

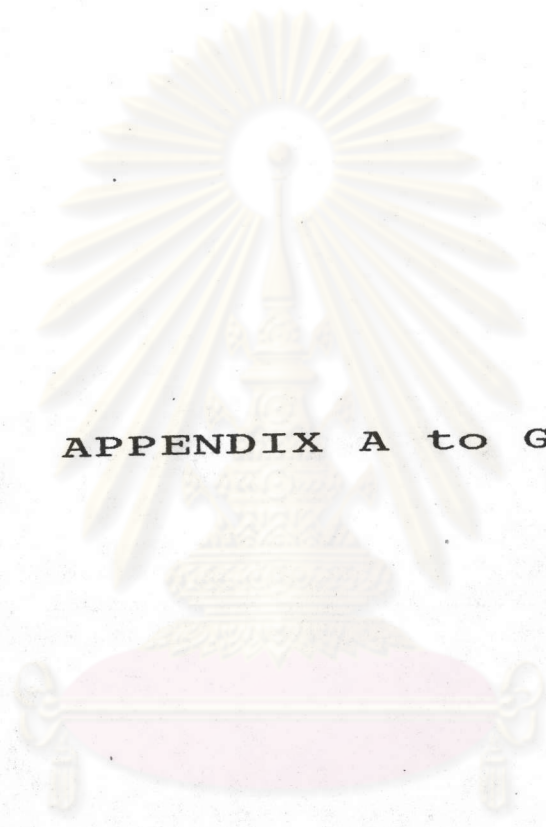


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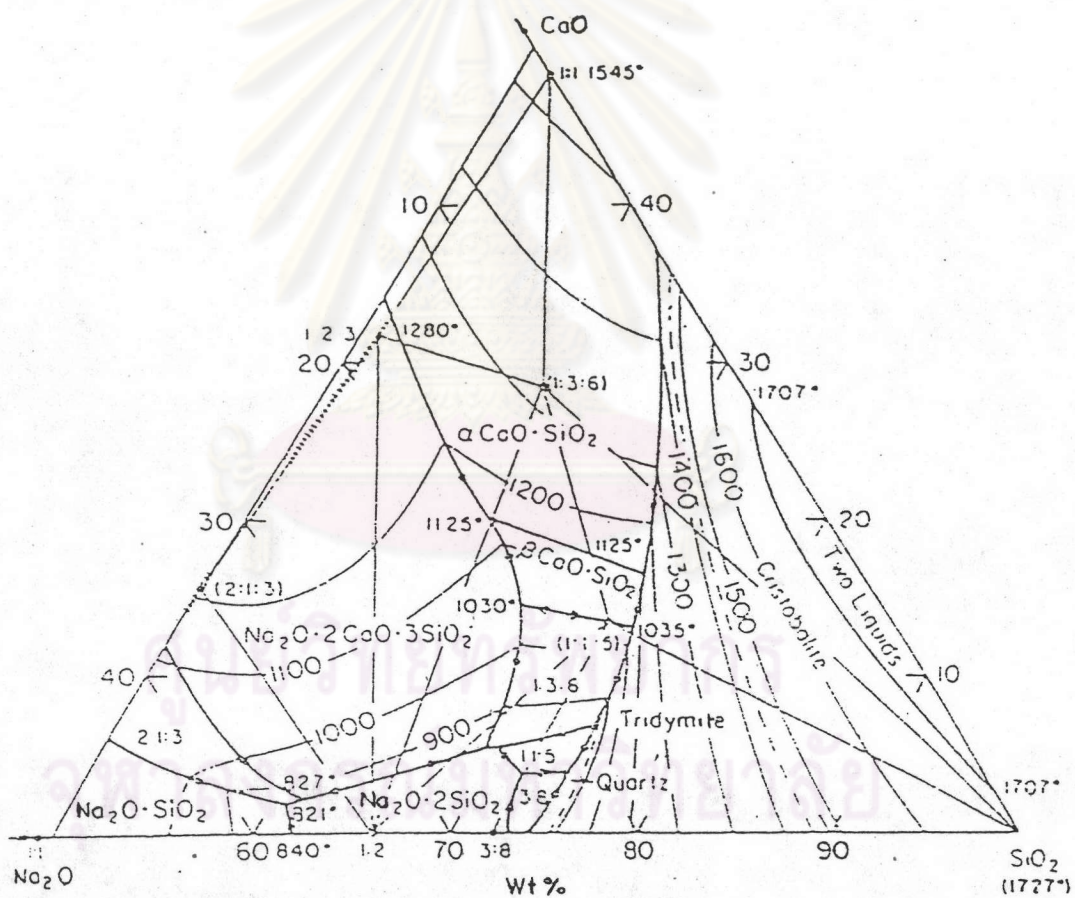




