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Apêndice

Cartas cristalográficas utilizadas para as análises quantitativas

2223

Name and formula

Reference code:	**00-041-0374**
PDF index name:	**Calcium Copper Strontium Bismuth Lead Oxide**
Empirical formula:	**$Bi_{1.9}Ca_{1.98}Cu_3O_{10}Pb_{0.13}Sr_{1.98}$**
Chemical formula:	**$Bi_{1.9}Pb_{0.13}Sr_{1.98}Ca_{1.98}Cu_3O_{10}$**

Crystallographic parameters

Crystal system:	**Orthorhombic**
Space group:	**Bbmb**
Space group number:	**66**
a (Å):	5,4101
b (Å):	5,4101
c (Å):	37,1293
Alpha (°):	90,0000
Beta (°):	90,0000
Gamma (°):	90,0000
Volume of cell (10^6 pm^3):	1086,74
RIR:	**-**

Subfiles and Quality

Subfiles:	**Inorganic** **Corrosion** **Superconducting Material**
Quality:	**Star (S)**

Comments

Color:	**Black**
General comments:	**Reflections calculated from cell parameters given in reference.** **Pattern is from highly oriented sample, plane parallel to 001.**

References

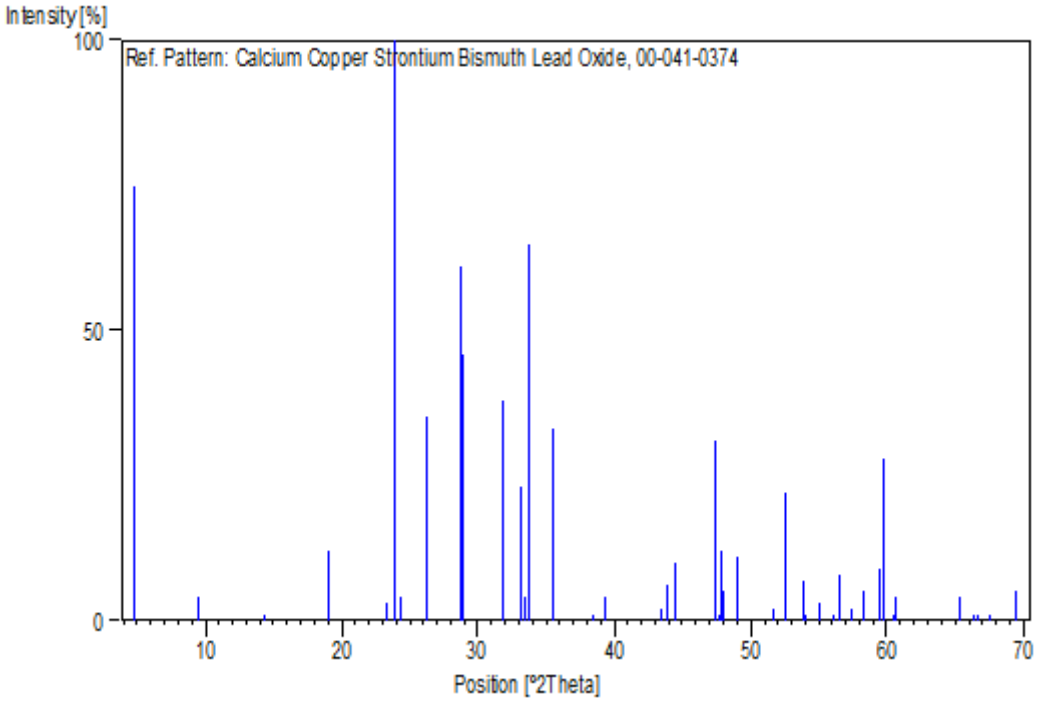
Primary reference:	**Nakahigashi, K., Sasakura, H., University of Osaka Prefecture, Osaka, Japan., *Private Communication*, (1990)**
Contributed:	**Nakahigashi, K., Japan., *Private Communication***

Sample preparation: **Sasakura, H., Minamigawa, S., Nakahigashi, K., Kogachi, M., Nakanishi, S., Fukuoka, N., Yoshikawa, M., Noguchi, S., Okuda, K., Yanase, A., *Jpn. J. Appl. Phys. Part 2*, 28, L1163, (1989)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	0	0	2	18,56470	4,756	75,0
2	0	0	4	9,28230	9,520	4,0
3	0	0	6	6,18820	14,301	1,0
4	0	0	8	4,64120	19,107	12,0
5	1	1	1	3,80540	23,357	3,0
6	0	0	10	3,71290	23,948	100,0
7	1	1	3	3,65490	24,334	4,0
8	1	1	5	3,40080	26,183	35,0
9	1	1	7	3,10270	28,750	61,0
10	0	0	12	3,09410	28,832	46,0
11	1	1	9	2,80510	31,877	38,0
12	2	0	0	2,70500	33,090	23,0
13	2	0	2	2,67680	33,449	4,0
14	0	0	14	2,65210	33,770	65,0
15	1	1	11	2,53100	35,438	33,0
16	2	0	8	2,33710	38,489	1,0
17	1	1	13	2,28860	39,337	4,0
18	1	1	15	2,07820	43,512	2,0
19	0	0	18	2,06270	43,856	6,0
20	2	0	12	2,03650	44,450	10,0
21	2	2	0	1,91280	47,495	31,0
22	2	2	2	1,90270	47,763	1,0
23	1	1	17	1,89670	47,923	12,0
24	2	0	14	1,89380	48,001	5,0
25	0	0	20	1,85650	49,029	11,0
26	2	2	8	1,76850	51,643	2,0
27	1	1	19	1,74030	52,543	22,0
28	2	2	10	1,70040	53,874	7,0
29	1	3	3	1,69470	54,070	1,0
30	1	3	5	1,66720	55,037	3,0
31	2	0	18	1,64030	56,018	1,0
32	3	1	7	1,62820	56,471	8,0
33	2	2	12	1,62700	56,517	4,0
34	1	1	21	1,60490	57,367	2,0
35	1	3	9	1,58030	58,345	5,0
36	2	2	14	1,55140	59,540	9,0
37	0	0	24	1,54710	59,722	28,0
38	2	0	20	1,53070	60,428	1,0
39	3	1	11	1,52600	60,634	4,0
40	0	0	26	1,42810	65,284	4,0
41	1	3	15	1,40740	66,367	1,0
42	2	2	18	1,40260	66,624	1,0
43	1	1	25	1,38450	67,611	1,0
44	4	0	0	1,35250	69,436	5,0

Stick Pattern



2212

Name and formula

Reference code: **00-049-0735**

PDF index name: **Calcium Copper Strontium Bismuth Oxide**

Chemical formula: $Bi_2Ca_{0.94}Sr_{2.01}Cu_{1.92}O_{7.87+x}$

Crystallographic parameters

Crystal system: **Orthorhombic**
Space group: **Amaa**
Space group number: **66**

a (Å): 5,4090
b (Å): 5,4070
c (Å): 30,8740
Alpha (°): 90,0000
Beta (°): 90,0000
Gamma (°): 90,0000

Volume of cell (10^6 pm^3): 902,96

RIR: -

Subfiles and Quality

Subfiles: **Inorganic**
Corrosion
Superconducting Material

Quality: **Star (S)**

Comments

Sample preparation: **Prepared by solid state reaction of Bi_2O_3 , $CaCO_3$, $SrCO_3$ and CuO by extensive heatings and grindings with temperatures up to 950 C.**

