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ศูนย์วิทยทรัพยากร
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ภาคผนวก

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวก

43-0303 Wavelength= 1.54056

(Pb0.6875Ca0.3125)TiO3

Lead Calcium Titanium Oxide

Rad.: CuKa λ: 1.5418 Filter: Graph Monod-sp: Diffractometer

Cut off: 15.0 Int.: Diffract. I/Icor.:

Ref: Martin, K., McCarthy, G., North Dakota State University, Fargo, North Dakota, USA, ICDD Grant-in-Aid, (1991)

Sys: Tetragonal S.G.: P4/*** (123)

a: 3.8885(3) b: c: 4.0292(8) A: C: 1.0362

α: β: γ: Z: 1 mp:

Ref: Ibid.

Dx: 6.849 Dm: SS/FOM$_{30}$=73(.0132, 30)

Peak height intensity. Synthesized, contributed and indexed by E. Goo (University of Southern California, USA) via W. Wong-Ng (NIST). See J. Am. Ceram. Soc., 71 454 (1988). Broad peaks [FWHM of (111) = 0.31° at 3°]. Average relative standard deviation in intensity of the eight strongest reflections for three specimen mounts 1.9% Perovskite, Ca O3 Ti type. Silicon used as an internal stand. PSC: tP5. Mwt: 251.29. Volume[CD]: 60.92.

2θ	Int	h	k	l
22.044	11	0	0	1
22.854	31	1	0	0
31.959	100	1	0	1
32.533	59	1	1	0
39.654	38	1	1	1
44.949*	6	0	0	2
46.683	31	2	0	0
51.016*	4	1	0	2
52.222*	6	2	0	1
52.587*	6	2	1	0
56.591	10	1	1	2
57.691	31	2	1	1
66.815*	8	2	0	2
68.174*	6	2	2	0
71.632*	3	2	1	2
72.627*	1	2	2	1
72.946*	1	3	0	0
74.697*	2	1	0	3
77.301*	6	3	0	1
77.592*	7	3	1	0
79.320	<1	1	1	3
81.865*	4	3	1	1
85.422*	3	2	2	2
88.377	<1	2	0	3
89.920	<1	3	0	2
91.201	<1	3	2	0
92.887*	2	2	1	3
94.449*	3	3	1	2
95.393*	4	3	2	1

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04-0802 Wavelength= 1.54056

Pt

Platinum

Platinum, syn

Rad.: CuKaλ: 1.5405 Filter: Ni BetaM d-sp:

Cut off: Int.: Diffract. I/Icor.:

Ref: Swanson, Tatge, Natl. Bur. Stand. (U.S.), Circ. 539, I, 31 (1953)

Sys: Cubic S.G.: Fm3m (225)

a: 3.9231 b: c: A: C:

α β: γ: Z: 4 mp:

Ref: Ibid.

Dx: 21.461 Dm: 21.370 SS/FOM$_9$=143(.0070, 9)

Color: Light gray metallic

Pattern taken at 26 C. CAS #: 7440-06-4. Sample prepared at NBS, Gaithersburg, MD, USA, and estimated to be more than 99.99% pure. Opaque mineral optical data on specimen from unspecified locality: RR2Re=70.3, Disp.=16, VHN50=122-129, Color values=.318, .324, 70.7, Ref: IMA Commission on Ore Microscopy QDF. Cu type. Gold group, gold subgroup. PSC: cF4. Mwt: 195.09. Volume[CD]: 60.38.

2θ	Int	h	k	l
39.763	100	1	1	1
46.243	53	2	0	0
67.454	31	2	2	0
81.286	33	3	1	1
85.712	12	2	2	2
103.508	6	4	0	0
117.711	22	3	3	1
122.807	20	4	2	0
148.262	29	4	2	2

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40-0932

Si

Silicon

Rad.: CuKa λ: 1.5418 Filter: Ni Beta□M d-sp: Debye-Sheerre

Cut off: Int.: Estimation I/Icor.:

Ref: Zhao, Y.-X et al., Solid State Commun., 59, 679 (1986)

Sys.: Tetragonal S.G.: P422 (89)

a: 7.482(5) b: c: 3.856(5) A: C: 0.5154

α β γ: Z: 10.8 mp:

Ref: Ibid.

Dx: 2.333 Dm: SS/FOM g=2(.092, 39)

Rapid pressure release after being held at 12.0 GPa for one hour. Phase IX. PSC: tP10.80. Mwt: 28.09. Volume[CD]: 215.86.