APPENDIX A to G

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

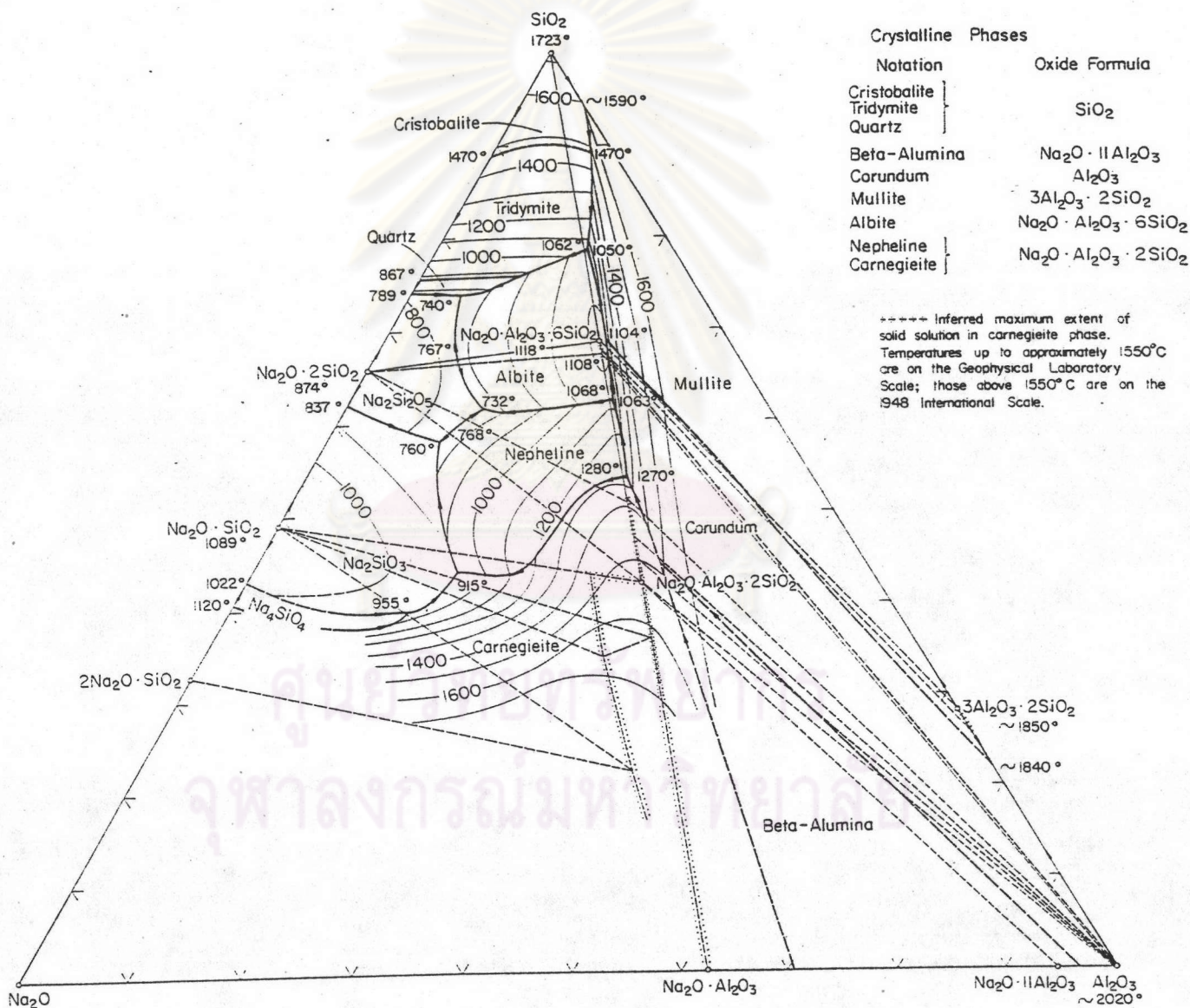
## Appendix A

Phase diagram of  $\text{Na}_2\text{O}-\text{CaO}-\text{SiO}_2$  