References

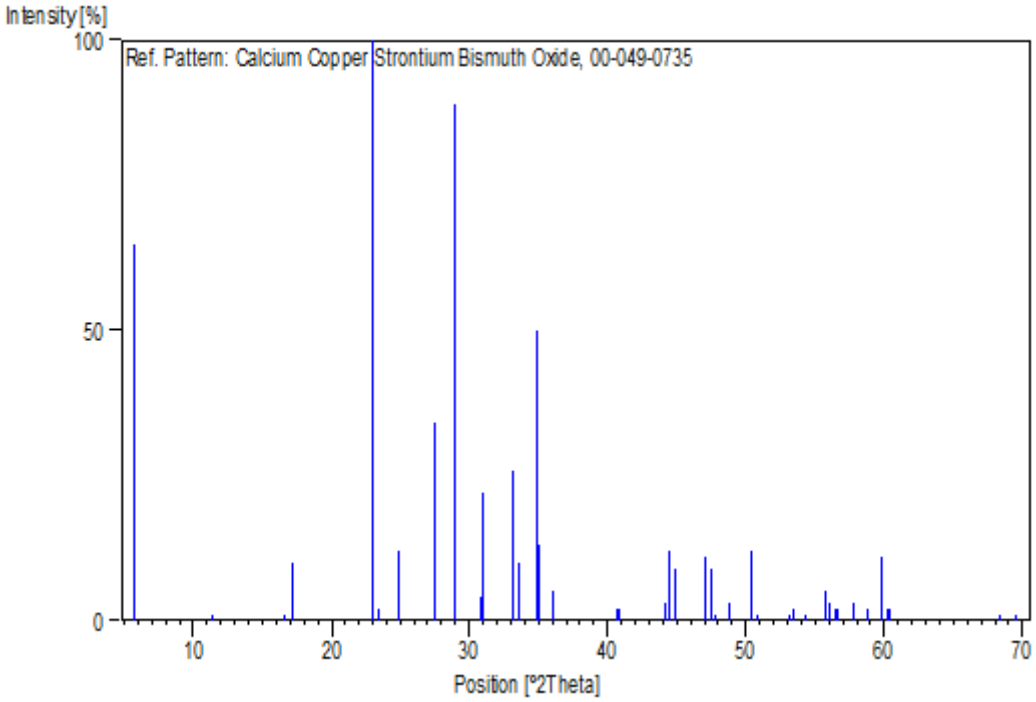
Primary reference: **Idink, H., Gotz, D., Hahn, Th., Woermann, E., Boekholt, M.,** ***Physica C: Superconductivity*****,** 204**, 267, (1993)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	0	0	2	15,41180	5,730	65,0
2	0	0	4	7,71130	11,466	1,0
3	0	1	1	5,32570	16,633	1,0
4	0	0	6	5,14650	17,216	10,0
5	0	0	8	3,85800	23,035	100,0
6	1	1	1	3,79810	23,403	2,0
7	1	1	3	3,58560	24,811	12,0
8	1	1	5	3,25120	27,411	34,0
9	0	0	10	3,08710	28,898	89,0
10	0	1	9	2,90010	30,807	4,0
11	1	1	7	2,88870	30,931	22,0
12	0	2	0	2,70350	33,109	26,0
13	2	0	2	2,66530	33,597	10,0
14	0	0	12	2,57280	34,843	50,0
15	1	1	9	2,55430	35,104	13,0
16	0	1	11	2,49000	36,041	5,0
17	2	0	8	2,21470	40,707	2,0
18	0	0	14	2,20510	40,892	2,0
19	1	2	8	2,05100	44,119	3,0
20	0	2	10	2,03370	44,515	12,0
21	1	1	13	2,01830	44,873	9,0
22	0	0	16	1,92950	47,059	11,0
23	2	2	0	1,91210	47,514	9,0
24	1	2	10	1,90260	47,766	1,0
25	2	0	12	1,86440	48,807	3,0
26	0	2	12	1,86350	48,832	3,0
27	1	1	15	1,81210	50,312	12,0
28	2	2	6	1,79200	50,917	1,0
29	0	1	17	1,72180	53,152	1,0
30	0	0	18	1,71480	53,386	2,0
31	3	1	3	1,68820	54,295	1,0
32	3	1	5	1,64820	55,726	5,0
33	1	1	17	1,64130	55,981	3,0
34	1	2	14	1,62860	56,456	2,0
35	2	2	10	1,62500	56,593	2,0
36	0	3	9	1,59600	57,716	3,0
37	0	2	16	1,56990	58,769	2,0

38	0	0	20	1,54400	59,854	11,0
39	2	2	12	1,53500	60,242	2,0
40	1	3	9	1,53010	60,455	2,0
41	1	1	21	1,37200	68,311	1,0
42	0	4	0	1,35180	69,477	1,0

Stick Pattern



2201

Name and formula

Reference code: **00-043-0027**

PDF index name: **Copper Strontium Bismuth Oxide**

Empirical formula: $Bi_{2.2}CuO_{6.1}Sr_{1.8}$
Chemical formula: $Sr_{1.8}Bi_{2.2}CuO_{6.1}$

Crystallographic parameters

Crystal system: **Monoclinic**
Space group: **C2**
Space group number: **5**

a (Å): 26,8890
b (Å): 5,3840
c (Å): 26,9330
Alpha (°): 90,0000

Beta (°): 113,6700
Gamma (°): 90,0000

Volume of cell (10^6 pm^3): 3571,08

RIR: -

Status, subfiles and quality

Status: Marked as deleted by ICDD
Subfiles: Inorganic
Corrosion
Superconducting Material
Quality: Star (S)

Comments

Deleted by: Deleted by 46-499, has preparation; McMurdie 5/95.

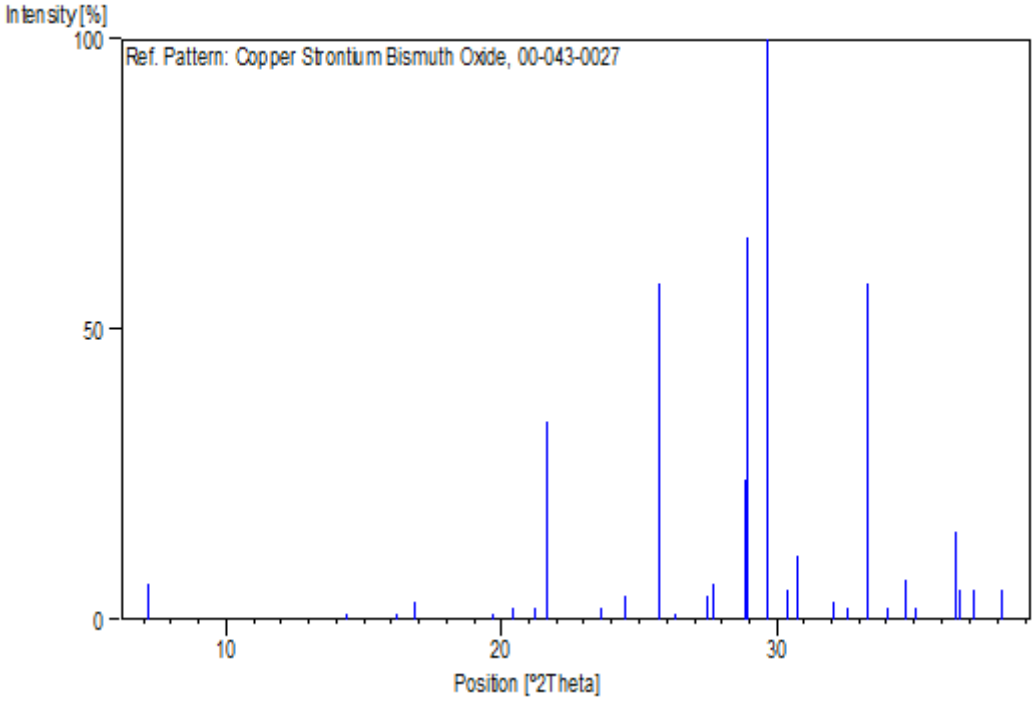
References

Primary reference: Roth, S., Rawn, C., Burton, B., Beech, F., *J. Res. Nat. Inst. Stand. Technol.*, 95, 291, (1990)
Contributed: Wong-Ng, W., Maryland, USA., *Private Communication*, (1991)

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	2	0	0	12,35000	7,152	6,0
2	4	0	0	6,16000	14,367	1,0
3	4	0	1	5,47000	16,191	1,0
4	1	1	0	5,26000	16,842	3,0
5	3	1	0	4,50000	19,713	1,0
6	6	0	-1	4,34800	20,409	2,0
7	1	1	-4	4,18300	21,223	2,0
8	6	0	0	4,10500	21,631	34,0
9	3	1	-5	3,76100	23,637	2,0
10	5	1	-4	3,63200	24,489	4,0
11	5	1	-5	3,45700	25,750	58,0
12	1	1	-6	3,38400	26,315	1,0
13	5	1	-6	3,23900	27,516	4,0
14	8	0	-1	3,22000	27,681	6,0
15	7	1	-4	3,09200	28,852	24,0
16	8	0	0	3,08100	28,957	66,0
17	7	1	-5	3,01300	29,625	100,0
18	7	1	0	2,94270	30,350	5,0
19	2	0	-9	2,93800	30,400	5,0
20	7	1	-6	2,90250	30,780	11,0
21	5	1	4	2,79290	32,020	3,0
22	3	1	6	2,74620	32,580	2,0
23	4	0	-10	2,69240	33,249	58,0
24	6	0	-10	2,63170	34,039	2,0
25	9	1	-5	2,58310	34,700	7,0
26	10	0	-1	2,55600	35,080	2,0
27	10	0	0	2,46230	36,461	15,0
28	4	0	-11	2,44810	36,680	5,0
29	6	0	-11	2,41820	37,150	5,0
30	10	0	1	2,35650	38,159	5,0

Stick Pattern



Ca_2PbO_4

Name and formula

Reference code: **00-046-0334**

PDF index name: **Calcium Lead Oxide**

Empirical formula: **Ca_2O_4Pb**
Chemical formula: **Ca_2PbO_4**

Crystallographic parameters

Crystal system: **Orthorhombic**
Space group: **Pbam**
Space group number: **55**

a (Å): 5,8407
b (Å): 9,7534
c (Å): 3,3820
Alpha (°): 90,0000
Beta (°): 90,0000
Gamma (°): 90,0000

Calculated density (g/cm^3): 6,06
Volume of cell (10^6 pm^3): 192,66

Z: 2,00

RIR: -

Subfiles and Quality

Subfiles: Inorganic
Corrosion
Superconducting Material

Quality: Star (S)

Comments

Color: Yellow

General comments: Average relative standard deviation in intensity of the ten strongest reflections for three specimen mounts = 2.2%.
Unit cell refined on 54 of 69 reflections.
Trace lime (CaO) present in sample.
Validated by a calculated pattern, with structure data from Tromel, M., *Z. Anorg. Allg. Chem.*, 371 237 (1969).

Sample preparation: Sample prepared by firing $CaCO_3$ and PbO in a 2:1 molar ratio, with a slight excess of PbO, for 48 hours at 800 C.

Additional pattern: To replace 24-207.