Wavelength 1.5418

2θ	Int	h	k	l
25.725	40	1	0	1
33.205	100	2	0	1
35.293	40	2	1	1
36.010	40	3	0	0
43.619	80	3	2	0
51.828	50	3	3	0
57.490	20	3	3	1
68.429	10	5	1	1

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39-1425

SiO2

Silicon Oxide

Cristobalite, syn

Rad.: CuKaλ: 1.5405 Filter: Graph Monod-sp: Diffractometer

Cut off: 17.7 Int.: Diffract. I/Icor.:

Ref: Wong-Ng, W., McMurdie, H., Paretzkin, B., Hubbard, C., Dragoo, A., NBS, Gaithersburg, MD, USA, ICDD Grant-in-Aid (1988)

Sys.: Tetragonal S.G.: $P4_12_12$ (92)

a: 4.9732(4) b: c: 6.9236(8) A: C: 1.3922

α: β: γ: Z: 4 mp:

Ref: Wong-Ng, W. et al., Powder Diffraction, 3, 253 (1988)

Dx: 2.331 Dm: SS/FOM$_{30}$=84(.0100, 36)

Color: Colorless

The temperature was - 25 C. Cristobalite was prepared by the Trans Tech Company using Berkeley 5 micron MIN-U-SIL(R). A two kilogram sample was heated at 1600 C for eight hours. The sample was then air quenched, treated with 6N HCl and then jet-milled. The +325 mesh fraction was then removed by sieving. There are a number of other forms of Si O2. The structure was determined by Peacor (1). O2 Si type. Tungsten, fluorophlogopite used as an internal stands. PSC: tP12. To replace 11-695 and validated by calculated pattern. Mwt: 60.08. Volume[CD]: 171.24.

Wavelength 1.5405981

2θ	Int	h	k	l	2θ	Int	h	k	l
21.985	100	1	0	1	79.394*	1	4	1	0
25.320	<1	1	1	0	81.150*	1	3	2	3
28.439*	8	1	1	1	81.862	<1	2	1	5
31.462*	9	1	0	2	82.884	<1	3	1	4
36.080	13	2	0	0	83.620	<1	3	3	1
36.381*	4	1	1	2	87.840	<1	3	3	2
38.410	<1	2	0	1	89.120*	1	4	2	1
42.656*	2	2	1	1	89.280*	1	1	1	6
44.843*	2	2	0	2					
47.063*	4	1	1	3					
48.611*	4	2	1	2					
51.940	<1	2	2	0					
52.869	<1	0	0	4					
54.156*	2	2	0	3					
56.220	<1	1	0	4					
57.084*	3	3	0	1					
57.507*	1	2	1	3					
58.680	<1	3	1	0					
58.870	<1	2	2	2					
60.304*	2	3	1	1					
62.019*	2	3	0	2					
65.102*	2	3	1	2					
65.650*	1	2	0	4					
66.813*	1	2	2	3					
68.676*	2	2	1	4					
69.420	<1	3	2	1					
69.790	<1	3	0	3					
70.542*	1	1	0	5					
72.690*	1	3	1	3					
73.908*	1	3	2	2					
77.312	<1	2	2	4					
78.020	<1	4	0	1					

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18-0979 Wavelength= 1.54056

PtTi3

Platinum Titanium

Rad. CuKalλ: 1.5405 Filter: Ni Beta□M d-sp:

Cut off: Int.: Diffract. I/Icor.: 2.70

Ref: Natl. Bur. Stand. (U.S.) Monogr. 25, 6, 33 (1968)

Sys: Cubic S.G.: Pm3n (223)

a: 5.0327 b: c: A: C:

α: β: γ: Z: 2 mp:

Ref: Ibid.

Dx: 8.827 Dm: SS/FOM$_{24}$=72(.0123, 27)

Color: Dark gray metallic

Pattern at 25 C. Sample prepared by R.M. Waterstrat by arc melting. Major impurities: 0.001-0.01% each of Al,Cr,Cu, and Si; 0.01-0.1% each of Fe and Pd. Cr3 Si type. Tungsten used as an internal stand. PSC: cP8. To replace 18-979. Mwt: 338.79. Volume[CD]: 127.47.