system



Appendix B

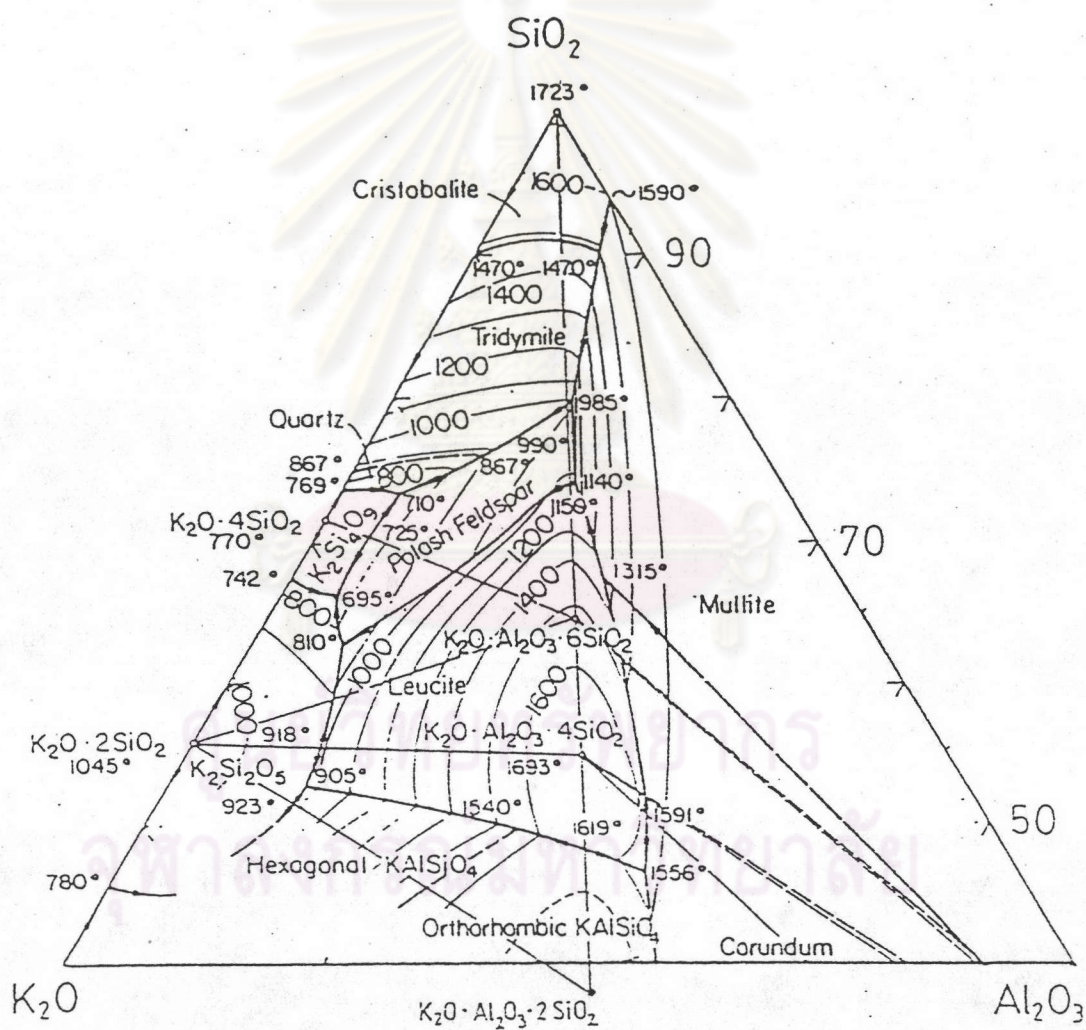
Phase diagram of Na<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> system