References

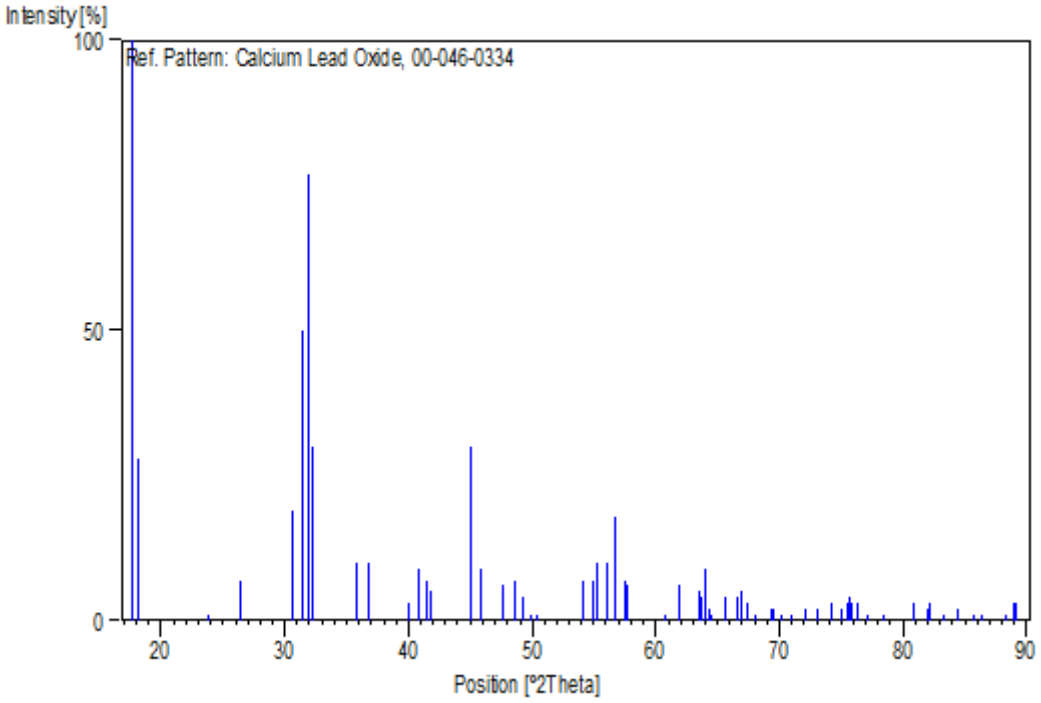
Primary reference: Scheer, M., Grier, D., McCarthy, G., North Dakota State Univ., Fargo, ND, USA., *ICDD Grant-in-Aid*, (1994)

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	1	1	0	5,01100	17,685	100,0
2	0	2	0	4,87800	18,172	28,0
3	1	2	0	3,74400	23,746	1,0
4	0	0	1	3,38200	26,331	7,0
5	2	0	0	2,92000	30,591	19,0
6	1	3	0	2,84100	31,464	50,0
7	1	1	1	2,80300	31,902	77,0
8	0	2	1	2,77900	32,185	30,0
9	2	2	0	2,50500	35,818	10,0
10	0	4	0	2,43800	36,837	10,0
11	1	4	0	2,25000	40,041	3,0
12	2	0	1	2,21100	40,778	9,0
13	1	3	1	2,17500	41,484	7,0
14	2	1	1	2,15600	41,867	5,0
15	2	2	1	2,01300	44,997	30,0
16	0	4	1	1,97800	45,839	9,0
17	3	1	0	1,90930	47,588	6,0
18	2	4	0	1,87200	48,596	7,0
19	1	5	0	1,85040	49,201	4,0
20	2	3	1	1,82830	49,836	1,0
21	3	2	0	1,80820	50,428	1,0
22	0	0	2	1,69110	54,195	7,0
23	3	3	0	1,67020	54,929	7,0

24	3	1	1	1,66270	55,198	10,0
25	2	4	1	1,63760	56,118	10,0
26	1	5	1	1,62370	56,642	18,0
27	1	1	2	1,60230	57,468	7,0
28	0	2	2	1,59790	57,641	6,0
29	3	4	0	1,52180	60,819	1,0
30	3	3	1	1,49770	61,904	6,0
31	0	6	1	1,46490	63,449	4,0
32	2	0	2	1,46330	63,527	5,0
33	4	0	0	1,46020	63,678	4,0
34	1	3	2	1,45300	64,030	9,0
35	2	1	2	1,44730	64,313	2,0
36	4	1	0	1,44400	64,478	1,0
37	2	6	0	1,42050	65,677	4,0
38	2	2	2	1,40150	66,683	4,0
39	4	2	0	1,39870	66,834	5,0
40	0	4	2	1,38950	67,335	3,0
41	3	5	0	1,37800	67,973	1,0
42	1	7	0	1,35530	69,272	2,0
43	1	4	2	1,35210	69,460	2,0
44	4	0	1	1,34040	70,154	1,0
45	4	1	1	1,32780	70,920	1,0
46	2	6	1	1,30960	72,058	2,0
47	4	2	1	1,29260	73,158	2,0
48	3	5	1	1,27620	74,255	3,0
49	3	1	2	1,26590	74,962	2,0
50	1	7	1	1,25800	75,515	3,0
51	2	4	2	1,25460	75,756	4,0
52	4	4	0	1,25320	75,855	3,0
53	1	5	2	1,24820	76,214	3,0
54	3	2	2	1,23500	77,177	1,0
55	0	8	0	1,21880	78,398	1,0
56	3	3	2	1,18820	80,826	3,0
57	4	4	1	1,17450	81,969	2,0
58	0	6	2	1,17180	82,198	3,0
59	5	1	0	1,15980	83,237	1,0
60	0	8	1	1,14700	84,378	2,0
61	3	7	0	1,13310	85,659	1,0
62	2	8	0	1,12490	86,435	1,0
63	4	0	2	1,10510	88,380	1,0
64	1	1	3	1,09970	88,928	3,0
65	0	2	3	1,09860	89,041	3,0
66	5	1	1	1,09730	89,175	3,0

Stick Pattern



$SrBi_2O_4$

Name and formula

Reference code:	**00-039-1424**
PDF index name:	**Strontium Bismuth Oxide**
Empirical formula:	**Bi_2O_4Sr**
Chemical formula:	**$SrBi_2O_4$**

Crystallographic parameters

Crystal system:	**Monoclinic**
Space group:	**C2/m**
Space group number:	**12**
a (Å):	19,2882
b (Å):	4,3520
c (Å):	6,1015
Alpha (°):	90,0000
Beta (°):	94,8390
Gamma (°):	90,0000
Volume of cell (10^6 pm^3):	510,35
Z:	4,00
RIR:	-

Subfiles and Quality

Subfiles: Inorganic
NBS pattern
Superconducting Material
Quality: Star (S)

Comments

Color: Yellowish white
Sample preparation: Stoichiometric amounts of $SrCO_3$ and Bi_2O_3 were mixed and heated at 700 C for 2 days, 750 C for 2 days, 775 C overnight and 800 C overnight. Two mol% of $SrCO_3$ was added and sample was heated at 775 C for 2 days with daily grindings.
Structure: The unit cell and space group were determined by R. S. Roth (1).
Temperature: The approximate temperature of data collection was 25 C.

References

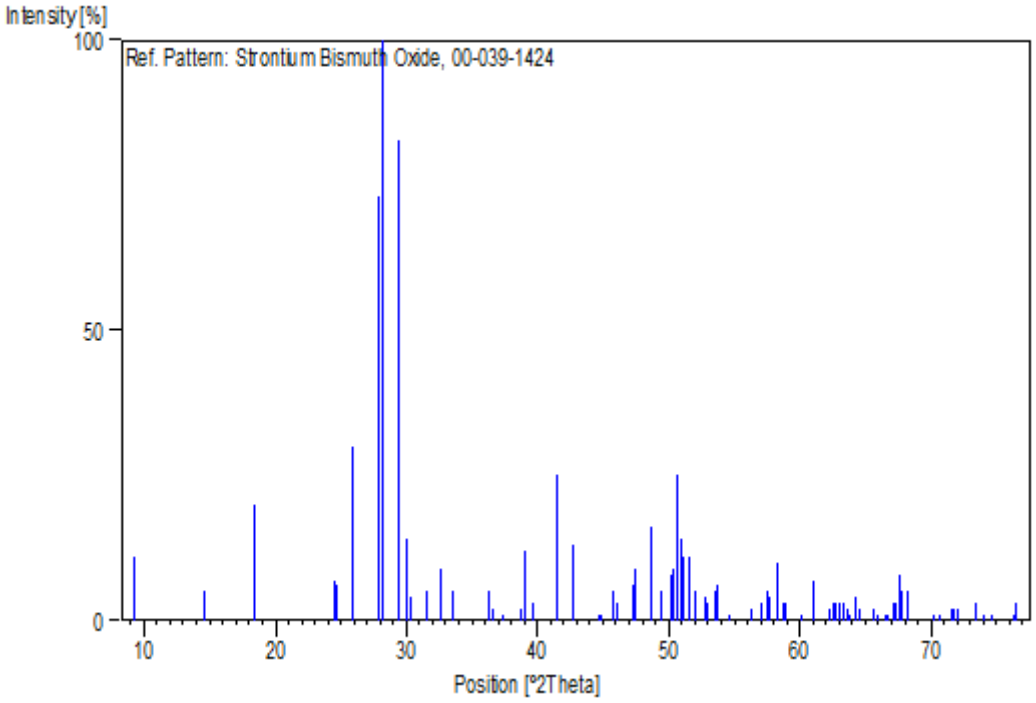
Primary reference: Wong-Ng, W., McMurdie, H., Paretzkin, B., Hubbard, C., Dragoo, A., NBS (USA)., *ICDD Grant-in-Aid*, (1988)
Structure: 1. Roth, R., *Priv. Comm. Roth*
Unit cell: Wong-Ng, W., McMurdie, H., Paretzkin, B., Hubbard, C., Dragoo, A., *Powder Diffraction*, 3, 254, (1988)

