Phase equilibria of CO_2 + N_2 + $[C_6mim][Tf_2N]$ and CO_2 + C_3H_8 + $[C_6mim][Tf_2N]$ at 298 K and up to 10 bar

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Room temperature ionic liquids are the alternative to volatile organic solvents as green solvents and their applications have been extended to numerous chemical processes. In addition gas separations of carbon dioxide by the supported ionic liquid membrane were proposed. Solubility data of pure carbon dioxide in ionic liquids were reported by many researchers. But few other studies have been published for phase equilibria of mixed gases containing carbon dioxide with ionic liquids. In this work phase equilibria of carbon dioxide + nitrogen + $[C_6mim][Tf_2N]$ and carbon dioxide + propane + $[C_6mim][Tf_2N]$ were experimentally studied at 298 K and up to about 10 bar. Also a group contribution NLF equation of state was applied to model the phase equilibria of mixed gases and ionic liquids.