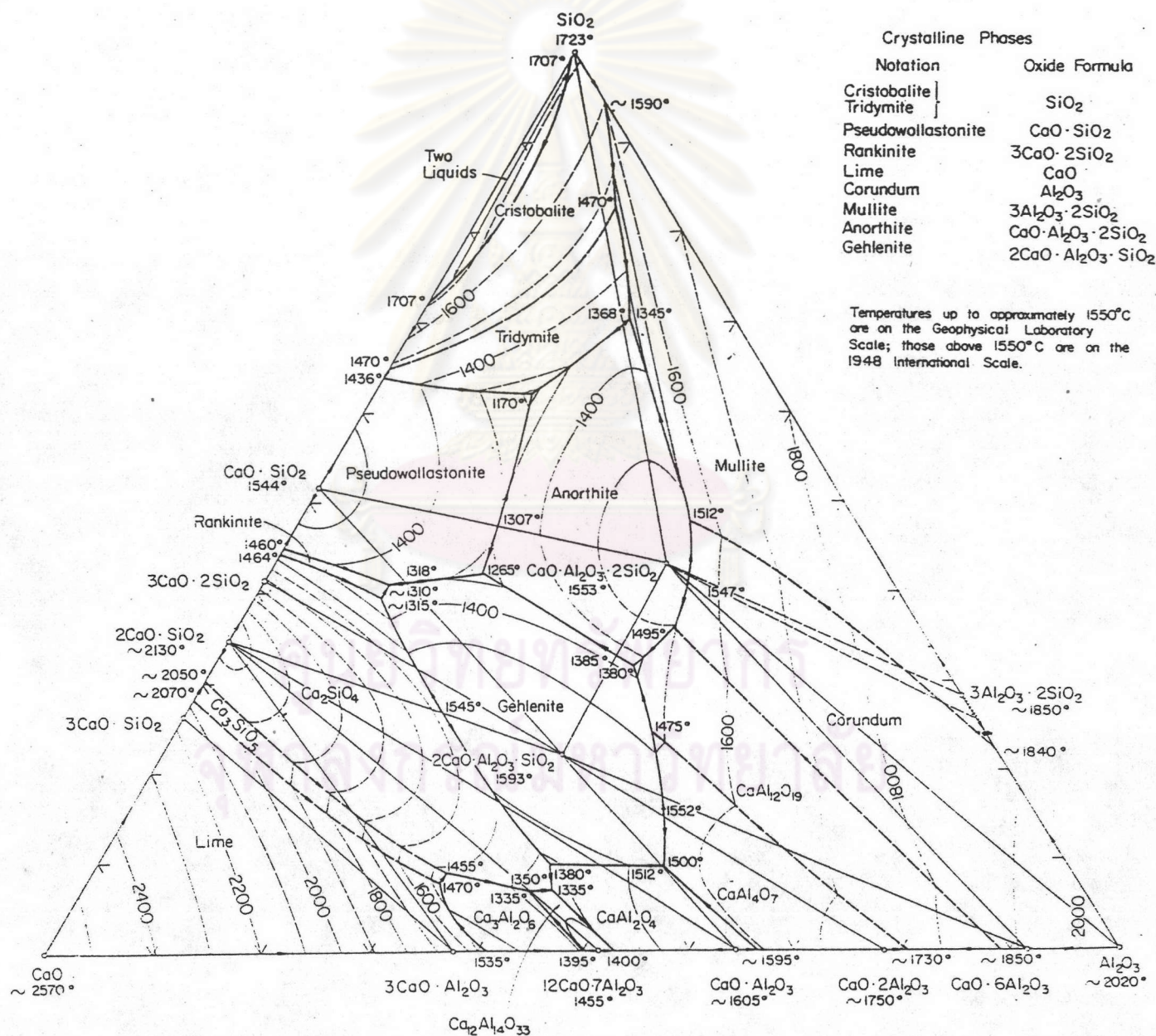
System Na<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>; composite.