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	2	0	0	9,63202	9,174	11,0
2	0	0	1	6,08423	14,547	5,0
3	4	0	0	4,80578	18,447	20,0
4	4	0	1	3,62287	24,552	7,0
5	-3	1	0	3,59806	24,724	6,0
6	1	1	1	3,45065	25,798	30,0
7	6	0	0	3,20292	27,832	73,0
8	-3	1	1	3,16371	28,184	100,0
9	3	1	1	3,03547	29,401	83,0
10	-2	0	2	2,97108	30,053	14,0
11	-6	0	1	2,94022	30,376	4,0
12	2	0	2	2,83142	31,573	5,0
13	6	0	1	2,74053	32,649	9,0
14	-5	1	1	2,67051	33,530	5,0
15	4	0	2	2,47553	36,259	5,0
16	1	1	2	2,45014	36,648	2,0
17	8	0	0	2,40277	37,397	1,0
18	-7	1	0	2,32141	38,759	2,0
19	-6	0	2	2,30297	39,082	12,0
20	3	1	2	2,26924	39,687	3,0
21	0	2	0	2,17630	41,458	25,0
22	6	0	2	2,11801	42,654	13,0
23	0	0	3	2,02652	44,681	1,0
24	-2	0	3	2,01731	44,896	1,0
25	-4	2	0	1,98236	45,732	5,0
26	-8	0	2	1,96722	46,104	3,0
27	10	0	0	1,92188	47,257	6,0
28	-9	1	0	1,91668	47,393	9,0
29	-9	1	1	1,86890	48,682	16,0

30	-1	1	3	1,84281	49,417	5,0
31	4	0	3	1,81309	50,283	8,0
32	8	0	2	1,81208	50,313	9,0
33	-6	2	0	1,79971	50,683	25,0
34	10	0	1	1,78943	50,995	14,0
35	7	1	2	1,78440	51,149	11,0
36	0	2	2	1,76942	51,614	11,0
37	-2	2	2	1,75530	52,060	5,0
38	3	1	3	1,73070	52,857	4,0
39	2	2	2	1,72506	53,043	3,0
40	-5	1	3	1,70924	53,573	5,0
41	6	2	1	1,70438	53,738	6,0
42	-9	1	2	1,68001	54,582	1,0
43	4	2	2	1,63480	56,223	2,0
44	5	1	3	1,61054	57,147	3,0
45	12	0	0	1,60136	57,505	5,0
46	-11	1	1	1,59806	57,635	4,0
47	-8	2	1	1,58158	58,293	10,0
48	9	1	2	1,56829	58,835	3,0
49	10	0	2	1,56587	58,935	3,0
50	11	1	1	1,53721	60,146	1,0
51	12	0	1	1,51740	61,014	7,0
52	8	0	3	1,48851	62,329	2,0
53	0	2	3	1,48372	62,553	3,0
54	-2	2	3	1,47902	62,774	3,0
55	7	1	3	1,47521	62,955	3,0
56	-12	0	2	1,46889	63,257	3,0
57	-8	2	2	1,45953	63,710	2,0
58	-10	0	3	1,45746	63,811	1,0
59	-9	1	3	1,44866	64,245	4,0
60	-10	2	0	1,44086	64,635	2,0
61	1	1	4	1,42235	65,581	2,0
62	-6	0	4	1,41991	65,708	2,0
63	4	0	4	1,41541	65,943	1,0
64	1	3	1	1,40515	66,487	1,0
65	-13	1	0	1,40019	66,753	1,0
66	8	2	2	1,39233	67,180	3,0
67	-13	1	1	1,38873	67,377	3,0
68	-3	3	1	1,38367	67,657	8,0
69	-5	1	4	1,38106	67,802	5,0
70	14	0	0	1,37289	68,261	5,0
71	10	0	3	1,33969	70,197	1,0
72	-5	3	1	1,33298	70,603	1,0
73	5	3	1	1,31664	71,613	2,0
74	6	2	3	1,31494	71,720	2,0
75	5	1	4	1,31076	71,984	2,0
76	-12	2	0	1,28981	73,342	3,0
77	-12	2	1	1,27943	74,036	1,0
78	10	2	2	1,27106	74,606	1,0
79	-2	2	4	1,24680	76,314	1,0
80	12	2	1	1,24459	76,474	3,0

Stick Pattern



Ca_2BiO_4

Name and formula

Reference code: **00-043-0213**

PDF index name: **Calcium Bismuth Oxide**

Empirical formula: **Bi_2CaO_4**
Chemical formula: **$CaBi_2O_4$**

Crystallographic parameters

Crystal system: **Monoclinic**
Space group: **I*/***
Space group number: **12**

a (Å): 14,0030
b (Å): 11,5960
c (Å): 12,1990
Alpha (°): 90,0000
Beta (°): 101,5600
Gamma (°): 90,0000

Calculated density (g/cm^3): 3,57
Measured density (g/cm^3): 3,75
Volume of cell (10^6 pm^3): 1940,68
Z: 8,00

RIR: 3,23

Status, subfiles and quality

Status: Marked as deleted by ICDD
Subfiles: Inorganic
Superconducting Material
Quality: Star (S)

Comments

Deleted by: Deleted by 48-216, more extensive data; LCA 5/97.
Color: Yellow
Sample preparation: Stoichiometric mixture of $CaCO_3$ (Riedel-de Haen, purum) and Bi_2O_3 (Ventron, ultrapure) annealed at 750 C for 10 days in an open gold-crucible.
Additional pattern: To replace 40-398.

References

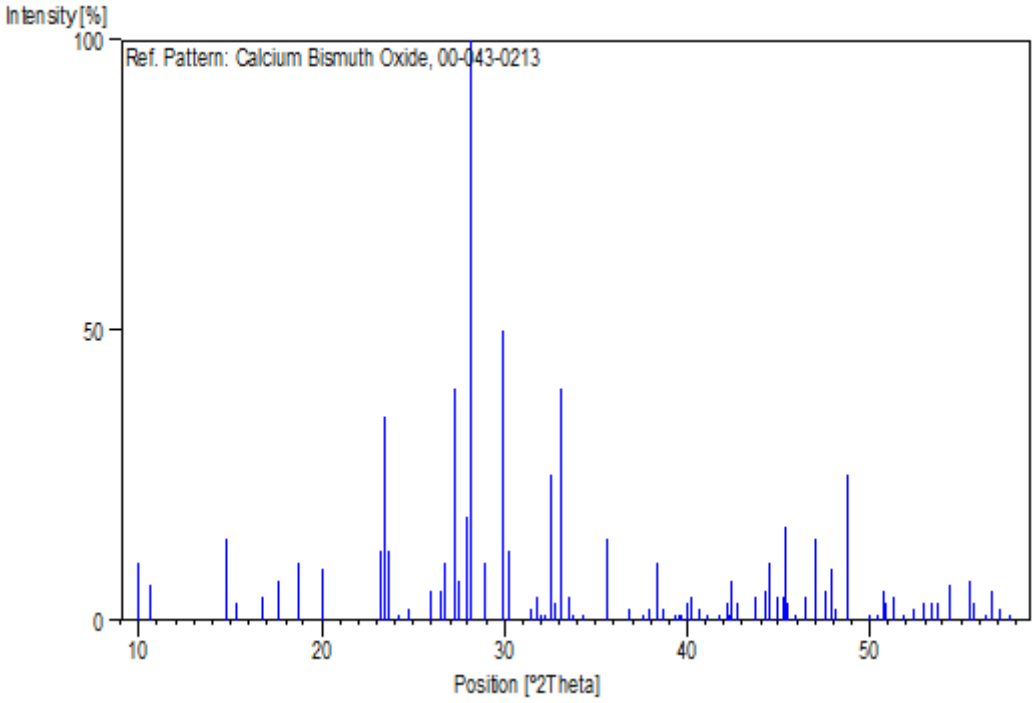
Primary reference: Gramlich, C., Eysel, W., Mineral.-Petrograph. Institut der Universitaet Heidelberg, Germany., *ICDD Grant-in-Aid*, (1991)
Additional pattern: Conflant, P. et al., *C. R. Seances Acad. Sci., Ser. C*, 279, (1974)

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	1	1	0	8,86400	9,971	10,0
2	0	1	1	8,32700	10,616	6,0
3	0	0	2	5,97900	14,804	14,0
4	0	2	0	5,79900	15,267	3,0
5	-1	1	2	5,28200	16,771	4,0
6	-1	2	1	5,02500	17,636	7,0
7	1	2	1	4,74100	18,701	10,0
8	2	2	0	4,42800	20,036	9,0
9	-3	1	2	3,81900	23,273	12,0
10	-2	2	2	3,80100	23,385	35,0
11	0	1	3	3,76800	23,593	12,0
12	0	3	1	3,67900	24,172	1,0
13	-2	1	3	3,60300	24,690	2,0
14	4	0	0	3,43100	25,948	5,0
15	2	2	2	3,35700	26,531	5,0
16	-4	1	1	3,34000	26,668	10,0
17	-2	3	1	3,32800	26,766	10,0
18	-4	0	2	3,27200	27,233	40,0
19	-1	3	2	3,23900	27,516	7,0
20	3	1	2	3,19600	27,894	18,0
21	2	3	1	3,16200	28,200	100,0
22	1	3	2	3,08400	28,928	10,0
23	0	0	4	2,98800	29,879	50,0
24	3	3	0	2,95150	30,257	12,0
25	-4	2	2	2,84860	31,378	2,0
26	-4	1	3	2,81630	31,747	4,0
27	-3	3	2	2,79380	32,010	1,0
28	0	3	3	2,77580	32,223	1,0
29	4	0	2	2,74670	32,574	25,0
30	1	4	1	2,73470	32,721	3,0
31	-2	3	3	2,70650	33,071	40,0

