

## Appendix B

Table of values obtained in 336 hours decomposition.

Temperature (°C)	NaOH:ZrSiO <sub>4</sub> (mols)	ZrSiO <sub>4</sub> (g used)	NaOH (g used)	ZrO <sub>2</sub> (% recovered)	Silica (% recovered)	NaOH in solids (%)	NaOH in liquids (%)
600	2:1	36,60	16,15	42,77	0	30,07	69,93
650	2:1	36,75	16,33	42,60	35,89	32,91	67,09
700	2:1	36,66	16,34	50,01	29,24	40,06	59,94
750	2:1	36,65	16,08	55,51	20,53	45,43	54,57
850	2:1	36,61	16,35	90,47	0	96,28	3,72
850	4:1	36,68	32,63	23,83	6,77	43,17	56,83

°C – temperature in degrees Celsius;

g – mass in grams;

% - Percentage in mass basis

## Appendix C

Table of values obtained on fusion at 850 °C using two mols of sodium hydroxide per mol of zircon.

Time (h)	NaOH:ZrSiO <sub>4</sub> (mols)	ZrSiO <sub>4</sub> (g used)	NaOH (g used)	ZrO <sub>2</sub> (% recovered)	Silica (% recovered)	NaOH in solids (%)	NaOH in liquids (%)
1	2:1	36,65	16,36	44,06	22,88	27,47	72,52
2	2:1	36,62	16,37	63,87	19,68	32,91	67,09
4	2:1	36,62	16,29	49,38	27,64	24,73	75,23
24	2:1	36,62	16,25	59,88	29,26	43,89	56,11
336	2:1	36,60	16,39	91,84	0	3,72	96,28

°C – temperature in degrees Celsius;

g – mass in grams;

% - Percentage in mass basis

## Appendix D

Table of values obtained on fusion at 750°C.

Time	NaOH:ZrSiO <sub>4</sub>	ZrSiO <sub>4</sub>	NaOH	ZrO <sub>2</sub>	Silica	NaOH in solids	NaOH in liquids
(h)	(mols)	(g used)	(g used)	(% recovered)	(% recovered)	(%)	(%)
2	2:1	36,62	16,33	38,63	35,49	9,48	90,52
4	2:1	36,63	16,29	38,49	23,63	10,68	89,32
336	2:1	36,60	16,15	54,94	19,11	32,91	67,09
2	4:1	36,61	32,28	62,02	64,41	13,61	86,39
4	4:1	36,63	32,33	73,04	44,31	8,8	91,20

°C – temperature in degrees Celsius;

g – mass in grams;

% - Percentage in mass basis

## Appendix E

Table of values of relative mass in the decomposed product.

Time (h)	Na <sub>2</sub> ZrO <sub>3</sub>	Na <sub>2</sub> ZrSiO <sub>5</sub>	ZrSiO <sub>4</sub>
1	0.26	0.23	0.51
2	0.21	0.41	0.39
4	0.30	0.19	0.50
24	0.31	0.30	0.40
336	0.03	0.87	0.10