## Appendix C

Phase diagram of  $K_2O-Al_2O_3-SiO_2$  system

## Appendix D

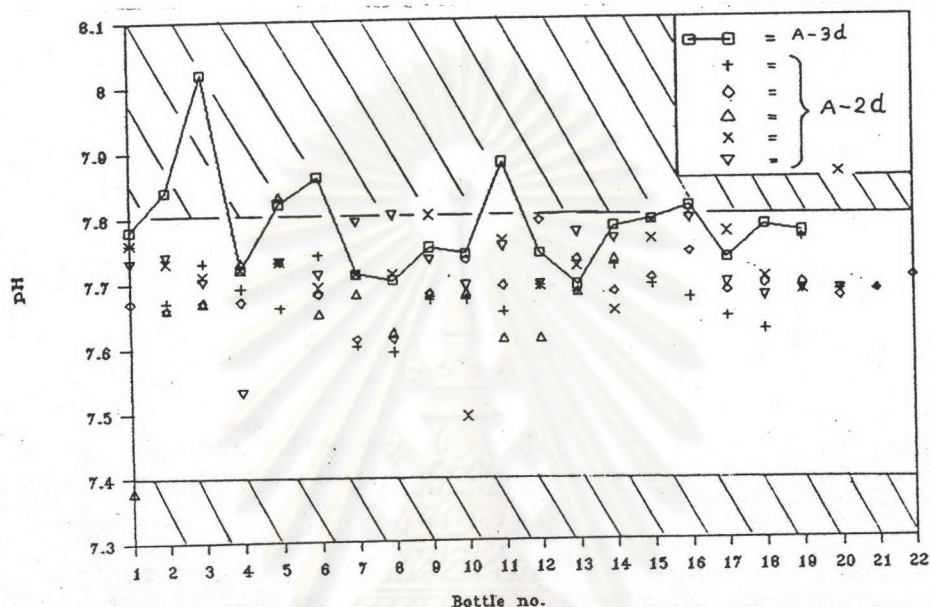
Phase diagram of CaO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> system



## Appendix E

pH change after exposure in heating chamber.

(re-bubble every 2 days)