32	2	4	0	2,67000	33,537	4,0
33	0	2	4	2,65550	33,725	1,0
34	0	4	2	2,60820	34,356	1,0
35	-5	2	1	2,52000	35,598	14,0
36	4	3	1	2,43510	36,882	2,0
37	-1	3	4	2,39440	37,533	1,0
38	2	4	2	2,36960	37,940	2,0
39	3	4	1	2,34730	38,315	10,0
40	4	1	3	2,32680	38,666	2,0
41	1	5	0	2,28630	39,379	1,0
42	0	5	1	2,27620	39,561	1,0
43	1	4	3	2,26650	39,737	1,0
44	-3	3	4	2,25040	40,033	3,0
45	5	3	0	2,23720	40,280	4,0
46	-5	3	2	2,21780	40,648	2,0
47	-3	4	3	2,19350	41,118	1,0
48	-1	5	2	2,15960	41,794	1,0
49	-4	1	5	2,13890	42,217	3,0
50	-6	2	2	2,13370	42,325	1,0
51	6	2	0	2,12690	42,467	7,0
52	1	5	2	2,11220	42,777	3,0
53	3	5	0	2,06810	43,736	4,0
54	-2	3	5	2,04660	44,219	5,0
55	0	3	5	2,03280	44,536	10,0
56	-5	0	5	2,01320	44,993	4,0
57	0	5	3	2,00380	45,215	4,0
58	-7	0	1	1,99810	45,352	16,0
59	0	0	6	1,99200	45,498	3,0
60	3	3	4	1,97570	45,895	1,0
61	5	2	3	1,95310	46,457	4,0
62	0	6	0	1,93200	46,995	14,0
63	-2	2	6	1,91040	47,559	5,0
64	-6	3	3	1,89870	47,870	9,0
65	6	3	1	1,89010	48,101	2,0
66	2	3	5	1,86450	48,805	25,0
67	-6	1	5	1,82400	49,961	1,0
68	-3	4	5	1,81050	50,360	1,0
69	-6	4	2	1,79890	50,708	5,0
70	-7	1	4	1,79200	50,917	3,0
71	-3	6	1	1,78110	51,251	4,0
72	4	1	5	1,77780	51,353	2,0
73	-5	5	2	1,76080	51,885	1,0
74	-1	6	3	1,74370	52,433	2,0
75	-8	1	1	1,72800	52,946	3,0
76	8	0	0	1,71520	53,372	3,0
77	1	6	3	1,70620	53,676	3,0
78	5	4	3	1,68690	54,341	6,0
79	6	3	3	1,65450	55,495	7,0
80	-4	1	7	1,65040	55,645	3,0
81	3	5	4	1,63220	56,321	1,0
82	0	6	4	1,62250	56,688	5,0
83	-6	2	6	1,61140	57,114	2,0
84	-1	7	2	1,59630	57,705	1,0

Stick Pattern



SiO_2 (Quartzo)

Name and formula

Reference code:	**01-075-1555**
Mineral name:	**Quartz**
ICSD name:	**Silicon Oxide**
Empirical formula:	**O_2Si**
Chemical formula:	**SiO_2**

Crystallographic parameters

Crystal system:	**Hexagonal**
Space group:	**P6222**
Space group number:	**180**
a (Å):	5,0130
b (Å):	5,0130
c (Å):	5,4700
Alpha (°):	90,0000
Beta (°):	90,0000
Gamma (°):	120,0000
Calculated density (g/cm^3):	2,51
Volume of cell (10^6 pm^3):	119,05
Z:	3,00
RIR:	5,01

Status, subfiles and quality

Status:	**Diffraction data collected at high or low temperature**
Subfiles:	**Inorganic** **Mineral** **Alloy, metal or intermetalic** **Pharmaceutical** **ICSD Pattern**
Quality:	**Calculated (C)**

Comments

Temperature:	**Pattern taken at 973.**
ICSD collection code:	**031088**
Test from ICSD:	**No R value given.** **At least one TF missing.**

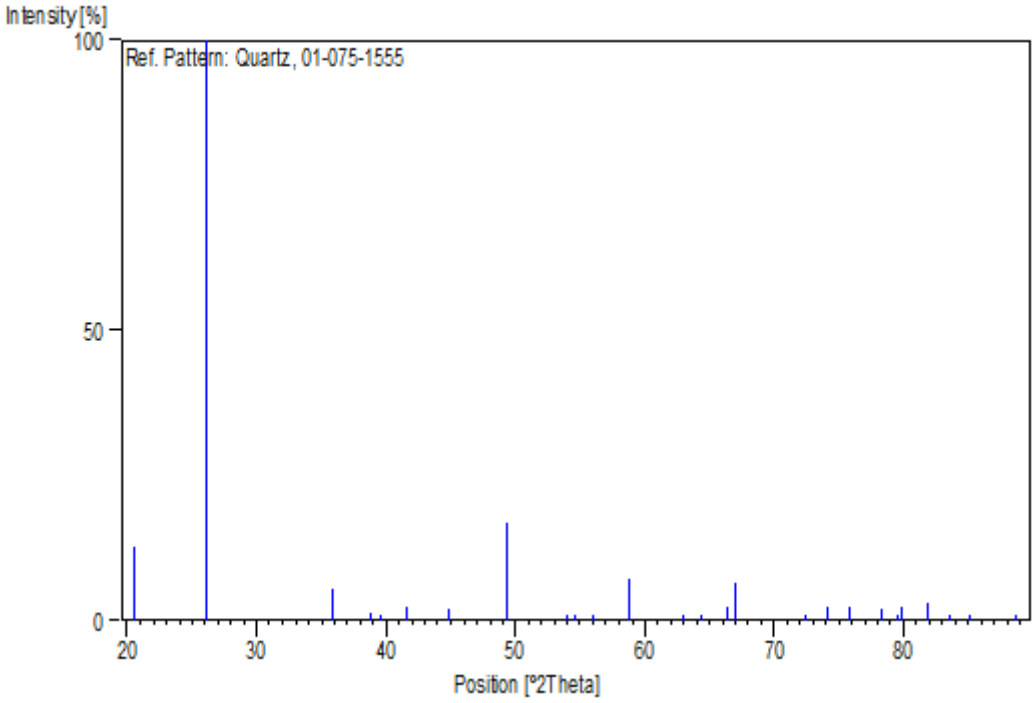
References

Primary reference:	***Calculated from ICSD using POWD-12++***
Structure:	**Wyckoff, R.W.G., *Z. Kristallogr., Kristallgeom., Kristallphys., Kristallchem.*, 63, 507, (1926)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	1	0	0	4,34139	20,440	12,8
2	1	0	1	3,40052	26,185	100,0
3	1	1	0	2,50650	35,796	5,3
4	1	0	2	2,31408	38,887	1,4
5	1	1	1	2,27866	39,516	0,1
6	2	0	0	2,17069	41,570	2,4
7	2	0	1	2,01763	44,889	1,9
8	1	1	2	1,84787	49,273	16,9
9	2	0	2	1,70026	53,879	0,8
10	1	0	3	1,68109	54,544	0,6
11	2	1	0	1,64089	55,996	0,2
12	2	1	1	1,57170	58,695	7,2
13	1	1	3	1,47448	62,990	0,1
14	3	0	0	1,44713	64,321	1,0
15	2	1	2	1,40708	66,384	2,2
16	2	0	3	1,39615	66,972	6,4
17	1	0	4	1,30432	72,396	0,3
18	3	0	2	1,27911	74,057	2,3
19	2	2	0	1,25325	75,852	2,3
20	2	1	3	1,21970	78,329	2,1
21	3	1	0	1,20408	79,545	0,4
22	1	1	4	1,20046	79,833	2,4
23	3	1	1	1,17593	81,848	3,1
24	2	0	4	1,15704	83,480	0,1
25	2	2	2	1,13933	85,079	0,1
26	3	1	2	1,10201	88,693	0,8

Stick Pattern



CuO

Name and formula

Reference code:	**00-048-1548**
Mineral name:	**Tenorite, syn**
PDF index name:	**Copper Oxide**
Empirical formula:	**CuO**
Chemical formula:	**CuO**

Crystallographic parameters

Crystal system:	**Monoclinic**
Space group:	**C2/c**
Space group number:	**15**
a (Å):	4,6883
b (Å):	3,4229
c (Å):	5,1319
Alpha (°):	90,0000
Beta (°):	99,5060
Gamma (°):	90,0000
Calculated density (g/cm^3):	6,51
Volume of cell (10^6 pm^3):	81,22
Z:	4,00

RIR: -

Subfiles and Quality

Subfiles: Inorganic
Mineral
Alloy, metal or intermetalic
Corrosion
Common Phase
Forensic
Superconducting Material

Quality: Star (S)

Comments

Sample preparation: $Cu_2(OH)_3NO_3$ was thermally decomposed to form CuO. This was annealed at 1000 C in air for 5 hours.

Additional pattern: To replace 5-661.