## Appendix F

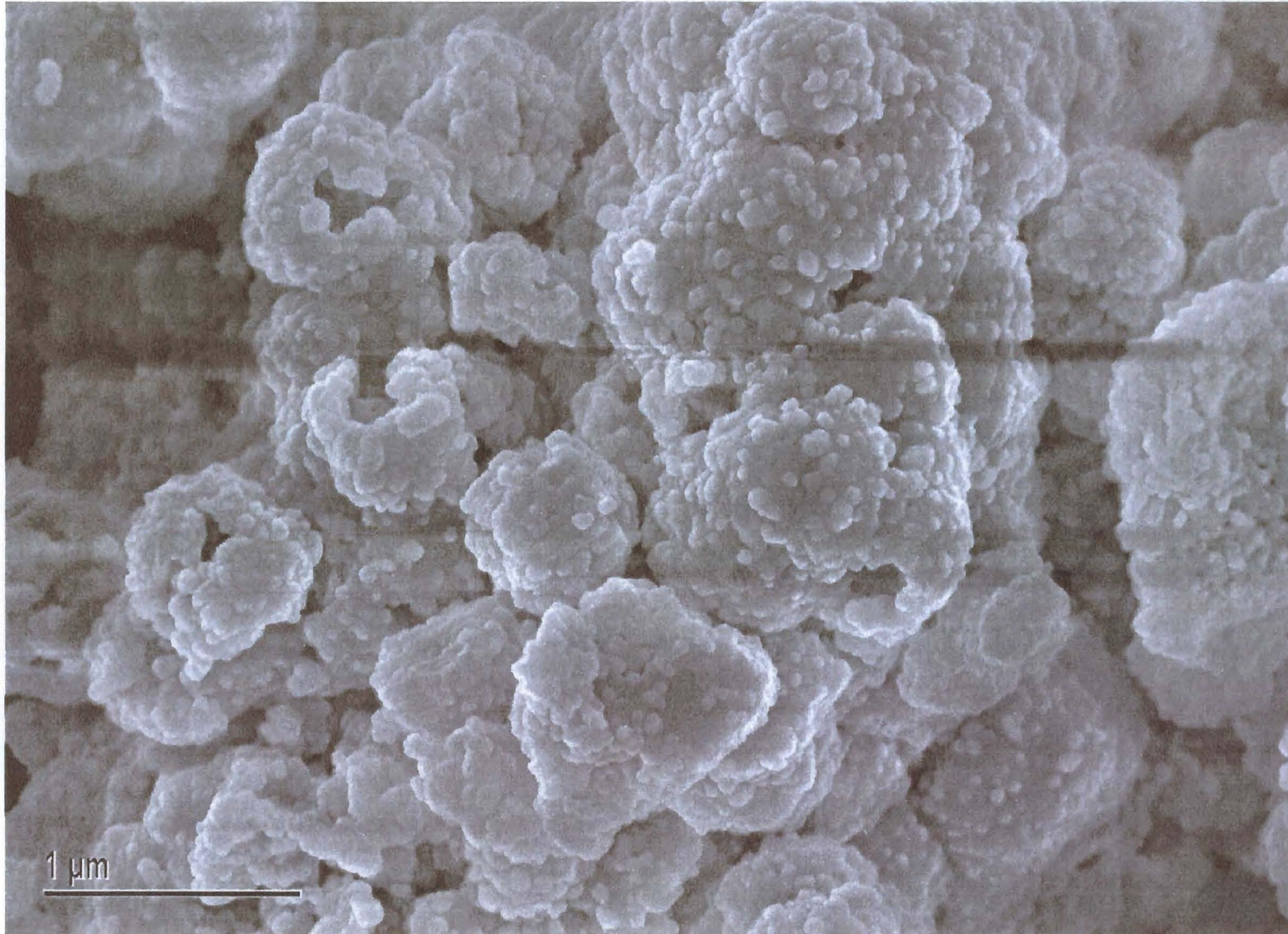
Table of values obtained on fusion of a mol of zircon with four mols of sodium hydroxide at 850 °C (direct synthesis).

Time (h)	Temperature (°C)	ZrSiO <sub>4</sub> (g used)	NaOH (g used)	ZrO <sub>2</sub> (% recovered)	Silica (% recovered)	NaOH in solids (%)	NaOH in liquids (%)
4	850	36,61	32,39	69,77	61,34	6,35	93,65
8	850	36,62	32,47	79,43	59,47	7,69	92,31

°C – temperature in degrees Celsius;