2θ	Int	h	k	l
24.999	90	1	1	0
35.655	45	2	0	0
40.040	25	2	1	0
44.028	100	2	1	1
51.314	12	2	2	0
57.913	16	3	1	0
64.024	<1	2	2	2
67.005*	4	3	2	0
69.883	40	3	2	1
75.506*	8	4	0	0
80.996*	8	4	1	1
86.394	10	4	2	0
89.090*	4	4	2	1
91.770	10	3	3	2
97.161*	2	4	2	2
102.585	8	5	1	0
111.011	4	5	2	0
113.934	12	5	2	1
119.987	6	4	4	0
126.367	6	5	3	0
133.329	8	6	0	0
137.171	<1	6	1	0
141.295	16	6	1	1
150.957	2	6	2	0

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17-0683 Wavelength= 1.54056

Pt2Si

Platinum Silicide

Rad.: CuKa λ: 1.5418 Filter: Ni Beta□M d-sp:

Cut off: Int.: Estimation I/Icor.:

Ref: Gohle, Schubert, Z. Metallkd., 55, 503 (1964)

Sys: Tetragonal S.G.: I4/mmm (139)

a: 3.933 b: c: 5.910 A: C: 1.5027

α: β: γ: Z: 2 mp:

Ref: Ibid.

Dx: 15.195 Dm: SS/FOM$_{16}$=11(.091, 16)

H2 Th type. PSC: tI6. Mwt: 418.27. Volume[CD]: 91.42

2θ	Int	h	k	l
27.165*	2	1	0	1
30.136	35	0	0	2
32.124	90	1	1	0
44.692	100	1	1	2
45.740	35	2	0	0
51.814*	2	1	0	3
54.405*	2	2	1	1
56.177	35	2	0	2
62.726	10	0	0	4
67.360	20	2	2	0
71.777*	2	2	1	3
72.286	25	1	1	4
74.130*	2	3	0	1
75.583	25	2	2	2
76.661	25	3	1	0
81.419	25	2	0	4

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34-0903 Wavelength= 1.54056

Pt12Si5

Platinum Silicide

Rad.: CrKa λ: 2.2909 Filter: d-sp: Debye-Sheerre

Cut off: Int.: Estimation I/Icor:

Ref: Ram, R., Bhan, Z. Metallkd., 69, 524 (1978)

Sys: Tetragonal S.G.: I4/m (87)

a: 9.607 b: c: 5.542 A: C: 0.5769

α: β: γ: Z: 2 mp:

Ref: Ibid

Dx: 16.112 Dm: SS/FOM$_{25}$=5(.085, 52)

O assigned because of inadequate range of intensities. Pattern at 902 C. Stoichiometric elemental mixtures were melted in argon arc furnace, heat treated and quenched. Higher angle intensities enhanced by absorption. Ni12 P5 type. PSC: tI34. Mwt: 2481.51. Volume[CD]: 511.50.

2θ	Int	h	k	l	2θ	Int	h	k	l
34.994	60	1	1	2	73.700	20	2	5	3
37.425	100	2	3	1	75.197	60	3	7	0
39.745	60	3	3	0	75.351	80	1	3	4
42.008	100	4	2	0	78.258	100	7	1	2
42.008	100	1	4	1					
44.186	100	1	3	2					
48.238	40	5	1	0					
50.225	60	5	0	1					
52.107	60	3	3	2					
53.931	80	2	5	1					
53.931	80	2	4	2					
55.699	20	3	5	0					
57.482	20	6	0	0					
57.482	20	3	0	3					
59.252	20	1	5	2					
60.897	40	2	6	0					
60.897	40	6	1	1					
64.231	40	5	4	1					
64.231	40	4	4	2					
65.874	80	3	5	2					
67.465	60	6	3	1					
67.465	60	6	0	2					
69.008	80	1	7	0					
70.563	60	6	4	0					
70.563	60	7	0	1					
70.612	100	6	2	2					

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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ประวัติผู้เขียนวิทยานิพนธ์

นางสาวนิตยา แก้วแพรก เกิดวันที่ 27 พฤศจิกายน พ.ศ. 2541 ที่จังหวัดสงขลา สำเร็จการศึกษาปริญญาตรีวิทยาศาสตรบัญฑิต ภาควิชาเคมี คณะวิทยาศาสตร์ มหาวิทยาลัยสงขลา-นครินทร์ เมื่อปีการศึกษา 2537 เข้าศึกษาต่อในหลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาเทคโนโลยีเซรามิก จุฬาลงกรณ์มหาวิทยาลัย ในปีการศึกษา 2542 สำเร็จในภาคการศึกษาต้น ปีการศึกษา 2545

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย