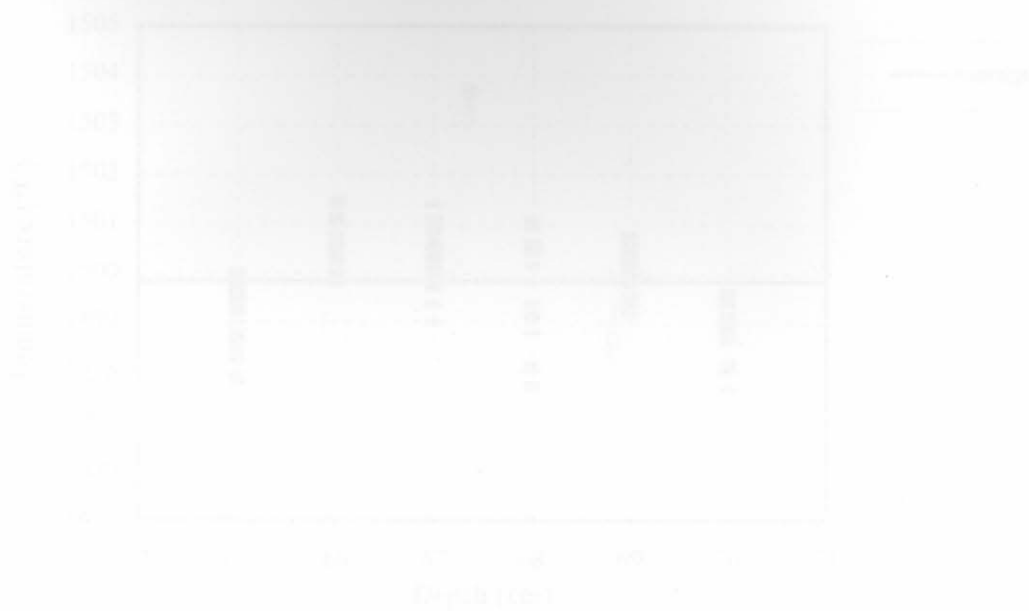


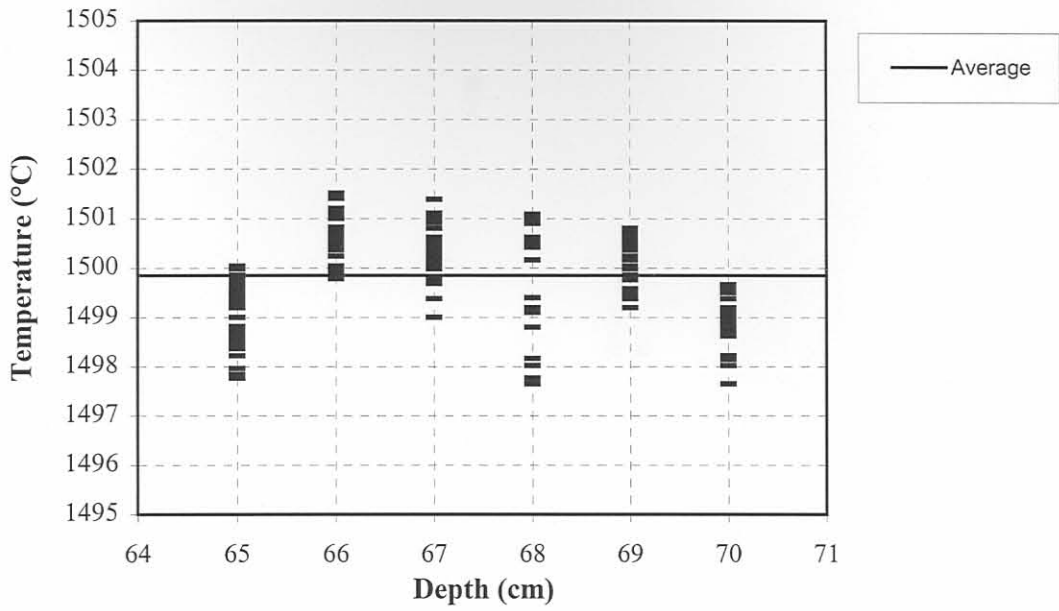
8. APPENDICES

Appendix 1: Temperature Variation vs. Position in Furnace at 1500°C

*Fig. 1: Temperature vs. Depth into Furnace Tube in the Primary Hot Zone
(Depth measured from the top of the rubber plug, at the top of the furnace)*

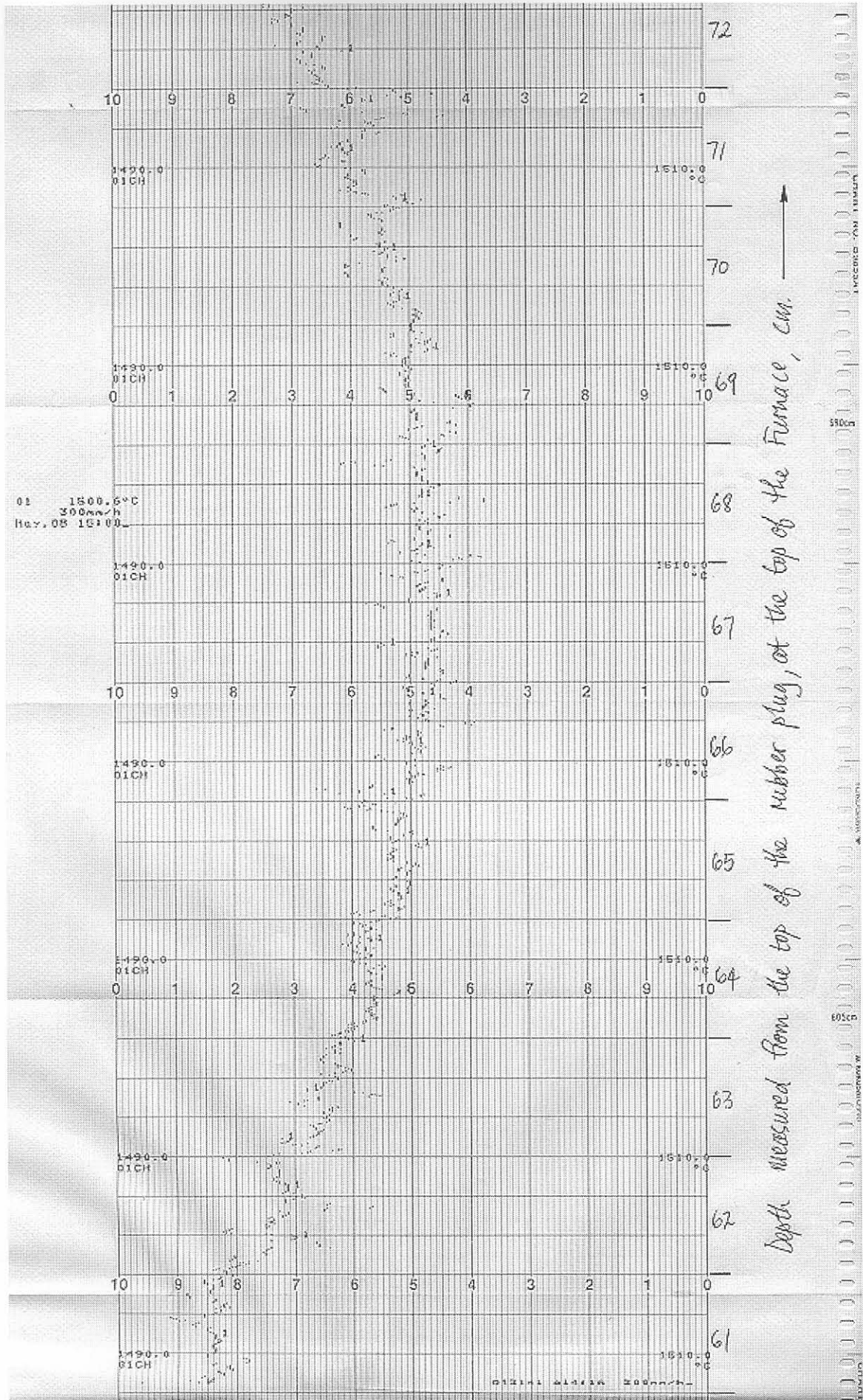


*Fig. 1: Temperature vs. Depth into Furnace Tube in the Furnace Hot Zone
(Depth measured from the top of the rubber plug, at the top of the furnace)*



Appendix 2: Recorder Chart for Temperature Measurements at 1500°C





Appendix 3: EPMA(WDS) Analyses for $V_2O_3 - TiO_2$ System

$O_2 = 90 \text{ max\% } V_2O_5$; Reaction

Temperature: 1400°C; Phase: V_2O_3

Analysis No.	Max % V_2O_5	Max % TiO_2	Total	wt % V	mol Ti	Mole fraction Ti
1	81.16	7.16	88.32	1.21	0.09	0.01
2	83.29	8.31	91.60	1.24	0.08	0.06
3	81.34	6.1	87.44	1.21	0.09	0.07
4	81.25	8.92	90.17	1.21	0.09	0.07
5	82.97	7.83	90.80	1.24	0.10	0.01
6	83.59	7.71	91.30	1.21	0.10	0.03
7	82.48	8.45	90.93	1.23	0.11	0.03
8	81.75	8.31	90.06	1.22	0.10	0.08
9	82.01	7.16	89.17	1.20	0.07	0.05
10	84.7	7.71	92.41	1.36	0.11	0.07
11	81.75	7.85	89.60	1.20	0.08	0.05
12	83.8	8.11	91.91	1.29	0.11	0.08
13	81.25	8.31	89.56	1.21	0.11	0.09
14	81.75	7.16	88.91	1.21	0.09	0.07
15	81.75	7.16	88.91	1.21	0.09	0.07
16	81.75	7.16	88.91	1.21	0.09	0.07
17	81.75	7.16	88.91	1.21	0.09	0.07
18	81.75	7.16	88.91	1.21	0.09	0.07
19	81.75	7.16	88.91	1.21	0.09	0.07
20	81.75	7.16	88.91	1.21	0.09	0.07
21	81.75	7.16	88.91	1.21	0.09	0.07
22	81.75	7.16	88.91	1.21	0.09	0.07
23	81.75	7.16	88.91	1.21	0.09	0.07
24	81.75	7.16	88.91	1.21	0.09	0.07
25	81.75	7.16	88.91	1.21	0.09	0.07
26	81.75	7.16	88.91	1.21	0.09	0.07
27	81.75	7.16	88.91	1.21	0.09	0.07
28	81.75	7.16	88.91	1.21	0.09	0.07
29	81.75	7.16	88.91	1.21	0.09	0.07
30	81.75	7.16	88.91	1.21	0.09	0.07
31	81.75	7.16	88.91	1.21	0.09	0.07
32	81.75	7.16	88.91	1.21	0.09	0.07
33	81.75	7.16	88.91	1.21	0.09	0.07
34	81.75	7.16	88.91	1.21	0.09	0.07
35	81.75	7.16	88.91	1.21	0.09	0.07
36	81.75	7.16	88.91	1.21	0.09	0.07
37	81.75	7.16	88.91	1.21	0.09	0.07
38	81.75	7.16	88.91	1.21	0.09	0.07
39	81.75	7.16	88.91	1.21	0.09	0.07
40	81.75	7.16	88.91	1.21	0.09	0.07
Average	81.26	8.02	89.28	1.22	0.11	0.09