References

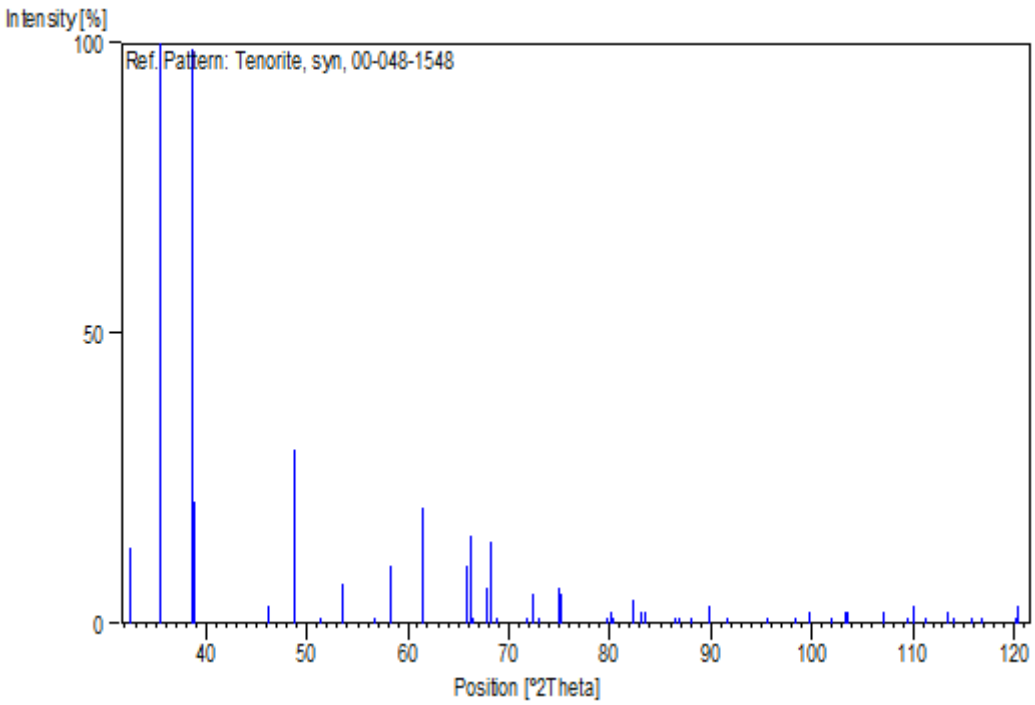
Primary reference: Langford, J., Louer, D., *J. Appl. Crystallogr.*, 24, 149, (1991)

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	1	1	0	2,75201	32,509	13,0
2	0	0	2	2,53236	35,418	37,0
3	1	1	-1	2,52367	35,544	100,0
4	1	1	1	2,32429	38,709	99,0
5	2	0	0	2,31315	38,903	21,0
6	1	1	-2	1,96095	46,260	3,0
7	2	0	-2	1,86764	48,717	30,0
8	1	1	2	1,77808	51,344	1,0
9	0	2	0	1,71179	53,487	7,0
10	0	2	1	1,62105	56,743	1,0
11	2	0	2	1,58227	58,265	10,0
12	1	1	-3	1,50600	61,526	20,0
13	0	2	2	1,41789	65,813	10,0
14	3	1	-1	1,41013	66,222	15,0
15	3	1	0	1,40586	66,449	1,0
16	1	1	3	1,37922	67,905	6,0
17	2	2	0	1,37530	68,125	14,0
18	2	2	-1	1,36158	68,907	1,0
19	3	1	-2	1,31552	71,683	1,0
20	3	1	1	1,30467	72,373	5,0
21	2	2	1	1,29586	72,944	1,0
22	0	0	4	1,26567	74,978	6,0
23	2	2	-2	1,26184	75,245	5,0
24	0	2	3	1,20171	79,733	1,0
25	2	0	-4	1,19642	80,157	2,0
26	1	1	-4	1,19538	80,241	1,0
27	3	1	-3	1,16989	82,362	4,0
28	2	2	2	1,16176	83,065	2,0
29	3	1	2	1,15604	83,568	2,0
30	4	0	-2	1,12388	86,533	1,0
31	2	2	-3	1,12137	86,775	1,0

32	1	1	4	1,10921	87,968	1,0
33	1	3	0	1,10835	88,054	1,0
34	1	3	-1	1,09137	89,790	3,0
35	1	3	1	1,07330	91,729	1,0
36	2	0	4	1,04010	95,565	1,0
37	2	2	3	1,01764	98,392	1,0
38	3	1	3	1,00789	99,684	2,0
39	4	0	2	0,99164	101,935	1,0
40	1	1	-5	0,98184	103,357	2,0
41	2	2	-4	0,98044	103,565	2,0
42	4	2	0	0,95795	107,049	2,0
43	1	3	-3	0,94314	109,519	1,0
44	4	2	-2	0,93939	110,170	3,0
45	4	0	-4	0,93362	111,191	1,0
46	1	1	5	0,92115	113,489	2,0
47	4	2	1	0,91816	114,060	1,0
48	1	3	3	0,90959	115,744	1,0
49	5	1	-1	0,90421	116,838	1,0
50	2	2	4	0,88848	120,221	1,0
51	3	3	1	0,88720	120,509	3,0

Stick Pattern



Bi_2CuO_4

Name and formula

Reference code: **00-042-0334**

Mineral name: **Kusachiite, syn**
PDF index name: **Copper Bismuth Oxide**

Empirical formula: Bi_2CuO_4
Chemical formula: $CuBi_2O_4$

Crystallographic parameters

Crystal system:	**Tetragonal**
Space group:	**P4/ncc**
Space group number:	**130**
a (Å):	8,4996
b (Å):	8,4996
c (Å):	5,8172
Alpha (°):	90,0000
Beta (°):	90,0000
Gamma (°):	90,0000
Calculated density (g/cm^3):	8,62
Volume of cell (10^6 pm^3):	420,25
Z:	4,00
RIR:	0,40

Subfiles and Quality

Subfiles: **Inorganic**
Mineral
Corrosion
Common Phase
Superconducting Material
Quality: **Star (S)**

Comments

Color: **Dark gray**
Sample preparation: **Stoichiometric mixture of Bi_2O_3 (Ventron, ultrapure) and CuO (Merck, p.a.) annealed for ten days at 800 C in Al_2O_3 -crucible.**
Additional pattern: **To replace 26-502.**

References

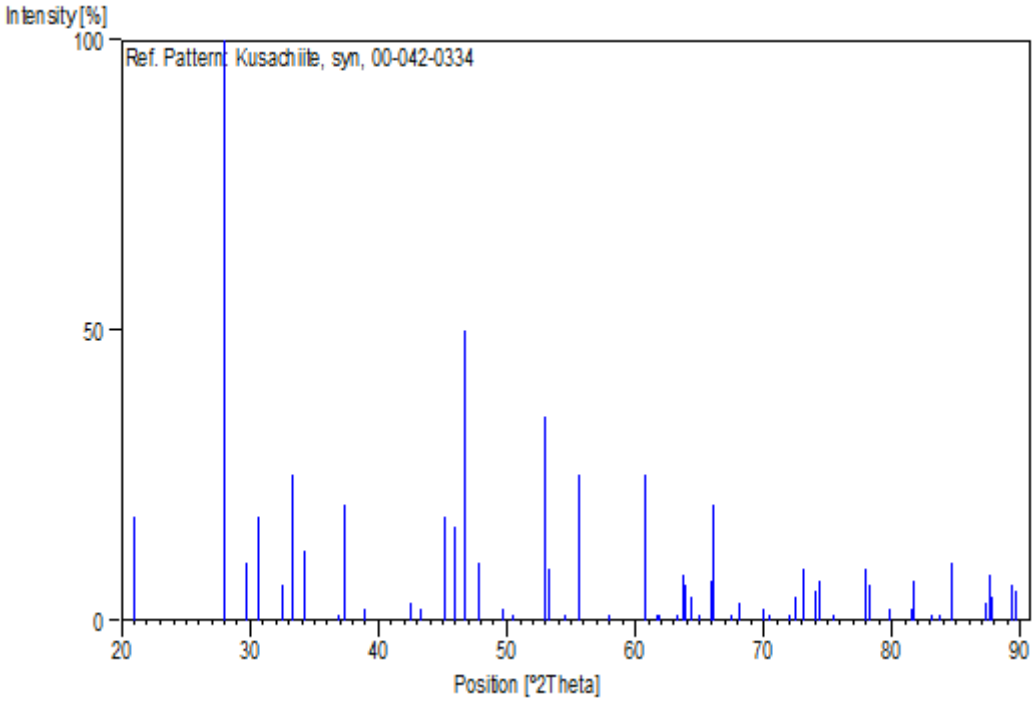
Primary reference: **Neininger, K., Eysel, W., Mineral.-Petrograph. Institut der Universitaet Heidelberg, Germany., *ICDD Grant-in-Aid*, (1991)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	2	0	0	4,25096	20,880	18,0
2	2	1	1	3,18286	28,011	100,0
3	2	2	0	3,00370	29,719	10,0
4	0	0	2	2,90817	30,719	18,0
5	1	0	2	2,75184	32,511	6,0
6	3	1	0	2,68740	33,313	25,0
7	1	1	2	2,61874	34,213	12,0

