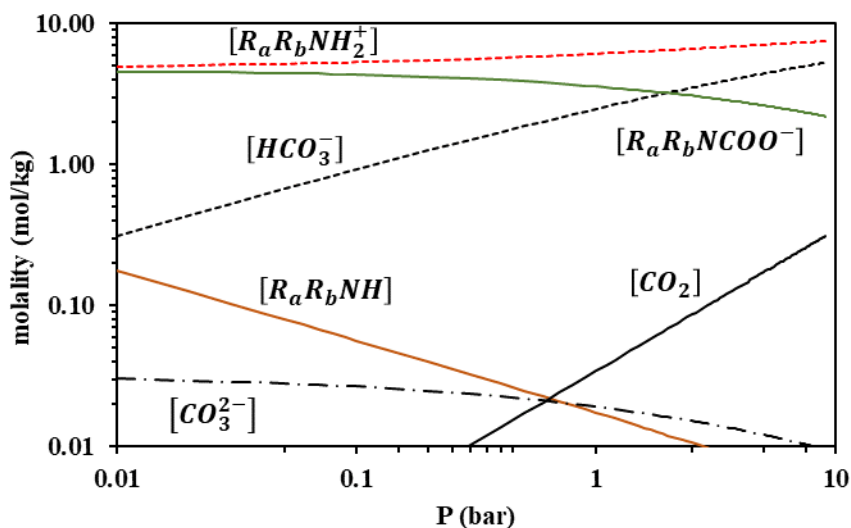


Figure S12. Liquid-phase speciation for MAPA-CO₂-H₂O system at 298 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 30.0% wt. MAPA aqueous solutions).

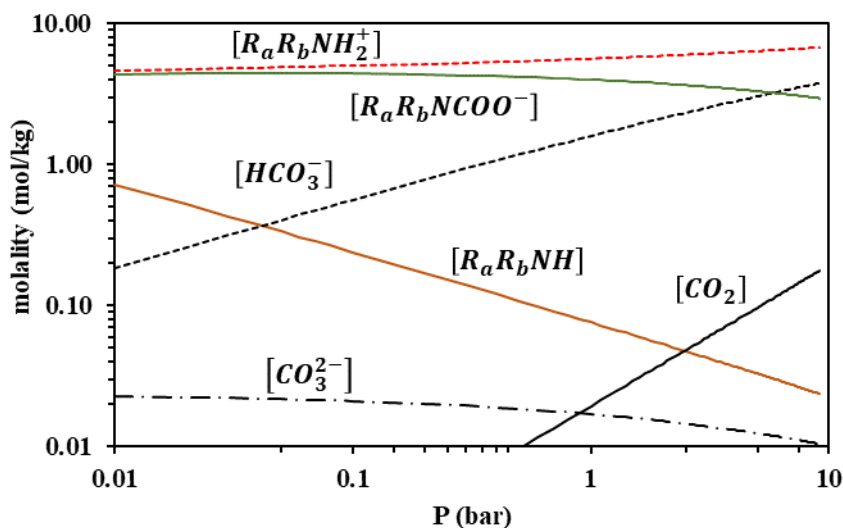


Figure S13. Liquid-phase speciation for MAPA-CO₂-H₂O system at 323 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 30.0% wt. MAPA aqueous solutions).

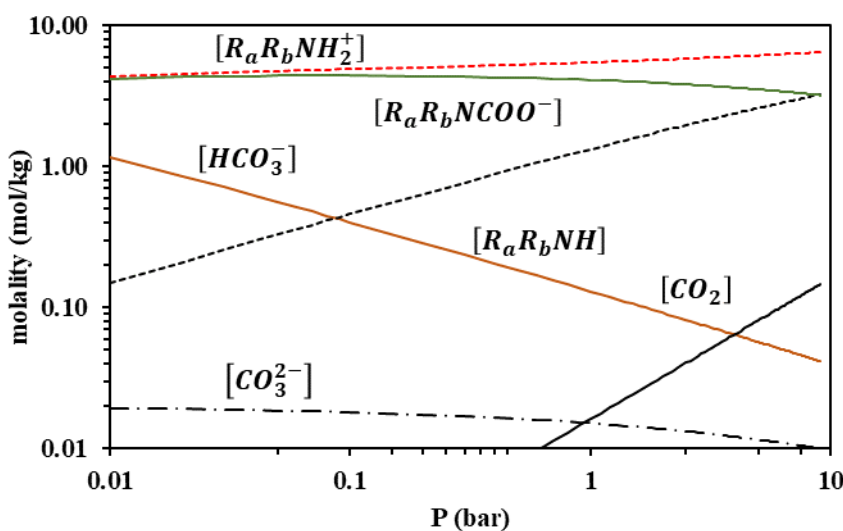


Figure S14. Liquid-phase speciation for MAPA-CO₂-H₂O system at 333 K, calculated using the modified Kent-Eisenberg model (calculations performed for the CO₂ loading of 30.0% wt. MAPA aqueous solutions).