Sample: 10T14; Initial Sample Composition = 10 mass% TiO₂ - 90 mass% V₂O₅; Reaction Temperature = 1400°C; Phases Identified = M₂O₃

Analysis No.	Mass % V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	91.10	7.06	98.16	1.22	0.09	0.07
2	93.30	6.34	99.64	1.24	0.08	0.06
3	93.34	7.21	100.55	1.25	0.09	0.07
4	91.22	6.92	98.13	1.22	0.09	0.07
5	92.97	7.82	100.80	1.24	0.10	0.07
6	92.59	7.78	100.37	1.24	0.10	0.07
7	92.40	8.45	100.85	1.23	0.11	0.08
8	91.75	8.31	100.05	1.22	0.10	0.08
9	94.63	5.77	100.39	1.26	0.07	0.05
10	94.77	5.75	100.51	1.26	0.07	0.05
11	94.61	5.68	100.30	1.26	0.07	0.05
12	88.97	8.21	97.18	1.19	0.10	0.08
13	92.22	8.87	101.08	1.23	0.11	0.08
14	91.65	8.19	99.84	1.22	0.10	0.08
15	91.66	8.07	99.73	1.22	0.10	0.08
16	92.85	8.07	100.91	1.24	0.10	0.08
17	90.71	7.76	98.47	1.21	0.10	0.07
18	92.27	7.79	100.06	1.23	0.10	0.07
19	90.40	8.39	98.79	1.21	0.11	0.08
20	90.65	8.44	99.10	1.21	0.11	0.08
21	91.57	8.93	100.50	1.22	0.11	0.08
22	91.55	8.52	100.07	1.22	0.11	0.08
23	92.31	8.51	100.82	1.23	0.11	0.08
24	91.25	9.31	100.56	1.22	0.12	0.09
25	90.83	9.63	100.46	1.21	0.12	0.09
26	91.02	9.52	100.54	1.21	0.12	0.09
27	92.28	8.29	100.57	1.23	0.10	0.08
28	92.08	8.96	101.03	1.23	0.11	0.08
29	91.63	8.97	100.60	1.22	0.11	0.08
30	90.88	9.33	100.21	1.21	0.12	0.09
31	91.53	9.60	101.13	1.22	0.12	0.09
32	90.96	9.86	100.82	1.21	0.12	0.09
33	88.33	10.30	98.63	1.18	0.13	0.10
34	90.19	11.00	101.19	1.20	0.14	0.10
35	89.08	12.66	101.74	1.19	0.16	0.12
36	86.60	12.23	98.83	1.16	0.15	0.12
37	88.78	12.68	101.47	1.18	0.16	0.12
38	88.61	12.69	101.30	1.18	0.16	0.12
39	87.13	12.17	99.31	1.16	0.15	0.12
Average	91.30	8.82	100.12	1.22	0.11	0.08

Standard Deviation	1.86	1.84	1.04	0.02	0.02	0.02
95% Confidence Limit	0.58	0.58	0.33	0.01	0.01	0.01

No.	V205	T101				
1	75.81	24.25	59.85	1.06	0.24	0.34
2	76.61	23.38	105.26	1.07	0.11	0.38
3	76.26	23.63	799.96	1.03	0.29	0.23
4	79.23	20.76	101.40	1.05	0.07	0.20
5	79.91	20.08	150.20	1.05	0.20	0.18
6	78.17	21.82	308.25	1.02	0.23	0.22
7	77.8	22.19	98.45	1.04	0.20	0.14
8	78.2	21.79	7.72	1.03	0.17	0.16
9	77.1	22.89	21.20	1.05	0.3	0.18
10	77.15	22.84	0.11	1.05	0.2	0.17
11	72.4	27.59	44.25	1.01	0.11	0.16
12	72.2	27.79	705	1.01	0.17	0.15
13	72.4	27.59	705	1.01	0.17	0.15
14	72.4	27.59	705	1.01	0.17	0.15
15	72.4	27.59	705	1.01	0.17	0.15
16	72.4	27.59	705	1.01	0.17	0.15
17	72.4	27.59	705	1.01	0.17	0.15
18	72.4	27.59	705	1.01	0.17	0.15
19	72.4	27.59	705	1.01	0.17	0.15
20	72.4	27.59	705	1.01	0.17	0.15
21	72.4	27.59	705	1.01	0.17	0.15
22	72.4	27.59	705	1.01	0.17	0.15
23	72.4	27.59	705	1.01	0.17	0.15
24	72.4	27.59	705	1.01	0.17	0.15
25	72.4	27.59	705	1.01	0.17	0.15
26	72.4	27.59	705	1.01	0.17	0.15
27	72.4	27.59	705	1.01	0.17	0.15
28	72.4	27.59	705	1.01	0.17	0.15
29	72.4	27.59	705	1.01	0.17	0.15
30	72.4	27.59	705	1.01	0.17	0.15
31	72.4	27.59	705	1.01	0.17	0.15
32	72.4	27.59	705	1.01	0.17	0.15
33	72.4	27.59	705	1.01	0.17	0.15
34	72.4	27.59	705	1.01	0.17	0.15
35	72.4	27.59	705	1.01	0.17	0.15
36	72.4	27.59	705	1.01	0.17	0.15
37	72.4	27.59	705	1.01	0.17	0.15
38	72.4	27.59	705	1.01	0.17	0.15
39	72.4	27.59	705	1.01	0.17	0.15
40	72.4	27.59	705	1.01	0.17	0.15
41	72.4	27.59	705	1.01	0.17	0.15
42	72.4	27.59	705	1.01	0.17	0.15
43	72.4	27.59	705	1.01	0.17	0.15
44	72.4	27.59	705	1.01	0.17	0.15
45	72.4	27.59	705	1.01	0.17	0.15
46	72.4	27.59	705	1.01	0.17	0.15
47	72.4	27.59	705	1.01	0.17	0.15
48	72.4	27.59	705	1.01	0.17	0.15
49	72.4	27.59	705	1.01	0.17	0.15
50	72.4	27.59	705	1.01	0.17	0.15
51	72.4	27.59	705	1.01	0.17	0.15
52	72.4	27.59	705	1.01	0.17	0.15
53	72.4	27.59	705	1.01	0.17	0.15
54	72.4	27.59	705	1.01	0.17	0.15
55	72.4	27.59	705	1.01	0.17	0.15
56	72.4	27.59	705	1.01	0.17	0.15
57	72.4	27.59	705	1.01	0.17	0.15
58	72.4	27.59	705	1.01	0.17	0.15
59	72.4	27.59	705	1.01	0.17	0.15
60	72.4	27.59	705	1.01	0.17	0.15
61	72.4	27.59	705	1.01	0.17	0.15
62	72.4	27.59	705	1.01	0.17	0.15
63	72.4	27.59	705	1.01	0.17	0.15
64	72.4	27.59	705	1.01	0.17	0.15
65	72.4	27.59	705	1.01	0.17	0.15
66	72.4	27.59	705	1.01	0.17	0.15
67	72.4	27.59	705	1.01	0.17	0.15
68	72.4	27.59	705	1.01	0.17	0.15
69	72.4	27.59	705	1.01	0.17	0.15
70	72.4	27.59	705	1.01	0.17	0.15
71	72.4	27.59	705	1.01	0.17	0.15
72	72.4	27.59	705	1.01	0.17	0.15
73	72.4	27.59	705	1.01	0.17	0.15
74	72.4	27.59	705	1.01	0.17	0.15
75	72.4	27.59	705	1.01	0.17	0.15
76	72.4	27.59	705	1.01	0.17	0.15
77	72.4	27.59	705	1.01	0.17	0.15
78	72.4	27.59	705	1.01	0.17	0.15
79	72.4	27.59	705	1.01	0.17	0.15
80	72.4	27.59	705	1.01	0.17	0.15
81	72.4	27.59	705	1.01	0.17	0.15
82	72.4	27.59	705	1.01	0.17	0.15
83	72.4	27.59	705	1.01	0.17	0.15
84	72.4	27.59	705	1.01	0.17	0.15
85	72.4	27.59	705	1.01	0.17	0.15
86	72.4	27.59	705	1.01	0.17	0.15
87	72.4	27.59	705	1.01	0.17	0.15
88	72.4	27.59	705	1.01	0.17	0.15
89	72.4	27.59	705	1.01	0.17	0.15
90	72.4	27.59	705	1.01	0.17	0.15
91	72.4	27.59	705	1.01	0.17	0.15
92	72.4	27.59	705	1.01	0.17	0.15
93	72.4	27.59	705	1.01	0.17	0.15
94	72.4	27.59	705	1.01	0.17	0.15
95	72.4	27.59	705	1.01	0.17	0.15
96	72.4	27.59	705	1.01	0.17	0.15
97	72.4	27.59	705	1.01	0.17	0.15
98	72.4	27.59	705	1.01	0.17	0.15
99	72.4	27.59	705	1.01	0.17	0.15
100	72.4	27.59	705	1.01	0.17	0.15

No.	Max % V205	Max % T101	Total	and %	and %	Max % Fraction B
1	23.07	33.15	100.1	0.21	0.24	0.31
2	23.15	28.41	98.56	0.24	0.29	0.35
3	22.2	27.80	102.33	0.20	0.23	0.34
4	23.06	27.28	101.34	0.25	0.24	0.36
5	22.25	27.29	111.24	0.21	0.24	0.31
6	22.06	27.32	120.21	0.21	0.20	0.25
7	22.12	27.36	101.75	0.22	0.25	0.28
8	22.06	27.24	92.90	0.20	0.21	0.27
9	21.27	27.20	101.32	0.22	0.20	0.28
10	22.22	26.22	105.84	0.21	0.26	0.32
11	22.20	26.20	104.60	0.21	0.20	0.28
12	21.11	26.23	104.23	0.22	0.20	0.28
13	21.02	26.21	101.43	0.21	0.21	0.28
14	21.22	26.29	100.21	0.24	0.27	0.30

