Thermodynamic modeling of acidic gas solubility in aqueous solutions of MEA, MDEA and MEA-MDEA blends

The thermodynamic framework that was developed in a previous work [Vrachnos et al. Ind. Eng. Chem. Res. 2004, 43, 2798] for the description of chemical and vapor-liquid equilibria of carbon dioxide, hydrogen sulfide, and their mixtures in aqueous methyldiethanolamine (MDEA) solutions is revised and extended in this study to the absorption of carbon dioxide into aqueous monoethanolamine (MEA) solutions and aqueous MDEA-MEA blends. The results of the model are compared with experimental data taken from the literature. Very satisfactory predictions of acidic gas vapor-liquid equilibrium over MDEA, MEA, and their blends at various concentrations, acidic gas loadings, and temperatures are obtained.