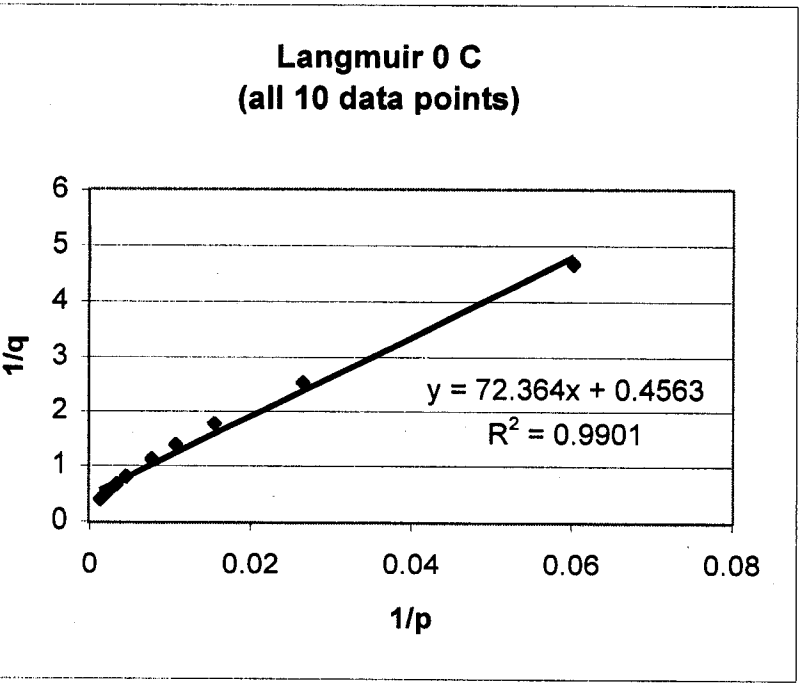
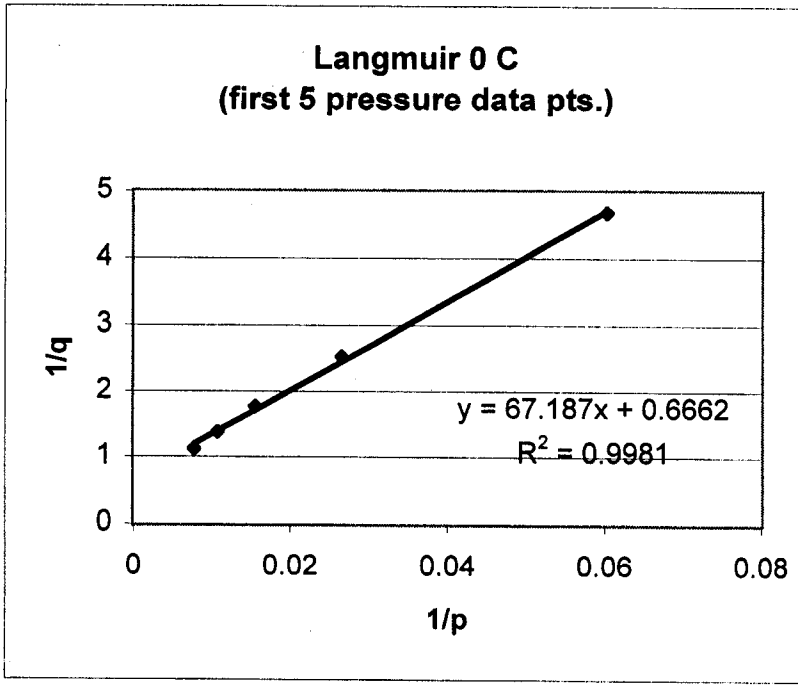
Rowan University
Separation Processes, 0906-314
Adsorption 6.D.1

0 C	0 C	0 C	0 C	40 C	40 C	40 C	40 C	100 C	100 C	100 C	100C
p	q	1/p	1/q	p	q	1/p	1/q	p	q	1/p	1/q
mmHg	gmole/kg	1/mmHg	kg/gmole	mmHg	gmole/kg	1/mmHg	kg/gmole	mmHg	gmole/kg	1/mmHg	kg/gmole
16.6	0.2137	0.060241	4.6794572	10.1	0.0418	0.09901	23.92344	96.4	0.0531	0.010373	18.83239
37.7	0.396	0.026525	2.5252525	27.9	0.09	0.035842	11.11111	119	0.1471	0.008403	6.798097
64.4	0.5678	0.015528	1.7611835	46.7	0.1407	0.021413	7.107321	406.5	0.2087	0.00246	4.791567
93.2	0.7307	0.01073	1.3685507	92.2	0.258	0.010846	3.875969	601.5	0.2781	0.001663	3.595829
129.3	0.901	0.007734	1.1098779	136.9	0.3352	0.007305	2.983294	753.7	0.336	0.001327	2.97619
218.4	1.259	0.004579	0.7942812	204	0.447	0.004902	2.237136				
298.8	1.52	0.003347	0.6578947	282	0.568	0.003546	1.760563				
429.4	1.881	0.002329	0.5316321	373	0.6871	0.002681	1.455392				
587.1	2.241	0.001703	0.4462294	462.6	0.7876	0.002162	1.26968				
762.6	2.582	0.001311	0.3872967	554.9	0.904	0.001802	1.106195				
				643	0.9908	0.001555	1.009285				
				768.9	1.128	0.001301	0.886525				



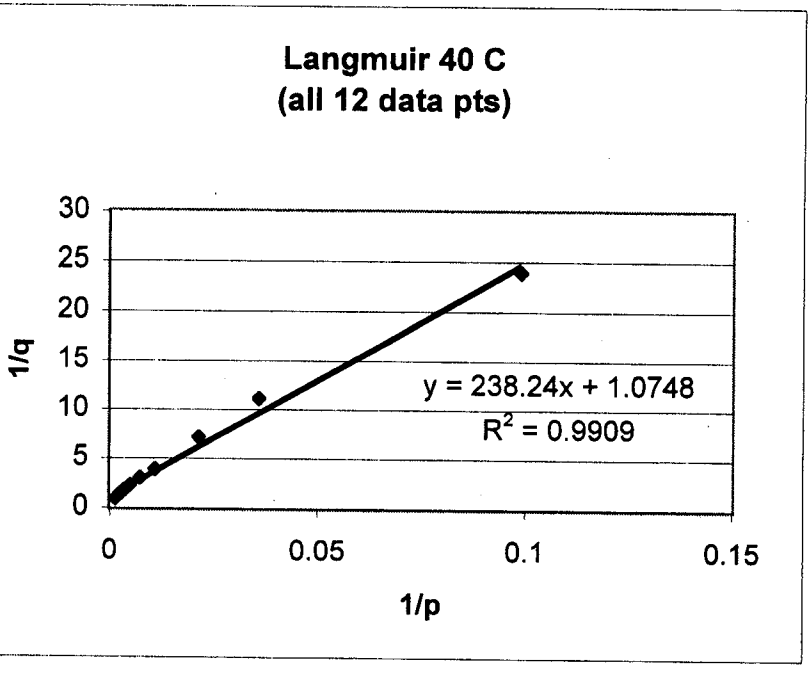


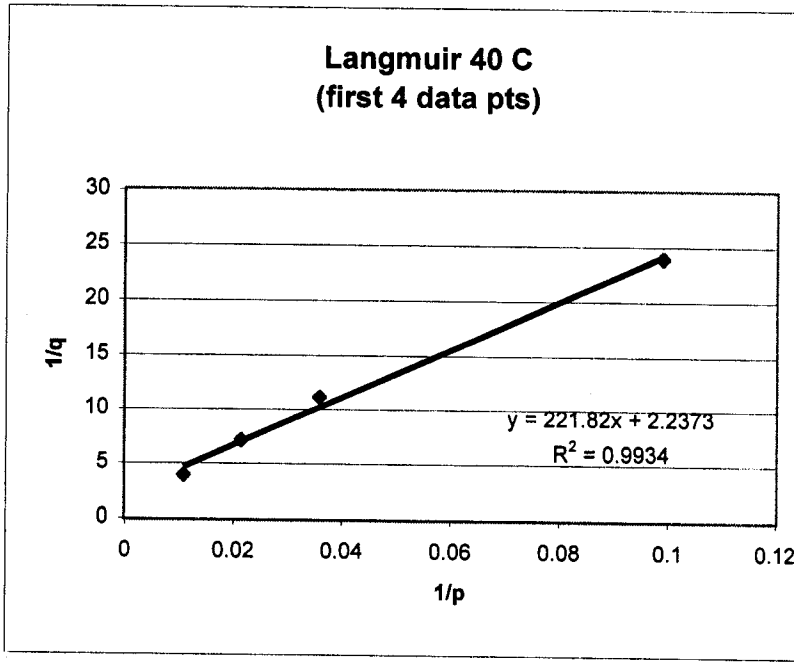
q_{max} = 1/0.4563 = 2.19 gmol/kg

K_A = (1/72.364)/2.19 = 0.00631 $mmHg^{-1}$

q_{max} = 1/0.6662 = 1.50 gmol/kg

K_A = (1/67.187)/1.5 = 0.00992 $mmHg^{-1}$



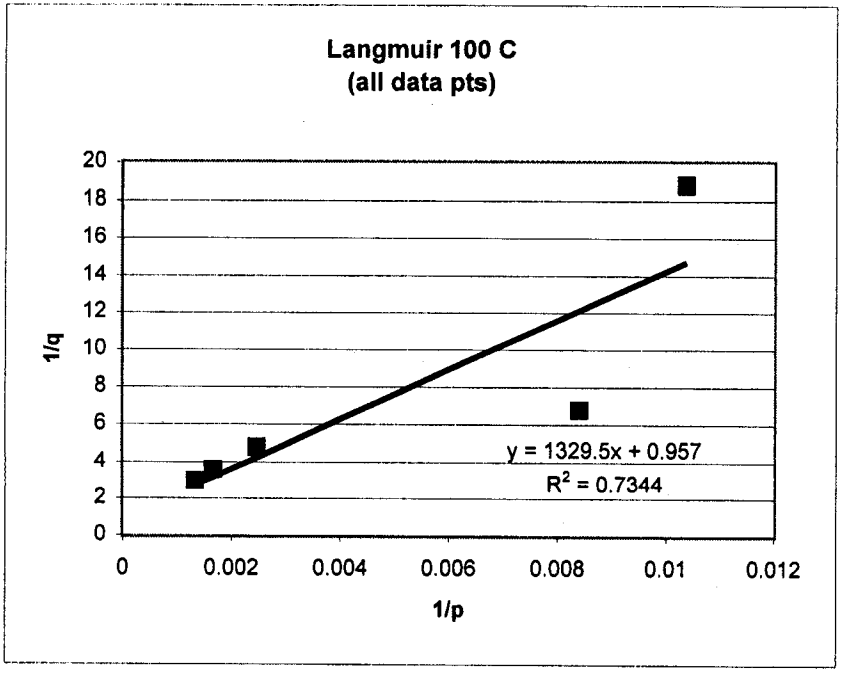


q_{max} = 1/1.0748 = 0.930 gmol/kg

K_A = (1/238.24)/0.930 = 0.00451 $mmHg^{-1}$

qmax = 1/2.2373 = 0.447 gmol/kg

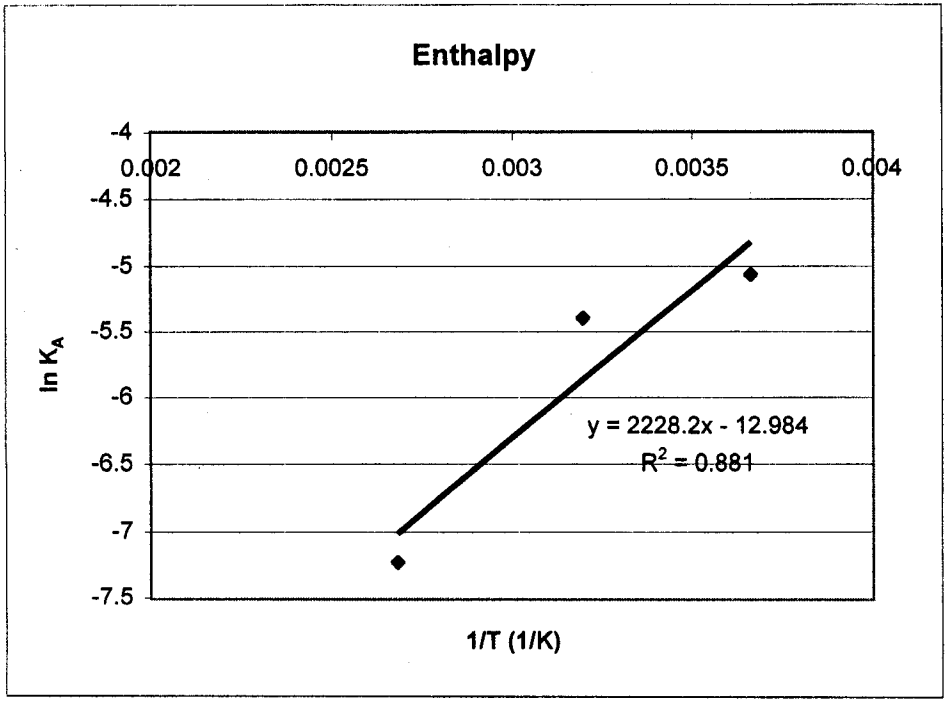
K_A = (1/221.82)/0.447 = 0.0101 $mmHg^{-1}$



q_{max} = 1/0.957 = 1.04 gmol/kg

K_A = (1/1329.5)/1.04 = 7.23 x 10^{-4} $mmHg^{-1}$

T	T	K_A	1/T	$\ln(K_A)$
C	K	$mmHg^{-1}$	K^{-1}	
0	273	6.31E-03	0.0037	-5.0656
40	313	4.51E-03	0.0032	-5.4015
100	373	7.23E-04	0.0027	-7.2321



R = 1.987 cal/gmol-K

slope = - H/R

H = -R(slope) H = 1.987(2228.2) = 4427.4 cal/gmol-K

Ko = INV(intercept) = 3.00×10^{-6}