8	3	1	1	2,43915	36,819	1,0
9	2	0	2	2,40005	37,441	20,0
10	2	1	2	2,31058	38,948	2,0
11	4	0	0	2,12552	42,496	3,0
12	2	2	2	2,09010	43,252	2,0
13	3	3	0	2,00348	45,223	18,0
14	3	1	2	1,97382	45,941	16,0
15	4	1	1	1,94263	46,722	50,0
16	4	2	0	1,90049	47,822	10,0
17	3	2	2	1,83177	49,735	2,0
18	4	2	1	1,80587	50,498	1,0
19	2	1	3	1,72715	52,974	35,0
20	4	0	2	1,71616	53,340	9,0
21	4	1	2	1,68185	54,517	1,0
22	3	3	2	1,64986	55,665	25,0
23	4	2	2	1,59025	57,945	1,0
24	5	2	1	1,52320	60,757	25,0
25	4	4	0	1,50263	61,679	1,0
26	3	2	3	1,49733	61,921	1,0
27	5	0	2	1,46745	63,326	1,0
28	5	3	0	1,45773	63,798	8,0
29	0	0	4	1,45425	63,969	6,0
30	5	1	2	1,44627	64,364	4,0
31	1	0	4	1,43341	65,012	1,0
32	6	0	0	1,41654	65,884	7,0
33	4	1	3	1,41226	66,109	20,0
34	5	2	2	1,38753	67,443	1,0
35	2	0	4	1,37592	68,090	3,0
36	6	2	0	1,34415	69,930	2,0
37	4	4	2	1,33490	70,486	1,0
38	6	2	1	1,30968	72,053	1,0
39	5	3	2	1,30340	72,455	4,0
40	5	4	1	1,29427	73,048	9,0
41	3	1	4	1,27931	74,044	5,0
42	6	0	2	1,27399	74,405	7,0
43	6	1	2	1,25970	75,395	1,0
44	5	2	3	1,22439	77,972	9,0
45	6	2	2	1,22035	78,279	6,0
46	4	0	4	1,20013	79,859	2,0
47	6	4	0	1,17907	81,583	2,0
48	7	1	1	1,17708	81,751	7,0
49	6	3	2	1,16153	83,085	1,0
50	6	4	1	1,15525	83,638	1,0
51	7	2	1	1,14465	84,591	10,0
52	7	3	0	1,11595	87,302	3,0
53	2	1	5	1,11246	87,645	8,0
54	5	5	2	1,11063	87,827	4,0
55	5	4	3	1,09544	89,367	6,0
56	6	4	2	1,09240	89,682	5,0

Stick Pattern



PbO

Name and formula

Reference code: **00-035-1482**

PDF index name: **Lead Oxide**

Empirical formula: **OPb**
Chemical formula: **PbO**

Crystallographic parameters

Crystal system: **Orthorhombic**
Space group: **Cmma**
Space group number: **67**

a (Å): 5,6085
b (Å): 5,6036
c (Å): 4,9893
Alpha (°): 90,0000
Beta (°): 90,0000
Gamma (°): 90,0000

Volume of cell (10^6 pm^3): 156,80
Z: 4,00

RIR: -

Status, subfiles and quality

Status:	**Diffraction data collected at high or low temperature**
Subfiles:	**Inorganic** **Alloy, metal or intermetalic** **Corrosion** **Common Phase** **Educational pattern** **Superconducting Material**
Quality:	**Star (S)**

Comments

Color:	**Violet-red**
General comments:	**Low temperature phase-transition.**
Sample preparation:	**Preparation by thermal decomposition of lead dioxide b-PbO_2 (Merck) at 793 K.**
Additional pattern:	**See ICSD 62846, 62847, 62848, 62849 (PDF 78-1663, 64, 65, 78-1666).**
Unit cell:	**a-PbO = α-PbO orthorhombic at 200 K.**

References

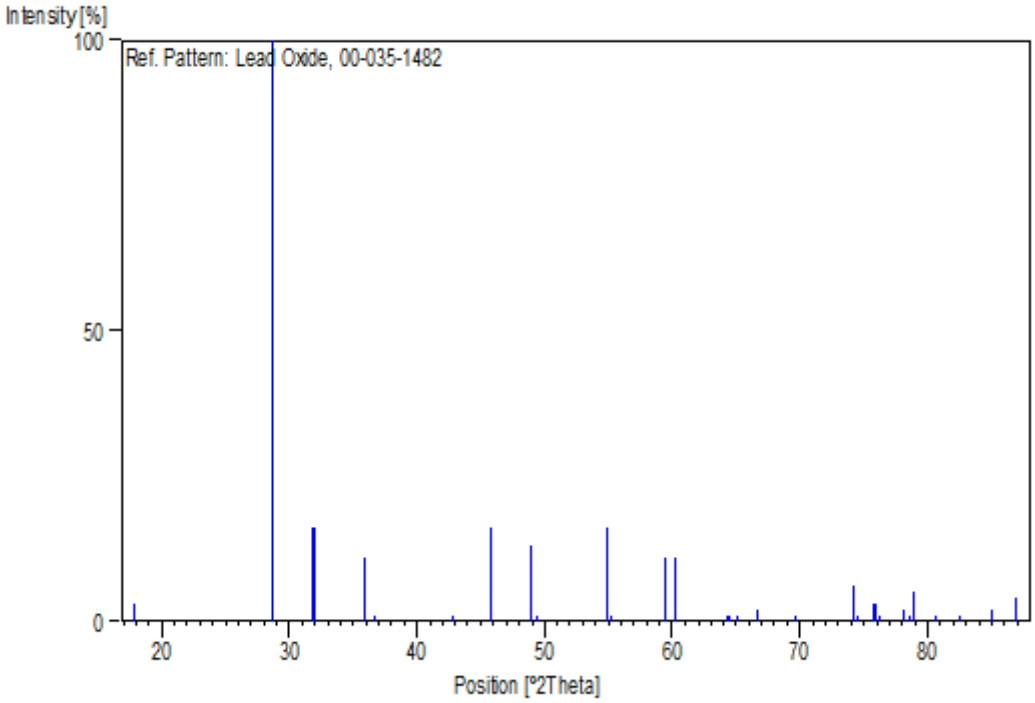
Primary reference:	**Boher, P.,** ***Private Communication*****, (1984)**
Unit cell:	**Boher, P., Garnier.,** ***C. R. Seances Acad. Sci., Ser. 2*****,** 298**, 203, (1984)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	0	0	1	4,98930	17,763	3,0
2	1	1	1	3,10370	28,741	100,0
3	2	0	0	2,80420	31,888	16,0
4	0	2	0	2,80180	31,916	16,0
5	0	0	2	2,49460	35,972	11,0
6	2	0	1	2,44460	36,734	1,0
7	0	2	1	2,44300	36,759	1,0
8	1	1	2	2,11130	42,796	1,0
9	2	2	0	1,98200	45,741	16,0
10	2	0	2	1,86390	48,821	13,0
11	0	2	2	1,86320	48,841	13,0
12	2	2	1	1,84200	49,440	1,0
13	3	1	1	1,67100	54,901	16,0
14	1	3	1	1,66990	54,940	16,0
15	0	0	3	1,66310	55,184	1,0
16	2	2	2	1,55180	59,523	11,0
17	1	1	3	1,53360	60,302	11,0
18	3	1	2	1,44540	64,408	1,0
19	1	3	2	1,44470	64,443	1,0
20	2	0	3	1,43040	65,166	1,0
21	0	2	3	1,43010	65,181	1,0
22	4	0	0	1,40210	66,650	2,0
23	0	4	0	1,40090	66,715	2,0
24	4	0	1	1,34980	69,595	1,0
25	0	4	1	1,34870	69,660	1,0
26	3	3	1	1,27730	74,180	6,0
27	2	2	3	1,27400	74,405	1,0
28	4	2	0	1,25390	75,806	3,0
29	2	4	0	1,25320	75,855	3,0

30	0	0	4	1,24730	76,278	1,0
31	4	0	2	1,22230	78,131	2,0
32	0	4	2	1,22150	78,191	2,0
33	4	2	1	1,21600	78,613	1,0
34	2	4	1	1,21550	78,652	1,0
35	3	1	3	1,21310	78,838	5,0
36	1	3	3	1,21270	78,869	5,0
37	1	1	4	1,18980	80,695	1,0
38	3	3	2	1,16770	82,550	1,0
39	2	0	4	1,13970	85,045	2,0
40	0	2	4	1,13950	85,063	2,0
41	4	2	2	1,12030	86,878	4,0
42	2	4	2	1,11980	86,927	4,0

Stick Pattern



Name and formula

Reference code: **00-005-0490**

Mineral name: **Quartz, low**
PDF index name: **Silicon Oxide**

Empirical formula: **O_2Si**
Chemical formula: **SiO_2**

Crystallographic parameters

Crystal system:	**Hexagonal**
Space group:	**P3121**
Space group number:	**152**
a (Å):	4,9130
b (Å):	4,9130
c (Å):	5,4050
Alpha (°):	90,0000
Beta (°):	90,0000
Gamma (°):	120,0000
Volume of cell (10^6 pm^3):	112,98
Z:	3,00
RIR:	3,60

Status, subfiles and quality

Status:	**Marked as deleted by ICDD**
Subfiles:	**Inorganic** **Mineral** **Alloy, metal or intermetalic** **Forensic** **NBS pattern**
Quality:	**Star (S)**