Sample: 30T14; Initial Sample Composition = 30 mass% TiO₂ - 70 mass% V₂O₅; Reaction Temperature = 1400°C; Phases Identified = M₂O₃ and M₃O₅

M₂O₃-Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	75.01	24.86	99.86	1.00	0.31	0.24
2	76.61	25.45	102.05	1.02	0.32	0.24
3	76.36	23.60	99.96	1.02	0.30	0.22
4	79.83	21.57	101.40	1.07	0.27	0.20
5	79.91	20.38	100.29	1.07	0.26	0.19
6	76.77	24.45	101.23	1.02	0.31	0.23
7	79.49	20.47	99.96	1.06	0.26	0.19
8	79.87	21.82	101.69	1.07	0.27	0.20
9	74.19	25.01	99.20	0.99	0.31	0.24
10	78.91	21.86	100.77	1.05	0.27	0.21
11	74.35	25.61	99.96	0.99	0.32	0.24
<i>12</i>	<i>79.9</i>	<i>20.1</i>	<i>100</i>	<i>1.07</i>	<i>0.25</i>	<i>0.19</i>
<i>13</i>	<i>80</i>	<i>20</i>	<i>100</i>	<i>1.07</i>	<i>0.25</i>	<i>0.19</i>
<i>14</i>	<i>80.3</i>	<i>19.8</i>	<i>100</i>	<i>1.07</i>	<i>0.25</i>	<i>0.19</i>
<i>15</i>	<i>80.31</i>	<i>19.69</i>	<i>100</i>	<i>1.07</i>	<i>0.25</i>	<i>0.19</i>
Average	78.12	22.31	100.42	1.04	0.28	0.21
Standard Deviation	2.31	2.27	0.81	0.03	0.03	0.02
95% Confidence Limit	1.17	1.15	0.41	0.02	0.01	0.01

Italic = SEM-EDS Analyses

M₃O₅-Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	61.22	38.95	100.17	0.82	0.49	0.37
2	63.18	36.41	99.58	0.84	0.46	0.35
3	66.40	35.93	102.33	0.89	0.45	0.34
4	63.98	37.58	101.56	0.85	0.47	0.36
5	62.56	39.29	101.85	0.83	0.49	0.37
6	60.40	39.82	100.21	0.81	0.50	0.38
7	66.12	35.66	101.78	0.88	0.45	0.34
8	60.16	37.74	97.90	0.80	0.47	0.37
9	61.33	39.99	101.32	0.82	0.50	0.38
10	60.75	39.92	100.67	0.81	0.50	0.38
11	61.90	39.70	101.60	0.83	0.50	0.38
12	61.11	40.28	101.38	0.82	0.50	0.38
13	61.02	40.41	101.43	0.81	0.51	0.38
14	62.72	37.79	100.51	0.84	0.47	0.36

15	61.41	38.09	99.50	0.82	0.48	0.37
16	62.06	38.85	100.92	0.83	0.49	0.37
17	68.03	32.76	100.79	0.91	0.41	0.31
18	70.47	29.32	99.79	0.94	0.37	0.28
19	70.67	31.28	101.95	0.94	0.39	0.29
20	67.96	33.47	101.42	0.91	0.42	0.32
21	65.32	33.76	99.08	0.87	0.42	0.33
22	68.32	33.18	101.50	0.91	0.42	0.31
23	69.92	31.89	101.81	0.93	0.40	0.30
24	69.29	31.45	100.73	0.92	0.39	0.30
25	71.26	30.47	101.73	0.95	0.38	0.29
26	72.46	28.10	100.56	0.97	0.35	0.27
27	<i>61.13</i>	<i>38.87</i>	<i>100.00</i>	<i>0.82</i>	<i>0.49</i>	<i>0.37</i>
28	<i>61.18</i>	<i>38.82</i>	<i>100.00</i>	<i>0.82</i>	<i>0.49</i>	<i>0.37</i>
29	<i>61.37</i>	<i>38.63</i>	<i>100.00</i>	<i>0.82</i>	<i>0.48</i>	<i>0.37</i>
30	<i>60.97</i>	<i>39.03</i>	<i>100.00</i>	<i>0.81</i>	<i>0.49</i>	<i>0.38</i>
Average	64.49	36.25	100.74	0.86	0.45	0.35
Standard Deviation	3.94	3.70	1.01	0.05	0.05	0.04
95% Confidence Limit	1.41	1.32	0.36	0.02	0.02	0.01

Italic = SEM-EDS Analyses

Sample: 50T14; Initial Sample Composition = 50 mass% TiO₂ - 50 mass% V₂O₅; Reaction Temperature = 1400°C; Phases Identified = M₃O₅ and M₄O₇

M₄O₇-Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	31.35	69.40	100.75	0.42	0.87	0.67
2	32.08	69.63	101.70	0.43	0.87	0.67
3	32.32	68.52	100.84	0.43	0.86	0.67
4	32.01	69.19	101.20	0.43	0.87	0.67
5	33.09	66.41	99.50	0.44	0.83	0.65
6	32.23	68.70	100.93	0.43	0.86	0.67
7	39.02	62.57	101.59	0.52	0.78	0.60
8	31.96	69.23	101.19	0.43	0.87	0.67
9	31.66	69.47	101.13	0.42	0.87	0.67
10	31.74	69.10	100.84	0.42	0.86	0.67
11	35.48	65.70	101.18	0.47	0.82	0.63
12	35.31	65.59	100.91	0.47	0.82	0.64
13	34.62	65.04	99.66	0.46	0.81	0.64
14	32.93	67.92	100.86	0.44	0.85	0.66
15	33.70	67.54	101.24	0.45	0.85	0.65
16	32.14	68.95	101.09	0.43	0.86	0.67
17	32.17	69.14	101.31	0.43	0.87	0.67
18	31.67	69.02	100.69	0.42	0.86	0.67
19	33.37	67.94	101.31	0.45	0.85	0.66
20	39.14	62.65	101.79	0.52	0.78	0.60
21	38.69	62.64	101.33	0.52	0.78	0.60
22	31.86	68.39	100.25	0.43	0.86	0.67
23	38.86	62.61	101.47	0.52	0.78	0.60
24	38.77	62.79	101.55	0.52	0.79	0.60
25	34.78	66.32	101.10	0.46	0.83	0.64
26	36.98	61.85	98.83	0.49	0.77	0.61
27	38.94	62.51	101.45	0.52	0.78	0.60
28	34.33	66.65	100.97	0.46	0.83	0.65
29	32.35	68.71	101.06	0.43	0.86	0.67
30	38.51	62.82	101.33	0.51	0.79	0.60
31	39.21	62.37	101.58	0.52	0.78	0.60
32	33.61	67.48	101.09	0.45	0.84	0.65
33	35.22	63.56	98.78	0.47	0.80	0.63
34	34.04	67.36	101.40	0.45	0.84	0.65
35	38.21	63.54	101.75	0.51	0.80	0.61
36	37.63	63.66	101.29	0.50	0.80	0.61
37	36.20	65.15	101.35	0.48	0.82	0.63
38	31.89	68.94	100.83	0.43	0.86	0.67
39	35.02	66.23	101.25	0.47	0.83	0.64

40	37.29	64.76	102.06	0.50	0.81	0.62
41	35.02	64.42	99.45	0.47	0.81	0.63
42	34.41	66.61	101.01	0.46	0.83	0.64
43	35.78	65.32	101.10	0.48	0.82	0.63
44	38.58	63.08	101.65	0.51	0.79	0.61
45	33.59	67.62	101.21	0.45	0.85	0.65
46	38.18	62.98	101.15	0.51	0.79	0.61
47	38.91	62.52	101.42	0.52	0.78	0.60
48	36.42	64.72	101.14	0.49	0.81	0.63
49	38.71	62.25	100.96	0.52	0.78	0.60
50	34.47	66.47	100.94	0.46	0.83	0.64
51	32.00	69.28	101.28	0.43	0.87	0.67
52	31.08	68.56	99.64	0.41	0.86	0.67
53	31.58	69.72	101.30	0.42	0.87	0.67
54	37.32	64.12	101.44	0.50	0.80	0.62
55	36.66	64.74	101.40	0.49	0.81	0.62
56	31.43	69.59	101.02	0.42	0.87	0.67
57	37.05	63.49	100.54	0.49	0.79	0.62
Average	34.94	66.06	101.00	0.47	0.83	0.64
Standard Deviation	2.72	2.61	0.67	0.04	0.03	0.03
95% Confidence Limit	0.71	0.68	0.18	0.01	0.01	0.01

Sample: 70T14; Initial Sample Composition = 70 mass% TiO₂ - 30 mass% V₂O₅; Reaction Temperature = 1400°C; Phases Identified = Magneli Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	25.28	72.87	98.14	0.34	0.91	0.73
2	30.15	69.64	99.79	0.40	0.87	0.68
3	30.37	68.99	99.36	0.41	0.86	0.68
4	25.65	73.13	98.77	0.34	0.92	0.73
5	26.90	72.02	98.91	0.36	0.90	0.72
6	29.99	69.04	99.02	0.40	0.86	0.68
7	25.70	73.26	98.96	0.34	0.92	0.73
8	30.40	69.84	100.24	0.41	0.87	0.68
9	30.24	69.74	99.99	0.40	0.87	0.68
10	24.88	75.79	100.67	0.33	0.95	0.74
11	24.63	75.72	100.35	0.33	0.95	0.74
12	24.83	75.73	100.56	0.33	0.95	0.74
13	25.33	75.27	100.60	0.34	0.94	0.74
14	24.84	74.01	98.85	0.33	0.93	0.74
15	25.29	75.38	100.66	0.34	0.94	0.74
16	25.70	74.65	100.34	0.34	0.93	0.73
17	30.80	70.63	101.42	0.41	0.88	0.68
18	30.46	70.63	101.08	0.41	0.88	0.69
19	26.31	74.16	100.47	0.35	0.93	0.73
20	26.00	74.25	100.25	0.35	0.93	0.73
21	29.62	71.12	100.74	0.40	0.89	0.69
22	25.90	75.23	101.13	0.35	0.94	0.73
23	25.79	74.75	100.54	0.34	0.94	0.73
24	26.01	74.92	100.93	0.35	0.94	0.73
25	25.59	74.74	100.33	0.34	0.94	0.73
26	25.77	75.07	100.84	0.34	0.94	0.73
27	25.72	75.09	100.81	0.34	0.94	0.73
28	25.72	74.83	100.55	0.34	0.94	0.73
29	25.77	74.98	100.75	0.34	0.94	0.73
30	25.75	75.60	101.35	0.34	0.95	0.73
31	26.10	75.26	101.36	0.35	0.94	0.73
32	25.73	75.44	101.16	0.34	0.94	0.73
33	25.74	75.59	101.33	0.34	0.95	0.73
34	25.62	75.37	100.99	0.34	0.94	0.73
35	25.77	75.29	101.06	0.34	0.94	0.73
36	25.76	75.21	100.97	0.34	0.94	0.73
37	25.44	74.92	100.35	0.34	0.94	0.73
38	25.85	75.41	101.26	0.34	0.94	0.73
39	25.91	74.99	100.89	0.35	0.94	0.73
40	30.21	71.35	101.55	0.40	0.89	0.69

University of Pretoria etd – Coetsee T 1998

41	25.77	75.24	101.01	0.34	0.94	0.73
42	25.70	75.19	100.90	0.34	0.94	0.73
43	30.03	71.03	101.06	0.40	0.89	0.69
44	25.84	75.07	100.91	0.34	0.94	0.73
45	26.09	75.09	101.17	0.35	0.94	0.73
46	25.88	75.15	101.03	0.35	0.94	0.73
47	30.60	70.50	101.10	0.41	0.88	0.68
48	29.97	70.12	100.09	0.40	0.88	0.69
49	29.61	70.00	99.61	0.40	0.88	0.69
50	30.20	69.75	99.94	0.40	0.87	0.68
51	30.28	69.48	99.76	0.40	0.87	0.68
52	27.97	71.72	99.68	0.37	0.90	0.71
53	25.59	74.01	99.60	0.34	0.93	0.73
54	26.22	73.54	99.76	0.35	0.92	0.72
55	26.08	73.41	99.49	0.35	0.92	0.73
56	25.72	73.81	99.52	0.34	0.92	0.73
57	25.47	74.18	99.64	0.34	0.93	0.73
58	30.28	69.60	99.87	0.40	0.87	0.68
59	30.44	69.75	100.19	0.41	0.87	0.68
60	30.02	70.04	100.06	0.40	0.88	0.69
61	30.34	69.76	100.10	0.40	0.87	0.68
62	25.63	74.50	100.13	0.34	0.93	0.73
63	25.45	74.03	99.48	0.34	0.93	0.73
64	25.44	74.43	99.88	0.34	0.93	0.73
65	25.73	74.63	100.36	0.34	0.93	0.73
66	27.08	72.77	99.84	0.36	0.91	0.72
67	25.66	74.23	99.89	0.34	0.93	0.73
68	25.66	74.37	100.03	0.34	0.93	0.73
69	25.57	74.48	100.05	0.34	0.93	0.73
70	25.64	74.92	100.56	0.34	0.94	0.73
71	25.39	75.29	100.68	0.34	0.94	0.74
72	26.23	74.88	101.11	0.35	0.94	0.73
73	25.83	75.41	101.24	0.34	0.94	0.73
74	25.72	75.40	101.12	0.34	0.94	0.73
75	25.71	75.22	100.93	0.34	0.94	0.73
76	25.83	75.21	101.04	0.34	0.94	0.73
77	25.65	75.54	101.19	0.34	0.95	0.73
78	25.88	74.96	100.85	0.35	0.94	0.73
79	25.72	75.10	100.82	0.34	0.94	0.73
80	25.76	75.14	100.90	0.34	0.94	0.73
81	29.23	71.52	100.75	0.39	0.90	0.70
82	25.88	75.16	101.03	0.35	0.94	0.73
83	25.69	75.65	101.34	0.34	0.95	0.73
84	25.98	75.81	101.79	0.35	0.95	0.73

85	25.79	75.62	101.40	0.34	0.95	0.73
Average	26.80	73.65	100.45	0.36	0.92	0.72
Standard Deviation	1.93	2.14	0.74	0.03	0.03	0.02
95% Confidence Limit	0.41	0.46	0.16	0.01	0.01	0.004

86	25.84	75.67	101.45	0.34	0.95	0.73
87	25.89	75.72	101.50	0.34	0.95	0.73
88	25.94	75.77	101.55	0.34	0.95	0.73
89	26.00	75.82	101.60	0.34	0.95	0.73
90	26.05	75.87	101.65	0.34	0.95	0.73
91	26.10	75.92	101.70	0.34	0.95	0.73
92	26.15	75.97	101.75	0.34	0.95	0.73
93	26.20	76.02	101.80	0.34	0.95	0.73
94	26.25	76.07	101.85	0.34	0.95	0.73
95	26.30	76.12	101.90	0.34	0.95	0.73
96	26.35	76.17	101.95	0.34	0.95	0.73
97	26.40	76.22	102.00	0.34	0.95	0.73
98	26.45	76.27	102.05	0.34	0.95	0.73
99	26.50	76.32	102.10	0.34	0.95	0.73
100	26.55	76.37	102.15	0.34	0.95	0.73
101	26.60	76.42	102.20	0.34	0.95	0.73
102	26.65	76.47	102.25	0.34	0.95	0.73
103	26.70	76.52	102.30	0.34	0.95	0.73
104	26.75	76.57	102.35	0.34	0.95	0.73
105	26.80	76.62	102.40	0.34	0.95	0.73
106	26.85	76.67	102.45	0.34	0.95	0.73
107	26.90	76.72	102.50	0.34	0.95	0.73
108	26.95	76.77	102.55	0.34	0.95	0.73
109	27.00	76.82	102.60	0.34	0.95	0.73
110	27.05	76.87	102.65	0.34	0.95	0.73
111	27.10	76.92	102.70	0.34	0.95	0.73
112	27.15	76.97	102.75	0.34	0.95	0.73
113	27.20	77.02	102.80	0.34	0.95	0.73
114	27.25	77.07	102.85	0.34	0.95	0.73
115	27.30	77.12	102.90	0.34	0.95	0.73
116	27.35	77.17	102.95	0.34	0.95	0.73
117	27.40	77.22	103.00	0.34	0.95	0.73
118	27.45	77.27	103.05	0.34	0.95	0.73
119	27.50	77.32	103.10	0.34	0.95	0.73
120	27.55	77.37	103.15	0.34	0.95	0.73
121	27.60	77.42	103.20	0.34	0.95	0.73
122	27.65	77.47	103.25	0.34	0.95	0.73
123	27.70	77.52	103.30	0.34	0.95	0.73
124	27.75	77.57	103.35	0.34	0.95	0.73
125	27.80	77.62	103.40	0.34	0.95	0.73
126	27.85	77.67	103.45	0.34	0.95	0.73
127	27.90	77.72	103.50	0.34	0.95	0.73
128	27.95	77.77	103.55	0.34	0.95	0.73
129	28.00	77.82	103.60	0.34	0.95	0.73
130	28.05	77.87	103.65	0.34	0.95	0.73
131	28.10	77.92	103.70	0.34	0.95	0.73
132	28.15	77.97	103.75	0.34	0.95	0.73
133	28.20	78.02	103.80	0.34	0.95	0.73
134	28.25	78.07	103.85	0.34	0.95	0.73
135	28.30	78.12	103.90	0.34	0.95	0.73
136	28.35	78.17	103.95	0.34	0.95	0.73
137	28.40	78.22	104.00	0.34	0.95	0.73
138	28.45	78.27	104.05	0.34	0.95	0.73
139	28.50	78.32	104.10	0.34	0.95	0.73
140	28.55	78.37	104.15	0.34	0.95	0.73
141	28.60	78.42	104.20	0.34	0.95	0.73
142	28.65	78.47	104.25	0.34	0.95	0.73
143	28.70	78.52	104.30	0.34	0.95	0.73
144	28.75	78.57	104.35	0.34	0.95	0.73
145	28.80	78.62	104.40	0.34	0.95	0.73
146	28.85	78.67	104.45	0.34	0.95	0.73
147	28.90	78.72	104.50	0.34	0.95	0.73
148	28.95	78.77	104.55	0.34	0.95	0.73
149	29.00	78.82	104.60	0.34	0.95	0.73
150	29.05	78.87	104.65	0.34	0.95	0.73
151	29.10	78.92	104.70	0.34	0.95	0.73
152	29.15	78.97	104.75	0.34	0.95	0.73
153	29.20	79.02	104.80	0.34	0.95	0.73
154	29.25	79.07	104.85	0.34	0.95	0.73
155	29.30	79.12	104.90	0.34	0.95	0.73
156	29.35	79.17	104.95	0.34	0.95	0.73
157	29.40	79.22	105.00	0.34	0.95	0.73
158	29.45	79.27	105.05	0.34	0.95	0.73
159	29.50	79.32	105.10	0.34	0.95	0.73
160	29.55	79.37	105.15	0.34	0.95	0.73
161	29.60	79.42	105.20	0.34	0.95	0.73
162	29.65	79.47	105.25	0.34	0.95	0.73
163	29.70	79.52	105.30	0.34	0.95	0.73
164	29.75	79.57	105.35	0.34	0.95	0.73
165	29.80	79.62	105.40	0.34	0.95	0.73
166	29.85	79.67	105.45	0.34	0.95	0.73
167	29.90	79.72	105.50	0.34	0.95	0.73
168	29.95	79.77	105.55	0.34	0.95	0.73
169	30.00	79.82	105.60	0.34	0.95	0.73
170	30.05	79.87	105.65	0.34	0.95	0.73
171	30.10	79.92	105.70	0.34	0.95	0.73
172	30.15	79.97	105.75	0.34	0.95	0.73
173	30.20	80.02	105.80	0.34	0.95	0.73
174	30.25	80.07	105.85	0.34	0.95	0.73
175	30.30	80.12	105.90	0.34	0.95	0.73
176	30.35	80.17	105.95	0.34	0.95	0.73
177	30.40	80.22	106.00	0.34	0.95	0.73
178	30.45	80.27	106.05	0.34	0.95	0.73
179	30.50	80.32	106.10	0.34	0.95	0.73
180	30.55	80.37	106.15	0.34	0.95	0.73
181	30.60	80.42	106.20	0.34	0.95	0.73
182	30.65	80.47	106.25	0.34	0.95	0.73
183	30.70	80.52	106.30	0.34	0.95	0.73
184	30.75	80.57	106.35	0.34	0.95	0.73
185	30.80	80.62	106.40	0.34	0.95	0.73
186	30.85	80.67	106.45	0.34	0.95	0.73
187	30.90	80.72	106.50	0.34	0.95	0.73
188	30.95	80.77	106.55	0.34	0.95	0.73
189	31.00	80.82	106.60	0.34	0.95	0.73
190	31.05	80.87	106.65	0.34	0.95	0.73
191	31.10	80.92	106.70	0.34	0.95	0.73
192	31.15	80.97	106.75	0.34	0.95	0.73
193	31.20	81.02	106.80	0.34	0.95	0.73
194	31.25	81.07	106.85	0.34	0.95	0.73
195	31.30	81.12	106.90	0.34	0.95	0.73
196	31.35	81.17	106.95	0.34	0.95	0.73
197	31.40	81.22	107.00	0.34	0.95	0.73
198	31.45	81.27	107.05	0.34	0.95	0.73
199	31.50	81.32	107.10	0.34	0.95	0.73
200	31.55	81.37	107.15	0.34	0.95	0.73
Average	26.80	73.65	100.45	0.36	0.92	0.72
Standard Deviation	1.93	2.14	0.74	0.03	0.03	0.02
95% Confidence Limit	0.41	0.46	0.16	0.01	0.01	0.004

Sample: 90T14; Initial Sample Composition = 90 mass% TiO_2 - 10 mass% V_2O_5 ; Reaction Temperature = 1400°C; Phases Identified = Magneli Phase

Analysis No.	Mass% V_2O_5	Mass% TiO_2	Total	mol V	mol Ti	Mole fraction Ti
1	8.63	90.97	99.60	0.12	1.14	0.91
2	8.55	91.68	100.23	0.11	1.15	0.91
3	7.89	92.19	100.08	0.11	1.15	0.92
4	7.84	92.53	100.37	0.10	1.16	0.92
5	7.94	92.57	100.51	0.11	1.16	0.92
6	8.76	90.32	99.07	0.12	1.13	0.91
7	8.86	91.35	100.21	0.12	1.14	0.91
8	8.48	91.89	100.37	0.11	1.15	0.91
9	8.68	90.74	99.41	0.12	1.14	0.91
10	8.64	91.73	100.37	0.12	1.15	0.91
11	8.37	91.83	100.20	0.11	1.15	0.91
12	8.39	91.95	100.34	0.11	1.15	0.91
13	8.31	91.07	99.37	0.11	1.14	0.91
14	8.20	90.38	98.57	0.11	1.13	0.91
15	8.17	90.92	99.09	0.11	1.14	0.91
16	8.42	92.19	100.61	0.11	1.15	0.91
17	8.64	92.46	101.09	0.12	1.16	0.91
18	8.20	93.08	101.28	0.11	1.16	0.91
19	8.26	93.00	101.26	0.11	1.16	0.91
20	8.35	92.26	100.61	0.11	1.15	0.91
21	8.22	92.38	100.61	0.11	1.16	0.91
22	8.50	91.18	99.67	0.11	1.14	0.91
23	8.53	92.14	100.67	0.11	1.15	0.91
24	8.68	90.59	99.26	0.12	1.13	0.91
25	8.74	91.26	99.99	0.12	1.14	0.91
26	8.74	91.69	100.43	0.12	1.15	0.91
27	8.78	91.82	100.60	0.12	1.15	0.91
Average	8.43	91.71	100.14	0.11	1.15	0.91
Standard Deviation	0.28	0.76	0.68	0.004	0.010	0.003
95% Confidence Limit	0.11	0.29	0.26	0.001	0.004	0.001

Sample: 10T15; Initial Sample Composition = 10 mass% TiO₂ - 90 mass% V₂O₅; Reaction Temperature = 1500°C; Phases Identified = M₂O₃

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	87.92	12.26	100.18	1.17	0.15	0.12
2	88.31	12.50	100.81	1.18	0.16	0.12
3	87.60	12.32	99.92	1.17	0.15	0.12
4	88.07	12.77	100.84	1.18	0.16	0.12
5	87.78	12.55	100.33	1.17	0.16	0.12
6	87.73	12.68	100.41	1.17	0.16	0.12
7	87.53	13.54	101.07	1.17	0.17	0.13
8	87.98	13.82	101.80	1.17	0.17	0.13
9	86.83	13.74	100.56	1.16	0.17	0.13
10	87.68	13.68	101.36	1.17	0.17	0.13
11	86.55	13.69	100.23	1.15	0.17	0.13
12	87.11	14.26	101.37	1.16	0.18	0.13
13	86.89	14.57	101.46	1.16	0.18	0.14
14	86.50	14.42	100.92	1.15	0.18	0.14
15	86.42	14.65	101.08	1.15	0.18	0.14
16	87.15	14.47	101.62	1.16	0.18	0.13
17	86.73	14.18	100.90	1.16	0.18	0.13
18	86.37	14.40	100.77	1.15	0.18	0.14
19	86.16	14.74	100.90	1.15	0.18	0.14
20	86.43	14.71	101.13	1.15	0.18	0.14
21	85.95	15.24	101.19	1.15	0.19	0.14
22	85.95	15.21	101.15	1.15	0.19	0.14
23	85.85	15.76	101.61	1.15	0.20	0.15
24	85.51	15.56	101.07	1.14	0.19	0.15
25	85.64	15.73	101.37	1.14	0.20	0.15
26	84.05	15.65	99.70	1.12	0.20	0.15
27	85.72	15.96	101.68	1.14	0.20	0.15
28	85.06	16.11	101.17	1.14	0.20	0.15
29	85.61	16.23	101.84	1.14	0.20	0.15
30	84.93	16.21	101.14	1.13	0.20	0.15
31	84.56	16.04	100.60	1.13	0.20	0.15
32	84.63	16.12	100.76	1.13	0.20	0.15
33	84.52	16.64	101.16	1.13	0.21	0.16
34	83.87	16.38	100.26	1.12	0.21	0.15
35	82.49	16.41	98.90	1.10	0.21	0.16
36	84.57	16.97	101.54	1.13	0.21	0.16
37	84.06	17.02	101.09	1.12	0.21	0.16
38	83.97	17.26	101.23	1.12	0.22	0.16
39	84.24	16.99	101.23	1.12	0.21	0.16
40	84.06	17.41	101.47	1.12	0.22	0.16

41	83.31	17.28	100.60	1.11	0.22	0.16
42	83.92	17.52	101.45	1.12	0.22	0.16
43	82.89	17.55	100.44	1.11	0.22	0.17
44	81.79	17.30	99.09	1.09	0.22	0.17
45	83.76	17.69	101.45	1.12	0.22	0.17
46	83.69	17.70	101.39	1.12	0.22	0.17
47	83.60	17.78	101.38	1.12	0.22	0.17
48	83.57	17.87	101.44	1.12	0.22	0.17
49	83.45	18.01	101.46	1.11	0.23	0.17
50	81.56	16.78	98.34	1.09	0.21	0.16
51	83.31	17.40	100.71	1.11	0.22	0.16
52	83.83	17.59	101.42	1.12	0.22	0.16
53	83.81	17.65	101.45	1.12	0.22	0.16
54	82.94	17.23	100.17	1.11	0.22	0.16
Average	85.27	15.63	100.90	1.14	0.20	0.15
Standard Deviation	1.78	1.72	0.72	0.02	0.02	0.02
95% Confidence Limit	0.47	0.46	0.19	0.01	0.01	0.004

Sample: 30T15; Initial Sample Composition = 30 mass% TiO₂ - 70 mass% V₂O₅; Reaction Temperature = 1500°C; Phases Identified = M₂O₃ and M₃O₅

M₃O₅-Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	70.08	31.02	101.10	0.94	0.39	0.29
2	65.12	35.53	100.65	0.87	0.44	0.34
3	70.49	30.79	101.27	0.94	0.39	0.29
4	64.89	35.83	100.73	0.87	0.45	0.34
5	62.71	37.70	100.40	0.84	0.47	0.36
6	60.81	39.63	100.44	0.81	0.50	0.38
7	61.39	39.12	100.50	0.82	0.49	0.37
8	60.94	39.95	100.88	0.81	0.50	0.38
9	60.19	39.91	100.09	0.80	0.50	0.38
10	61.20	39.80	101.00	0.82	0.50	0.38
11	61.07	39.79	100.86	0.81	0.50	0.38
12	60.64	39.65	100.28	0.81	0.50	0.38
13	63.18	37.53	100.70	0.84	0.47	0.36
14	60.62	40.33	100.95	0.81	0.50	0.38
15	59.58	39.43	99.00	0.79	0.49	0.38
16	60.17	40.07	100.24	0.80	0.50	0.38
17	59.93	40.59	100.53	0.80	0.51	0.39
18	58.87	41.46	100.34	0.79	0.52	0.40
19	56.67	40.55	97.22	0.76	0.51	0.40
20	58.08	42.73	100.81	0.78	0.53	0.41
21	57.54	42.22	99.76	0.77	0.53	0.41
22	57.50	43.09	100.59	0.77	0.54	0.41
23	57.27	43.65	100.92	0.76	0.55	0.42
24	57.10	43.56	100.66	0.76	0.55	0.42
25	58.10	43.43	101.54	0.78	0.54	0.41
26	57.25	43.99	101.24	0.76	0.55	0.42
27	57.18	44.16	101.34	0.76	0.55	0.42
28	55.57	42.78	98.35	0.74	0.54	0.42
29	55.21	43.63	98.84	0.74	0.55	0.43
30	55.31	45.10	100.41	0.74	0.56	0.43
31	56.62	43.64	100.26	0.76	0.55	0.42
32	56.35	44.38	100.73	0.75	0.56	0.42
33	56.80	44.23	101.03	0.76	0.55	0.42
34	55.46	45.45	100.91	0.74	0.57	0.43
35	56.35	45.19	101.54	0.75	0.57	0.43
36	57.01	44.10	101.11	0.76	0.55	0.42
37	56.43	44.74	101.17	0.75	0.56	0.43
38	57.06	43.87	100.93	0.76	0.55	0.42
39	55.83	43.28	99.11	0.74	0.54	0.42

University of Pretoria etd – Coetsee T 1998

40	57.01	43.23	100.25	0.76	0.54	0.42
41	57.44	43.64	101.08	0.77	0.55	0.42
42	56.80	43.55	100.34	0.76	0.55	0.42
43	58.04	43.20	101.23	0.77	0.54	0.41
44	58.32	43.18	101.49	0.78	0.54	0.41
45	58.58	42.65	101.23	0.78	0.53	0.41
46	59.62	42.12	101.74	0.80	0.53	0.40
47	59.55	41.66	101.20	0.79	0.52	0.40
48	59.76	41.16	100.92	0.80	0.52	0.39
49	59.61	41.10	100.71	0.80	0.51	0.39
50	58.99	41.97	100.96	0.79	0.53	0.40
51	59.06	42.12	101.18	0.79	0.53	0.40
52	55.19	42.84	98.03	0.74	0.54	0.42
53	56.81	44.08	100.89	0.76	0.55	0.42
54	50.66	39.66	90.32	0.68	0.50	0.42
55	57.16	44.17	101.33	0.76	0.55	0.42
56	56.93	44.15	101.08	0.76	0.55	0.42
57	50.20	51.05	101.26	0.67	0.64	0.49
58	51.83	48.57	100.40	0.69	0.61	0.47
59	51.23	49.77	101.00	0.68	0.62	0.48
60	56.56	43.62	100.18	0.75	0.55	0.42
61	57.56	43.93	101.49	0.77	0.55	0.42
62	58.03	43.11	101.14	0.77	0.54	0.41
63	58.27	43.04	101.31	0.78	0.54	0.41
64	56.14	44.01	100.15	0.75	0.55	0.42
65	53.52	46.96	100.48	0.71	0.59	0.45
66	53.40	47.57	100.98	0.71	0.60	0.46
67	57.33	44.34	101.67	0.77	0.55	0.42
68	57.66	43.94	101.60	0.77	0.55	0.42
69	57.37	43.74	101.11	0.77	0.55	0.42
70	57.23	43.91	101.14	0.76	0.55	0.42
71	57.05	43.84	100.88	0.76	0.55	0.42
72	60.68	39.29	99.97	0.81	0.49	0.38
73	61.00	39.88	100.89	0.81	0.50	0.38
74	67.50	33.76	101.27	0.90	0.42	0.32
75	70.03	30.75	100.78	0.93	0.38	0.29
76	67.13	33.55	100.67	0.90	0.42	0.32
77	57.35	42.58	99.93	0.77	0.53	0.41
78	57.21	42.99	100.20	0.76	0.54	0.41
79	57.55	43.12	100.67	0.77	0.54	0.41
80	57.84	42.40	100.23	0.77	0.53	0.41
81	61.64	38.36	100.00	0.82	0.48	0.37
82	63.54	36.46	100.00	0.85	0.46	0.35
Average	58.62	41.89	100.51	0.78	0.52	0.40

Standard Deviation	3.85	3.74	1.39	0.05	0.05	0.04
95% Confidence Limit	0.83	0.81	0.30	0.01	0.01	0.01

Italic = SEM-EDS Analyses

M₂O₃-Phase

Analysis No.	Mass% V₂O₃	Mass% TiO₂	Total	mol V	mol Ti	Mole fraction Ti
<i>1</i>	<i>82.53</i>	<i>17.47</i>	<i>101.10</i>	<i>1.10</i>	<i>0.22</i>	<i>0.17</i>
<i>2</i>	<i>82.02</i>	<i>17.98</i>	<i>100.65</i>	<i>1.09</i>	<i>0.23</i>	<i>0.17</i>
<i>3</i>	<i>82.14</i>	<i>17.86</i>	<i>101.27</i>	<i>1.10</i>	<i>0.22</i>	<i>0.17</i>
Average	82.23	17.77	100.00	1.10	0.22	0.17
Standard Deviation	0.27	0.27		0.004	0.003	0.003
95% Confidence Limit	0.30	0.33		0.004	0.004	0.003

Italic = SEM-EDS Analyses

Sample: 50T15; Initial Sample Composition = 50 mass% TiO₂ - 50 mass% V₂O₅; Reaction Temperature = 1500°C; Phases Identified = M₃O₅ and M₄O₇

M₃O₅-Phase:

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	58.99	42.01	101.00	0.79	0.53	0.40
2	59.55	41.74	101.29	0.79	0.52	0.40
3	58.71	41.63	100.34	0.78	0.52	0.40
4	58.54	41.91	100.45	0.78	0.52	0.40
5	56.57	44.11	100.67	0.75	0.55	0.42
6	56.38	44.54	100.92	0.75	0.56	0.43
7	54.40	46.47	100.87	0.73	0.58	0.44
8	58.29	42.16	100.45	0.78	0.53	0.40
9	58.14	42.87	101.00	0.78	0.54	0.41
10	57.54	42.87	100.41	0.77	0.54	0.41
11	57.44	43.01	100.45	0.77	0.54	0.41
12	56.97	43.51	100.48	0.76	0.54	0.42
13	56.97	43.49	100.46	0.76	0.54	0.42
14	56.82	43.78	100.60	0.76	0.55	0.42
15	56.81	43.58	100.39	0.76	0.55	0.42
16	56.71	44.07	100.78	0.76	0.55	0.42
17	56.58	44.32	100.90	0.76	0.55	0.42
18	57.13	44.19	101.33	0.76	0.55	0.42
19	55.98	43.81	99.79	0.75	0.55	0.42
20	54.36	43.39	97.75	0.73	0.54	0.43
Average	57.14	43.37	100.52	0.76	0.54	0.42
Standard Deviation	1.35	1.17	0.74	0.02	0.01	0.01
95% Confidence Limit	0.59	0.51	0.33	0.01	0.01	0.01

M₄O₇-Phase:

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	47.49	53.43	100.93	0.63	0.67	0.51
2	47.44	53.24	100.68	0.63	0.67	0.51
3	41.98	58.08	100.07	0.56	0.73	0.56
4	43.56	56.88	100.44	0.58	0.71	0.55
5	42.26	58.27	100.54	0.56	0.73	0.56
6	41.61	58.71	100.32	0.56	0.73	0.57
7	41.18	57.93	99.10	0.55	0.73	0.57
8	44.43	54.79	99.22	0.59	0.69	0.54
9	46.80	54.11	100.91	0.62	0.68	0.52
10	42.07	58.38	100.45	0.56	0.73	0.57
11	46.66	53.84	100.50	0.62	0.67	0.52

University of Pretoria etd – Coetsee T 1998

12	48.33	52.07	100.40	0.64	0.65	0.50
13	47.93	52.95	100.88	0.64	0.66	0.51
14	47.38	53.73	101.11	0.63	0.67	0.52
15	47.02	53.68	100.70	0.63	0.67	0.52
16	45.45	55.10	100.54	0.61	0.69	0.53
17	47.79	53.49	101.28	0.64	0.67	0.51
18	40.06	60.83	100.89	0.53	0.76	0.59
19	40.07	61.12	101.19	0.53	0.76	0.59
20	37.82	63.08	100.90	0.50	0.79	0.61
21	37.94	63.29	101.23	0.51	0.79	0.61
22	37.81	63.37	101.17	0.50	0.79	0.61
Average	43.78	56.83	100.61	0.58	0.71	0.55
Standard Deviation	3.64	3.68	0.57	0.05	0.05	0.04
95% Confidence Limit	1.52	1.54	0.24	0.02	0.02	0.02

Sample: 70T15; Initial Sample Composition = 70 mass% TiO₂ - 30 mass% V₂O₅; Reaction Temperature = 1500°C; Phases Identified = Magneli Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	23.96	77.56	101.52	0.32	0.97	0.75
2	23.78	77.22	101.00	0.32	0.97	0.75
3	23.93	77.05	100.98	0.32	0.96	0.75
4	23.92	77.35	101.27	0.32	0.97	0.75
5	23.81	76.70	100.51	0.32	0.96	0.75
6	23.95	77.31	101.26	0.32	0.97	0.75
7	20.00	80.42	100.41	0.27	1.01	0.79
8	23.86	76.88	100.74	0.32	0.96	0.75
9	23.33	76.61	99.93	0.31	0.96	0.75
10	23.86	77.28	101.15	0.32	0.97	0.75
11	23.78	77.36	101.14	0.32	0.97	0.75
12	24.15	76.98	101.13	0.32	0.96	0.75
13	24.68	76.23	100.90	0.33	0.95	0.74
14	29.58	71.63	101.21	0.39	0.90	0.69
15	24.90	75.84	100.73	0.33	0.95	0.74
16	26.87	74.57	101.43	0.36	0.93	0.72
17	29.60	71.89	101.49	0.40	0.90	0.69
18	29.38	71.59	100.97	0.39	0.90	0.70
19	29.14	71.86	101.01	0.39	0.90	0.70
20	26.03	74.18	100.20	0.35	0.93	0.73
21	29.39	71.58	100.98	0.39	0.90	0.70
22	29.47	71.77	101.24	0.39	0.90	0.70
23	25.13	75.58	100.70	0.34	0.95	0.74
24	29.34	71.12	100.46	0.39	0.89	0.69
25	29.19	71.67	100.86	0.39	0.90	0.70
26	29.24	69.81	99.05	0.39	0.87	0.69
27	29.30	70.02	99.32	0.39	0.88	0.69
28	29.61	69.22	98.83	0.40	0.87	0.69
29	24.67	76.16	100.83	0.33	0.95	0.74
30	24.64	76.19	100.83	0.33	0.95	0.74
31	24.32	76.14	100.46	0.32	0.95	0.75
32	24.35	75.82	100.17	0.32	0.95	0.74
33	24.50	75.87	100.37	0.33	0.95	0.74
34	24.52	76.31	100.84	0.33	0.96	0.74
35	24.25	76.21	100.46	0.32	0.95	0.75
36	24.36	76.24	100.60	0.33	0.95	0.75
37	24.44	76.19	100.63	0.33	0.95	0.75
38	24.44	76.18	100.62	0.33	0.95	0.75
39	23.28	74.87	98.15	0.31	0.94	0.75
40	23.59	75.32	98.92	0.31	0.94	0.75

41	24.18	76.73	100.92	0.32	0.96	0.75
42	24.03	76.73	100.76	0.32	0.96	0.75
43	24.08	77.03	101.11	0.32	0.96	0.75
44	23.93	76.86	100.79	0.32	0.96	0.75
45	24.39	76.49	100.87	0.33	0.96	0.75
46	25.56	75.11	100.67	0.34	0.94	0.73
Average	25.45	75.17	100.62	0.34	0.94	0.73
Standard Deviation	2.40	2.52	0.72	0.03	0.03	0.02
95% Confidence Limit	0.69	0.73	0.21	0.01	0.01	0.01

Sample: 90T15; Initial Sample Composition = 90 mass% TiO₂ - 10 mass% V₂O₅; Reaction Temperature = 1500°C; Phases Identified = Magneli Phase