Temperature control of 6 positions in the oven

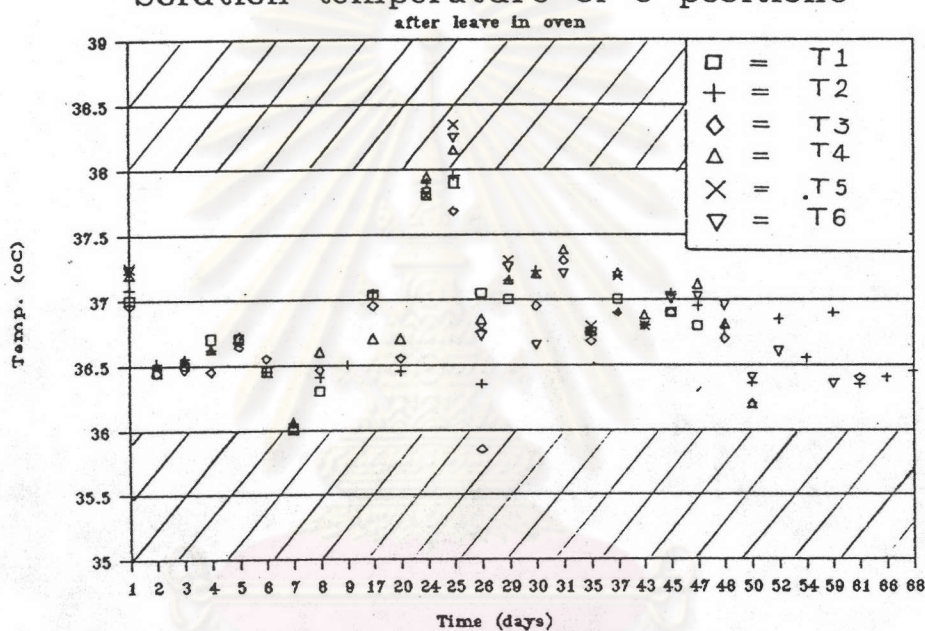
Date	Time (d)	T1	T2	T3	T4	T5	T6
04-1-93	1	37.00	37.08	36.96	37.20	37.25	37.23
05-1-93	2	36.45	36.52	36.44	36.50	-	-
06-1-93	3	36.50	36.55	36.47	36.55	-	-
07-1-93	4	36.70	36.62	36.45	36.62	-	-
09-1-93	5	36.70	36.68	36.64	36.72	-	-
10-1-93	6	36.45	36.45	36.55	-	-	-
11-1-93	7	36.00	36.05	36.01	36.06	-	-
12-1-93	8	36.30	36.40	36.46	36.60	-	-
13-1-93	9	-	36.50	-	-	-	-
21-1-93	17	37.04	37.05	36.95	36.70	-	-
24-1-93	20	-	36.45	36.55	36.70	-	-
28-2-93	24	37.80	37.90	37.85	37.95	37.80	37.83
29-1-93	25	37.90	37.95	37.68	38.15	38.35	38.25
30-1-93	26	37.05	36.35	35.85	36.85	36.78	36.72
02-1-93	29	37.00	37.15	-	37.15	37.30	37.25
03-2-93	30	-	37.22	36.95	37.20	-	36.65
04-2-93	31	-	-	37.30	37.38	-	37.20
06-2-93	35	36.75	36.75	36.68	36.75	36.80	-
08-2-93	37	37.00	36.90	36.90	37.21	37.18	-
14-2-93	43	-	36.80	36.80	36.88	36.80	-
16-2-93	45	36.90	37.05	36.90	37.03	-	37.00
18-2-93	47	36.80	36.95	-	37.12	-	37.02
19-2-93	48	-	36.78	36.70	36.82	-	36.95
21-2-93	50	-	36.36	36.20	36.20	-	36.40
23-2-93	52	-	36.85	-	-	-	36.60
25-2-93	54	-	36.55	-	-	-	-
02-3-93	59	-	36.90	-	-	-	36.35
04-2-93	61	-	36.35	36.40	-	-	-
09-2-93	66	-	36.40	-	-	-	-
11-2-93	68	-	36.45	-	-	-	-



## Appendix F

pH measurement after test with Gamble's solution

Solution temperature of 6 positions



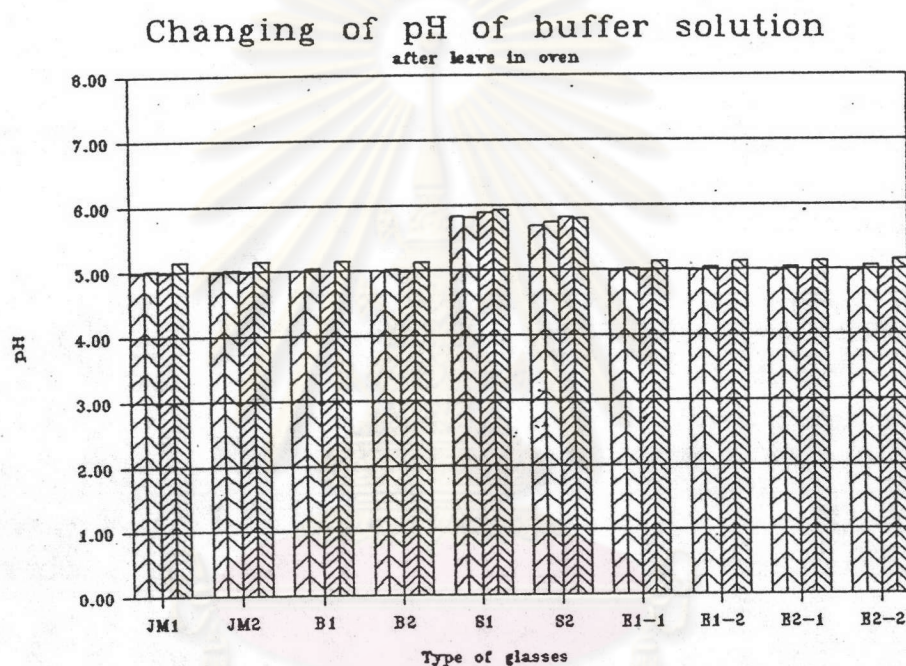
pH measurement after 2 and 3 days corrode

Bottle	A-3d	A-2d	A-2d	A-2d	A-2d	A-2d	A-2d	A-2d
01	7.78	7.76	7.67	7.38	7.76	7.73	7.78	7.71
02	7.84	7.67	7.66	7.66	7.73	7.74	7.80	7.82
03	8.02	7.73	7.67	7.67	7.71	7.70	7.74	7.74
04	7.72	7.69	7.67	7.73	7.72	7.53	7.72	7.71
05	7.82	7.66	7.73	7.83	7.73	7.73	7.75	7.67
06	7.86	7.74	7.68	7.65	7.69	7.71	7.71	7.74
07	7.71	7.60	7.61	7.68	7.71	7.79	7.82	7.80
08	7.70	7.59	7.61	7.62	7.71	7.80	7.74	7.76
09	7.75	7.67	7.68	7.68	7.80	7.73	-	7.81
10	7.74	7.67	7.73	7.68	7.49	7.69	-	7.78
11	7.88	7.65	7.69	7.61	7.76	7.75	-	7.73
12	7.74	7.69	7.79	7.61	7.69	7.69	-	7.74
13	7.69	7.68	7.73	7.68	7.72	7.77	-	7.64
14	7.78	7.72	7.68	7.73	7.65	7.76	-	7.67
15	7.79	7.69	7.70	-	7.76	7.79	-	7.70
16	7.81	7.67	7.74	-	7.80	7.79	-	7.71
17	7.73	7.64	7.68	-	7.77	7.69	-	7.70
18	7.78	7.62	7.69	-	7.70	7.67	-	-
19	7.77	7.76	7.69	-	7.68	7.68	-	-
20	-	7.68	7.67	-	7.86	7.68	-	-
21	-	7.68	7.68	-	-	-	-	-
22	-	-	7.70	-	-	-	-	-

A-3d = after 3 days  
A-2d = after 2 days

### Appendix G

pH measurement after test with buffer solution at pH 5



pH measurement after 7 days corrode

Sample	18-1-93	25-1-93	3-2-93	18-2-93
JM1	4.98	5.01	4.99	5.14
JM2	4.99	5.02	4.99	5.14
B1	5.00	5.03	5.00	5.15
B2	5.00	5.02	4.99	5.13
S1	5.83	5.82	5.89	5.93
S2	5.69	5.74	5.81	5.80
E1-1	4.99	5.02	4.99	5.12
E1-2	4.98	5.03	5.00	5.13
E2-1	4.99	5.03	5.00	5.13
E2-2	4.99	5.06	4.99	5.14



### Vita

Mr. Pisit Geasee recieved his Bachelor Degree of Science in Materials Science (Ceramics) from Faculty of Science, Chulalongkorn University in 1991.

He began his master study in June 1991 and complete the programme in May 1993.



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