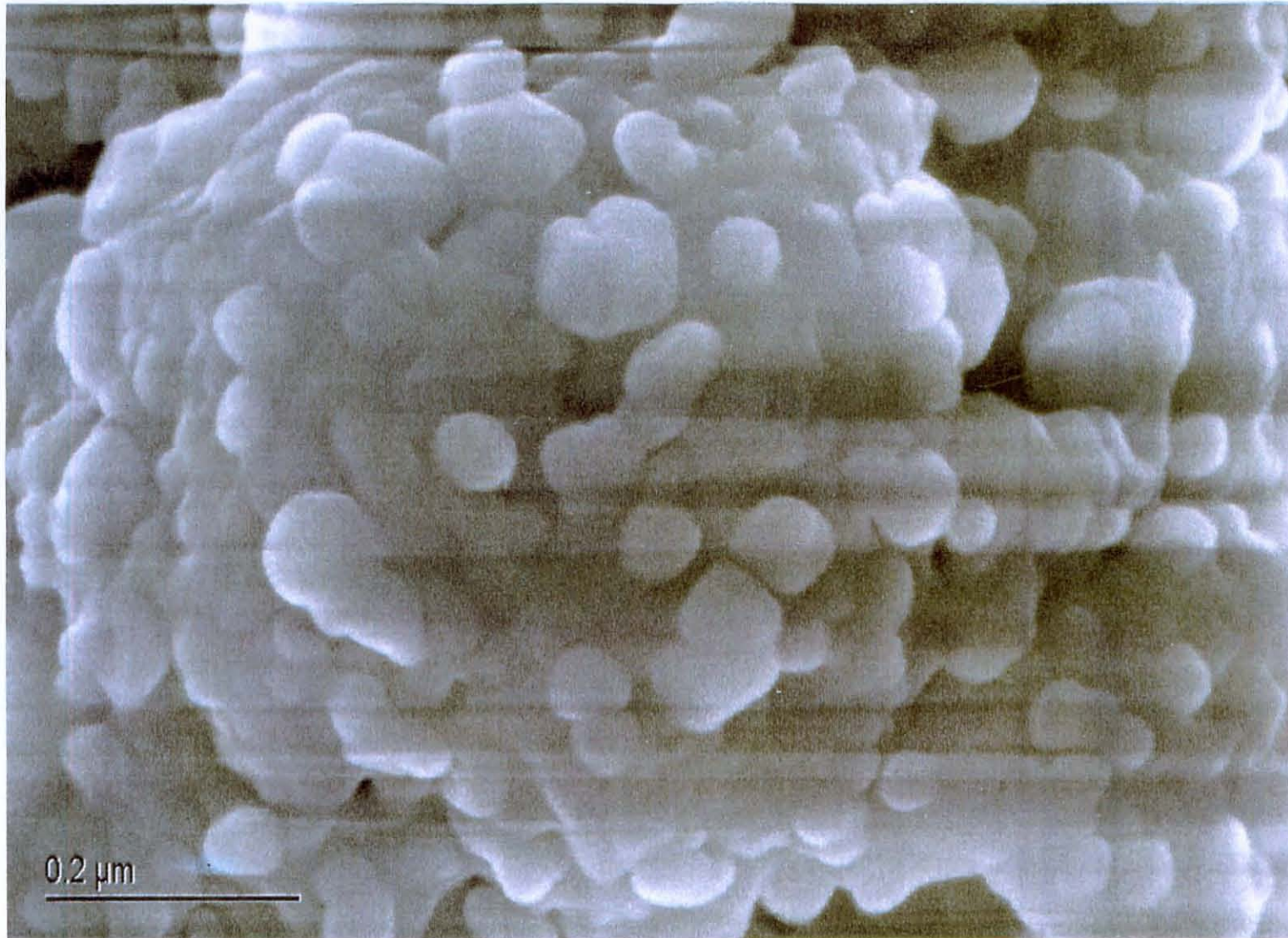
g – mass in grams;

% - Percentage in mass basis



Appendix G  
Microphotograph of zirconia produced by direct route





Appendix G  
Microphotograph of zirconia produced by direct route