Analysis No.	Mass% V ₂ O ₃	Mass% TiO ₂	Total	mol V	mol Ti	Mole fraction Ti
1	8.57	91.86	100.44	0.11	1.15	0.91
2	8.51	90.97	99.48	0.11	1.14	0.91
3	8.62	91.14	99.76	0.12	1.14	0.91
4	8.46	91.80	100.26	0.11	1.15	0.91
5	8.49	91.86	100.35	0.11	1.15	0.91
6	8.52	91.88	100.40	0.11	1.15	0.91
7	8.49	91.70	100.19	0.11	1.15	0.91
8	8.48	91.69	100.18	0.11	1.15	0.91
9	8.42	91.25	99.67	0.11	1.14	0.91
10	8.50	91.67	100.16	0.11	1.15	0.91
11	8.44	91.77	100.20	0.11	1.15	0.91
12	8.43	91.35	99.77	0.11	1.14	0.91
13	8.46	91.90	100.36	0.11	1.15	0.91
14	8.44	91.24	99.68	0.11	1.14	0.91
15	8.29	91.21	99.49	0.11	1.14	0.91
16	8.30	91.63	99.93	0.11	1.15	0.91
17	8.40	91.41	99.81	0.11	1.14	0.91
18	8.37	92.28	100.65	0.11	1.15	0.91
19	8.24	91.93	100.17	0.11	1.15	0.91
20	8.36	91.62	99.98	0.11	1.15	0.91
21	8.41	91.59	100.00	0.11	1.15	0.91
22	8.49	91.70	100.19	0.11	1.15	0.91
23	8.26	92.31	100.57	0.11	1.16	0.91
24	8.34	91.47	99.80	0.11	1.14	0.91
25	8.38	92.02	100.41	0.11	1.15	0.91
26	8.23	91.79	100.02	0.11	1.15	0.91
27	8.31	91.82	100.13	0.11	1.15	0.91
28	8.33	92.00	100.33	0.11	1.15	0.91
29	8.28	92.17	100.46	0.11	1.15	0.91
30	8.29	92.04	100.33	0.11	1.15	0.91
31	8.40	91.76	100.16	0.11	1.15	0.91
32	8.32	92.13	100.45	0.11	1.15	0.91
33	8.22	91.49	99.72	0.11	1.15	0.91
34	8.39	92.00	100.39	0.11	1.15	0.91
35	8.27	92.09	100.37	0.11	1.15	0.91
36	8.29	91.72	100.01	0.11	1.15	0.91
37	8.33	91.83	100.16	0.11	1.15	0.91
38	8.21	91.01	99.22	0.11	1.14	0.91
39	8.30	91.92	100.22	0.11	1.15	0.91
40	8.24	92.26	100.50	0.11	1.15	0.91

41	8.30	92.27	100.57	0.11	1.15	0.91
42	8.22	92.34	100.55	0.11	1.16	0.91
43	8.33	92.09	100.42	0.11	1.15	0.91
44	8.11	92.27	100.38	0.11	1.15	0.91
45	8.01	89.10	97.11	0.11	1.12	0.91
46	8.25	92.27	100.52	0.11	1.15	0.91
47	8.37	91.93	100.30	0.11	1.15	0.91
48	8.25	91.60	99.86	0.11	1.15	0.91
49	8.39	91.95	100.35	0.11	1.15	0.91
Average	8.35	91.74	100.09	0.11	1.15	0.91
Standard Deviation	0.12	0.52	0.54	0.0016	0.0065	0.0012
95% Confidence Limit	0.03	0.15	0.15	0.0004	0.0018	0.0003

Sample: 90T16480; Initial Sample Composition = 90 mass% TiO₂ - 10 mass% V₂O₅;
 Reaction Temperature = 1600°C; Phases Identified = Magneli Phase

Analysis No.	Mass% V2O3	Mass% TiO2	Total	mol V	mol Ti	Mole fraction Ti
1	8.58	91.89	100.46	0.11	1.15	0.91
2	8.58	92.16	100.74	0.11	1.15	0.91
3	8.56	92.23	100.79	0.11	1.15	0.91
4	8.75	91.35	100.10	0.12	1.14	0.91
5	8.60	91.38	99.98	0.11	1.14	0.91
6	8.54	91.38	99.93	0.11	1.14	0.91
7	8.53	90.78	99.32	0.11	1.14	0.91
8	8.56	91.56	100.12	0.11	1.15	0.91
9	8.59	91.61	100.21	0.11	1.15	0.91
10	8.59	91.55	100.14	0.11	1.15	0.91
11	8.59	91.76	100.35	0.11	1.15	0.91
12	8.59	91.98	100.57	0.11	1.15	0.91
13	8.48	91.89	100.37	0.11	1.15	0.91
14	8.69	91.42	100.11	0.12	1.14	0.91
15	8.55	91.32	99.87	0.11	1.14	0.91
16	8.51	91.15	99.66	0.11	1.14	0.91
17	8.63	91.66	100.29	0.12	1.15	0.91
18	8.56	91.26	99.82	0.11	1.14	0.91
19	8.66	91.42	100.08	0.12	1.14	0.91
20	8.67	91.51	100.18	0.12	1.15	0.91
21	8.30	91.43	99.72	0.11	1.14	0.91
22	8.14	89.51	97.65	0.11	1.12	0.91
23	8.22	91.54	99.76	0.11	1.15	0.91
24	8.26	92.45	100.71	0.11	1.16	0.91
25	8.39	92.46	100.86	0.11	1.16	0.91
26	8.34	91.36	99.70	0.11	1.14	0.91
27	8.27	91.25	99.51	0.11	1.14	0.91
28	8.23	91.45	99.68	0.11	1.14	0.91
29	8.26	91.48	99.74	0.11	1.14	0.91
30	8.24	91.29	99.53	0.11	1.14	0.91
31	8.22	92.31	100.54	0.11	1.16	0.91
32	8.16	91.99	100.15	0.11	1.15	0.91
33	8.10	90.88	98.98	0.11	1.14	0.91
34	8.29	91.56	99.84	0.11	1.15	0.91
35	8.32	91.84	100.16	0.11	1.15	0.91
36	8.32	92.13	100.45	0.11	1.15	0.91
37	8.56	91.83	100.39	0.11	1.15	0.91
38	8.52	91.71	100.22	0.11	1.15	0.91
39	8.51	91.60	100.11	0.11	1.15	0.91
40	8.57	91.54	100.11	0.11	1.15	0.91

41	8.75	91.21	99.95	0.12	1.14	0.91
Average	8.46	91.56	100.02	0.11	1.15	0.91
Standard Deviation	0.18	0.50	0.55	0.002	0.006	0.002
95% Confidence Limit	0.06	0.15	0.17	0.001	0.002	0.001

Appendix 4: EPMA(EDS) Analyses for V₂O₃ - TiO₂ System

EPMA(EDS) Analyses for V₂O₃ - TiO₂ System

Sample	Time (s)	Peak	Area	Height	Intensity	Count	Rate	Conc. (%)	Conc. (at.%)
10	100	V	111	1.76	111	100	1.11	1.11	1.11
10	100	Ti	111	1.76	111	100	1.11	1.11	1.11
10	100	O	111	1.76	111	100	1.11	1.11	1.11
10	100	Si	111	1.76	111	100	1.11	1.11	1.11
10	100	Al	111	1.76	111	100	1.11	1.11	1.11
10	100	Fe	111	1.76	111	100	1.11	1.11	1.11
10	100	Mg	111	1.76	111	100	1.11	1.11	1.11
10	100	Ca	111	1.76	111	100	1.11	1.11	1.11
10	100	Na	111	1.76	111	100	1.11	1.11	1.11
10	100	K	111	1.76	111	100	1.11	1.11	1.11
10	100	Cr	111	1.76	111	100	1.11	1.11	1.11
10	100	Mn	111	1.76	111	100	1.11	1.11	1.11
10	100	Zn	111	1.76	111	100	1.11	1.11	1.11
10	100	As	111	1.76	111	100	1.11	1.11	1.11
10	100	Se	111	1.76	111	100	1.11	1.11	1.11
10	100	Br	111	1.76	111	100	1.11	1.11	1.11
10	100	I	111	1.76	111	100	1.11	1.11	1.11
10	100	Sr	111	1.76	111	100	1.11	1.11	1.11
10	100	Zr	111	1.76	111	100	1.11	1.11	1.11
10	100	Nb	111	1.76	111	100	1.11	1.11	1.11
10	100	Mo	111	1.76	111	100	1.11	1.11	1.11
10	100	Ag	111	1.76	111	100	1.11	1.11	1.11
10	100	Cd	111	1.76	111	100	1.11	1.11	1.11
10	100	Sb	111	1.76	111	100	1.11	1.11	1.11
10	100	Te	111	1.76	111	100	1.11	1.11	1.11
10	100	Ba	111	1.76	111	100	1.11	1.11	1.11
10	100	Pb	111	1.76	111	100	1.11	1.11	1.11
10	100	Bi	111	1.76	111	100	1.11	1.11	1.11
10	100	Po	111	1.76	111	100	1.11	1.11	1.11
10	100	At	111	1.76	111	100	1.11	1.11	1.11
10	100	Rn	111	1.76	111	100	1.11	1.11	1.11
10	100	Ac	111	1.76	111	100	1.11	1.11	1.11
10	100	Th	111	1.76	111	100	1.11	1.11	1.11
10	100	Pa	111	1.76	111	100	1.11	1.11	1.11
10	100	U	111	1.76	111	100	1.11	1.11	1.11
10	100	Np	111	1.76	111	100	1.11	1.11	1.11
10	100	Pu	111	1.76	111	100	1.11	1.11	1.11
10	100	Am	111	1.76	111	100	1.11	1.11	1.11
10	100	Cm	111	1.76	111	100	1.11	1.11	1.11
10	100	Bk	111	1.76	111	100	1.11	1.11	1.11
10	100	Cf	111	1.76	111	100	1.11	1.11	1.11
10	100	Es	111	1.76	111	100	1.11	1.11	1.11
10	100	Fm	111	1.76	111	100	1.11	1.11	1.11
10	100	Mendelevium	111	1.76	111	100	1.11	1.11	1.11
10	100	Nobelium	111	1.76	111	100	1.11	1.11	1.11
10	100	Lanthanum	111	1.76	111	100	1.11	1.11	1.11
10	100	Cerium	111	1.76	111	100	1.11	1.11	1.11
10	100	Praseodymium	111	1.76	111	100	1.11	1.11	1.11
10	100	Neodymium	111	1.76	111	100	1.11	1.11	1.11
10	100	Europium	111	1.76	111	100	1.11	1.11	1.11
10	100	Gadolinium	111	1.76	111	100	1.11	1.11	1.11
10	100	Terbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Erbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Ytterbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Lutetium	111	1.76	111	100	1.11	1.11	1.11
10	100	Scandium	111	1.76	111	100	1.11	1.11	1.11
10	100	Yttrium	111	1.76	111	100	1.11	1.11	1.11
10	100	Strontium	111	1.76	111	100	1.11	1.11	1.11
10	100	Zirconium	111	1.76	111	100	1.11	1.11	1.11
10	100	Niobium	111	1.76	111	100	1.11	1.11	1.11
10	100	Molybdenum	111	1.76	111	100	1.11	1.11	1.11
10	100	Rhenium	111	1.76	111	100	1.11	1.11	1.11
10	100	Ruthenium	111	1.76	111	100	1.11	1.11	1.11
10	100	Rhodium	111	1.76	111	100	1.11	1.11	1.11
10	100	Palladium	111	1.76	111	100	1.11	1.11	1.11
10	100	Silver	111	1.76	111	100	1.11	1.11	1.11
10	100	Cadmium	111	1.76	111	100	1.11	1.11	1.11
10	100	Indium	111	1.76	111	100	1.11	1.11	1.11
10	100	Tin	111	1.76	111	100	1.11	1.11	1.11
10	100	Antimony	111	1.76	111	100	1.11	1.11	1.11
10	100	Tellurium	111	1.76	111	100	1.11	1.11	1.11
10	100	Bismuth	111	1.76	111	100	1.11	1.11	1.11
10	100	Polonium	111	1.76	111	100	1.11	1.11	1.11
10	100	Arsenic	111	1.76	111	100	1.11	1.11	1.11
10	100	Selenium	111	1.76	111	100	1.11	1.11	1.11
10	100	Chromium	111	1.76	111	100	1.11	1.11	1.11
10	100	Manganese	111	1.76	111	100	1.11	1.11	1.11
10	100	Iron	111	1.76	111	100	1.11	1.11	1.11
10	100	Cobalt	111	1.76	111	100	1.11	1.11	1.11
10	100	Nickel	111	1.76	111	100	1.11	1.11	1.11
10	100	Copper	111	1.76	111	100	1.11	1.11	1.11
10	100	Zinc	111	1.76	111	100	1.11	1.11	1.11
10	100	Gallium	111	1.76	111	100	1.11	1.11	1.11
10	100	Germanium	111	1.76	111	100	1.11	1.11	1.11
10	100	Arsenic	111	1.76	111	100	1.11	1.11	1.11
10	100	Selenium	111	1.76	111	100	1.11	1.11	1.11
10	100	Bromine	111	1.76	111	100	1.11	1.11	1.11
10	100	Krypton	111	1.76	111	100	1.11	1.11	1.11
10	100	Xenon	111	1.76	111	100	1.11	1.11	1.11
10	100	Radon	111	1.76	111	100	1.11	1.11	1.11
10	100	Francium	111	1.76	111	100	1.11	1.11	1.11
10	100	Radium	111	1.76	111	100	1.11	1.11	1.11
10	100	Actinium	111	1.76	111	100	1.11	1.11	1.11
10	100	Thorium	111	1.76	111	100	1.11	1.11	1.11
10	100	Protactinium	111	1.76	111	100	1.11	1.11	1.11
10	100	Uranium	111	1.76	111	100	1.11	1.11	1.11
10	100	Neptunium	111	1.76	111	100	1.11	1.11	1.11
10	100	Plutonium	111	1.76	111	100	1.11	1.11	1.11
10	100	Americium	111	1.76	111	100	1.11	1.11	1.11
10	100	Curium	111	1.76	111	100	1.11	1.11	1.11
10	100	Berkelium	111	1.76	111	100	1.11	1.11	1.11
10	100	Californium	111	1.76	111	100	1.11	1.11	1.11
10	100	Einsteinium	111	1.76	111	100	1.11	1.11	1.11
10	100	Fermium	111	1.76	111	100	1.11	1.11	1.11
10	100	Mendelevium	111	1.76	111	100	1.11	1.11	1.11
10	100	Nobelium	111	1.76	111	100	1.11	1.11	1.11
10	100	Lanthanum	111	1.76	111	100	1.11	1.11	1.11
10	100	Cerium	111	1.76	111	100	1.11	1.11	1.11
10	100	Praseodymium	111	1.76	111	100	1.11	1.11	1.11
10	100	Neodymium	111	1.76	111	100	1.11	1.11	1.11
10	100	Europium	111	1.76	111	100	1.11	1.11	1.11
10	100	Gadolinium	111	1.76	111	100	1.11	1.11	1.11
10	100	Terbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Erbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Ytterbium	111	1.76	111	100	1.11	1.11	1.11
10	100	Lutetium	111	1.76	111	100	1.11	1.11	1.11
10	100	Scandium	111	1.76	111	100	1.11	1.11	1.11
10	100	Yttrium	111	1.76	111	100	1.11	1.11	1.11
10	100	Strontium	111	1.76	111	100	1.11	1.11	1.11
10	100	Zirconium	111	1.76	111	100	1.11	1.11	1.11
10	100	Niobium	111	1.76	111	100	1.11	1.11	1.11
10	100	Molybdenum	111	1.76	111	100	1.11	1.11	

EPMA(EDS) Analyses for V_2O_3 - TiO_2 System

Initial Composition Mass%		Temperature °C	Phase Identified	Final Composition Mass%																Average Mass%		Standard Deviation Mass%
TiO ₂	V ₂ O ₅			TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂	V ₂ O ₃	TiO ₂
10	90	1400	M ₂ O ₃	10.70	89.30	10.17	89.83	5.98	94.02	8.08	91.92									8.73	91.27	2.16
30	70	1400	M ₃ O ₅	38.87	61.13	38.82	61.18	38.63	61.37	39.03	60.97									38.84	61.16	0.16
30	70	1400	M ₂ O ₃	20.09	79.91	20.01	79.99	19.75	80.25	19.69	80.31									19.89	80.12	0.19
50	50	1400	Magneli	61.61	38.39	60.88	39.12	68.78	31.22											63.76	36.24	4.37
70	30	1400	Magneli	77.65	22.35	73.29	26.71	72.08	27.92											74.34	25.66	2.93
90	10	1400	Magneli	90.61	9.39	90.39	9.61	90.13	9.87											90.38	9.62	0.24
10	90	1500	M ₂ O ₃	10.47	89.53	11.76	88.24	17.55	82.45	19.71	80.29									14.87	85.13	4.46
30	70	1500	M ₃ O ₅	38.36	61.64	36.46	63.54													37.41	62.59	1.34
30	70	1500	M ₂ O ₃	17.47	82.53	17.98	82.02	17.86	82.14											17.77	82.23	0.27
50	50	1500	Magneli	55.72	44.28	63.49	36.51	58.76	41.24											59.32	40.68	3.92
70	30	1500	Magneli	79.01	20.99	78.80	21.20	75.17	24.83	75.64	24.36	75.40	24.60	78.54	21.46	75.45	24.55	71.48	28.52	76.19	23.81	2.54
90	10	1500	Magneli	90.74	9.26	90.59	9.41	90.21	9.79											90.51	9.49	0.27
90	10	1600	Magneli	90.46	9.54	90.74	9.26	90.86	9.14											90.69	9.31	0.20

EPMA Analyses: V_2O_3 - FeO System at 1400, 1500 and 1600 °C

Initial Composition Mass%		Temperature °C	Phase Identified	Final Composition Mol										Average Mol		Standard Deviation Mol	95% Confidence Interval
Fe ₂ O ₃	V ₂ O ₅			Fe	V	Fe	V	Fe	V	Fe	V	Fe	V	Fe	V	Fe	Fe
10	90	1400	M ₃ O ₄	0.472	0.882	0.459	0.894	0.463	0.890					0.465	0.889	0.006	± 0.007
10	90	1400	M ₂ O ₃	0.088	1.250	0.089	1.249	0.095	1.245	0.090	1.248			0.090	1.248	0.003	± 0.003
30	70	1400	M ₃ O ₄	0.466	0.887	0.461	0.893	0.469	0.885	0.463	0.890	0.472	0.883	0.466	0.888	0.004	± 0.004
30	70	1400	M ₂ O ₃	0.096	1.242	0.093	1.245	0.099	1.240					0.096	1.242	0.003	± 0.003
50	50	1400	M ₃ O ₄	0.692	0.673	0.689	0.674	0.675	0.687					0.685	0.678	0.009	± 0.010
70	30	1400	M ₃ O ₄	0.768	0.598	0.772	0.594	0.779	0.587					0.773	0.593	0.006	± 0.006
70	30	1400	Liquid	1.194	0.191	1.186	0.197	1.184	0.199					1.188	0.196	0.005	± 0.006
90	10	1400	Liquid	1.236	0.151	1.235	0.151	1.232	0.153					1.234	0.152	0.002	± 0.002
10	90	1500	M ₃ O ₄	0.472	0.882	0.468	0.886	0.462	0.891	0.451	0.902			0.463	0.890	0.009	± 0.008
10	90	1500	M ₂ O ₃	0.103	1.236	0.103	1.236	0.104	1.234	0.102	1.237			0.103	1.236	0.001	± 0.001
30	70	1500	M ₃ O ₄	0.477	0.878	0.477	0.878	0.468	0.886	0.480	0.874			0.476	0.879	0.005	± 0.005
30	70	1500	M ₂ O ₃	0.110	1.229	0.109	1.230	0.104	1.234					0.108	1.231	0.003	± 0.003
50	50	1500	M ₃ O ₄	0.603	0.757	0.628	0.733	0.608	0.751	0.599	0.761			0.609	0.750	0.013	± 0.013
10	90	1600	M ₃ O ₄	0.477	0.877	0.480	0.874	0.476	0.878					0.478	0.876	0.003	± 0.003
10	90	1600	M ₂ O ₃	0.116	1.224	0.072	1.265	0.120	1.220	0.117	1.222	0.120	1.220	0.109	1.230	0.020	± 0.018
50	50	1600	M ₃ O ₄	0.580	0.778	0.560	0.798	0.521	0.835	0.533	0.823			0.548	0.809	0.027	± 0.026
70	30	1600	M ₃ O ₄	0.633	0.727	0.629	0.731	0.635	0.726					0.632	0.728	0.004	± 0.004
70	30	1600	Liquid	1.235	0.151	1.141	0.240	1.215	0.169					1.197	0.187	0.052	± 0.059