Supporting Information Cover Sheet

Absorption of Carbon Dioxide into Aqueous Solutions of 2-Piperidineethanol: Kinetics Analysis

Subham Paul, Aloke K. Ghoshal, and Bishnupada Mandal[*]

Department of Chemical Engineering, Indian Institute of Technology Guwahati, Guwahati - 781039, Assam, India.

[*]Corresponding author phone: +91-361-2582256; fax: +91-361-2582291; e-mail: bpmandal@iitg.ernet.in
.

Number of pages: 5
Number of Tables: 2

Table S1 lists the values of dissociation constants at different temperatures.

Table S2 lists the physicochemical properties used in the kinetic study.

Table S1. Values of dissociation constants at different temperatures

T (K)	$K_P \times 10^{10}$ (kmol m^{-3})	$K_W \times 10^{14}$ (kmol^2 m^{-6})
303	1.05	1.41
313	2.04	2.77
323	3.89	5.46

Table S2. Physicochemical properties used in the kinetic study

T (K)	[2-PE] (kmol m^{-3})	ρ^a (kg m^{-3})	η^a (10^4 Pa s^{-1})	$H^b_{CO_2}$ (kPa m^3 $kmol^{-1}$)	$D^c_{CO_2}$ (10^9 m^2 s^{-1})	$D^d_{2\text{-PE}}$ (10^{10} m^2 s^{-1})
303	0.149	995.10	9.35	3395	1.96	6.70
	0.365	997.60	10.6	3370	1.74	6.02
	0.784	999.60	13.2	3351	1.50	5.20
	1.130	1001.4	16.0	3346	1.31	4.14
313	0.144	992.10	7.26	4129	2.54	8.72
	0.353	994.30	8.28	4100	2.17	7.87
	0.759	996.50	10.2	4067	1.86	6.44
	1.094	997.90	12.5	4046	1.65	5.47
323	0.140	988.50	5.68	4864	2.88	11.2
	0.342	990.30	6.84	4780	2.38	10.1
	0.735	991.70	8.28	4663	2.02	8.33
	1.060	993.50	9.95	4571	1.83	7.10

[a]Estimated using the correlation developed by Paul and Mandal[1]

[b]Calculated using the correlation developed by Xu et. al.[2]

[c]Calculated using the data reported by Xu et al.[3]

[d]Calculated using the correlation developed by Chang et. al.[4]

Literature Cited

(1) Paul, S.; Mandal, B. Density and Viscosity of Aqueous Solutions of 2-Piperidineethanol, (2-piperidineethanol + Monoethanolamine), and (2-piperidineethanol + Diethanolamine) From (288 to 333) K. *J. Chem. Eng. Data* **2006**, *51*, 1406 – 1410.

(2) Xu, S.; Wang, Y.; Otto, F. D.; Mather, A. E. Physicochemical Properties of 2-piperidineethanol and Its Aqueous Solutions. *J. Chem. Eng. Data* **1992**, *37*, 407 – 411.

(3) Xu, S.; Wang, Y. W.; Otto, F. D.; Mather A. E. Kinetics of the Reaction of CO_2 with Aqueous 2-piperidineethanol Solutions. *AIChE J.* **1993**, *39*, 1721 – 1725.

(4) Chang, L. C.; Lin, T. I.; Li., M. H. Mutual Diffusion Coefficients of Some Aqueous Alkanolamines Solutions. *J. Chem. Eng. Data* **2005**, *50*, 77 – 84.