Comments

Deleted by:	**Deleted by 33-1161.**
Additional pattern:	**To replace 1-649.**

References

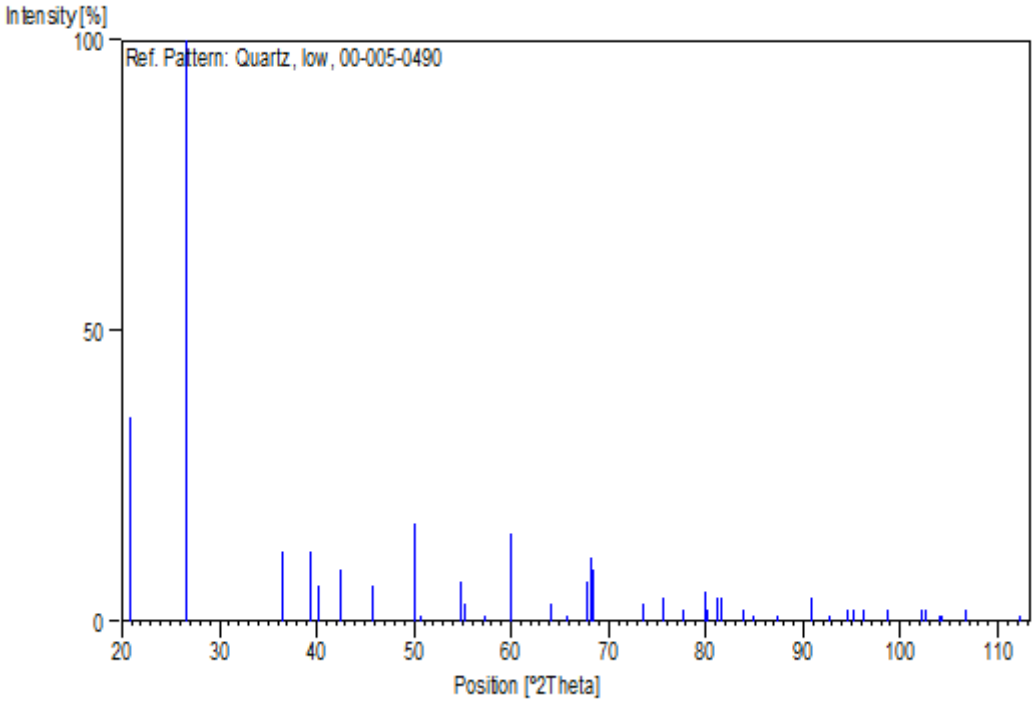
Primary reference: **Swanson and Fuyat.,** ***Natl. Bur. Stand. (U.S.), Circ. 539*****,** 3**, (1953)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	1	0	0	4,26000	20,835	35,0
2	1	0	1	3,34300	26,644	100,0
3	1	1	0	2,45800	36,527	12,0
4	1	0	2	2,28200	39,456	12,0
5	1	1	1	2,23700	40,284	6,0
6	2	0	0	2,12800	42,444	9,0
7	2	0	1	1,98000	45,790	6,0
8	1	1	2	1,81700	50,167	17,0
9	0	0	3	1,80100	50,644	1,0
10	2	0	2	1,67200	54,865	7,0
11	1	0	3	1,65900	55,332	3,0
12	2	1	0	1,60800	57,246	1,0
13	2	1	1	1,54100	59,983	15,0
14	1	1	3	1,45300	64,030	3,0
15	3	0	0	1,41800	65,808	1,0
16	2	1	2	1,38200	67,750	7,0
17	2	0	3	1,37500	68,142	11,0
18	3	0	1	1,37200	68,311	9,0
19	1	0	4	1,28800	73,462	3,0

20	3	0	2	1,25600	75,656	4,0
21	2	2	0	1,22800	77,699	2,0
22	2	1	3	1,19970	79,894	5,0
23	2	2	1	1,19730	80,086	2,0
24	1	1	4	1,18380	81,189	4,0
25	3	1	0	1,18020	81,489	4,0
26	3	1	1	1,15300	83,839	2,0
27	2	0	4	1,14080	84,944	1,0
28	3	0	3	1,11440	87,454	1,0
29	3	1	2	1,08160	90,826	4,0
30	4	0	0	1,06360	92,811	1,0
31	1	0	5	1,04770	94,653	2,0
32	4	0	1	1,04370	95,131	2,0
33	2	1	4	1,03460	96,239	2,0
34	2	2	3	1,01490	98,751	2,0
35	1	1	5	0,98960	102,228	2,0
36	3	1	3	0,98720	102,574	2,0
37	3	0	4	0,97810	103,914	1,0
38	3	2	0	0,97620	104,199	1,0
39	3	2	1	0,96070	106,607	2,0
40	4	1	0	0,92800	112,211	1,0

Stick Pattern



Name and formula

Reference code: **00-034-0282**

PDF index name: **Calcium Copper Oxide**

Empirical formula: **Ca_2CuO_3**

Chemical formula: Ca_2CuO_3

Crystallographic parameters

Crystal system:	**Orthorhombic**
Space group:	**Immm**
Space group number:	**71**
a (Å):	12,2340
b (Å):	3,7769
c (Å):	3,2573
Alpha (°):	90,0000
Beta (°):	90,0000
Gamma (°):	90,0000
Calculated density (g/cm^3):	4,23
Volume of cell (10^6 pm^3):	150,51
Z:	2,00
RIR:	1,80

Subfiles and Quality

Subfiles:	**Inorganic** **Corrosion** **Common Phase** **Superconducting Material**
Quality:	**Star (S)**

Comments

Color:	**Dark brown**
General comments:	**Additional unit cell reference: Teske, C., Muller-Buschbaum, *Z. Anorg. Allg. Chem.*, 379 234 (1970).**
Sample preparation:	**Stoichiometric mixture of CaO (LAB) and CuO (p.a.) heated for 3 days at 1000 C.**
Additional pattern:	**To replace 19-218.**

References

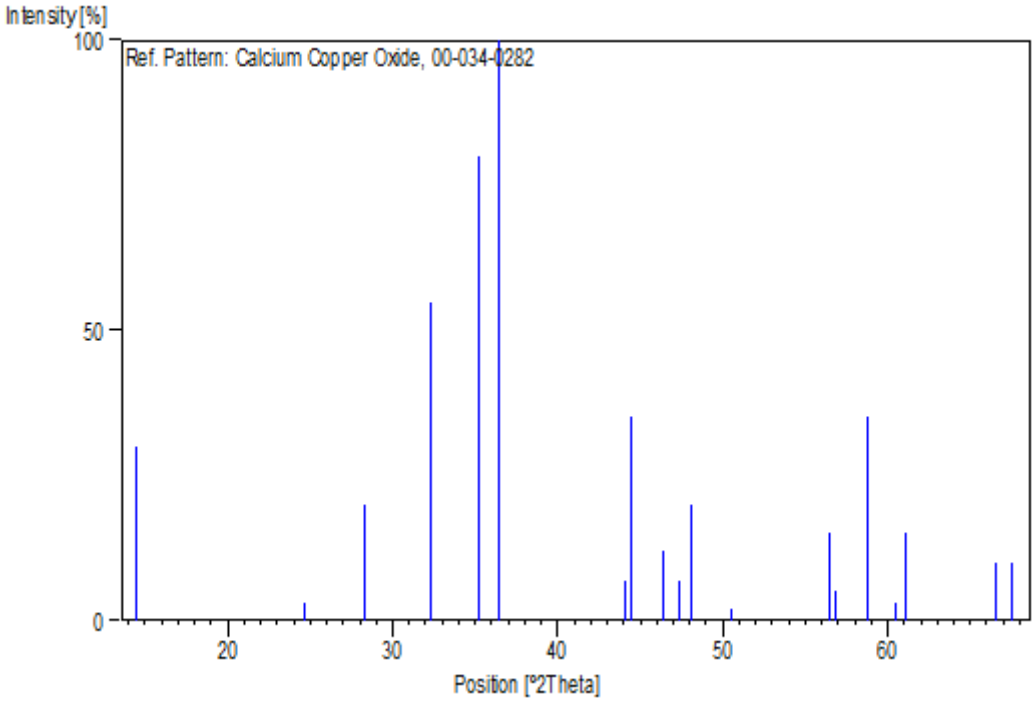
Primary reference:	**Breuer, Eysel, W., Mineral.-Petrograph. Inst., Univ. Heidelberg, Germany., *ICDD Grant-in-Aid*, (1981)**
Structure:	**Breuer, K.-H., Eysel, W., Behruzi, M., *Z. Kristallogr.*, 176, 219, (1986)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	2	0	0	6,11000	14,485	30,0
2	1	1	0	3,60700	24,662	3,0
3	1	0	1	3,14600	28,346	20,0
4	3	1	0	2,77100	32,280	55,0
5	3	0	1	2,54540	35,231	80,0
6	0	1	1	2,46690	36,390	100,0
7	5	1	0	2,05310	44,072	7,0
8	6	0	0	2,03860	44,402	35,0
9	5	0	1	1,95610	46,382	12,0

10	4	1	1	1,91980	47,311	7,0
11	0	2	0	1,88790	48,161	20,0
12	2	2	0	1,80510	50,521	2,0
13	0	0	2	1,62870	56,452	15,0
14	1	2	1	1,61950	56,802	5,0
15	6	1	1	1,57150	58,703	35,0
16	8	0	0	1,52950	60,481	3,0
17	3	2	1	1,51630	61,063	15,0
18	3	1	2	1,40410	66,543	10,0
19	6	2	0	1,38560	67,550	10,0

Stick Pattern



ame and formula

Reference code: **01-089-1357**

ICSD name: **Strontium Calcium Copper Oxide**

Empirical formula: $Ca_{0.726}Cu_2O_4Sr_{1.196}$

Chemical formula: $(Sr_{1.196}Ca_{0.726}) Cu_2O_4$

Crystallographic parameters

Crystal system: **Orthorhombic**

Space group: **Cmcm**

Space group number: **63**

a (Å):	3,4530
b (Å):	16,1100
c (Å):	3,8680
Alpha (°):	90,0000

Beta (°): 90,0000
Gamma (°): 90,0000

Calculated density (g/cm^3): 5,01
Volume of cell (10^6 pm^3): 215,17
Z: 2,00

RIR: 3,16

Subfiles and Quality

Subfiles: **Inorganic**
Corrosion
ICSD Pattern
Quality: **Calculated (C)**

Comments

ICSD collection code: **086214**

References

Primary reference: ***Calculated from ICSD using POWD-12++***
Structure: **Leonyuk, L., Babonas, G.-J., Rybakov, V., Sokolova, E., Szymczak, R., Maltsev, V., Shvanskaya, L., *J. Phys. Chem. Solids*, 59, 1591, (1998)**

Peak list

No.	h	k	l	d [A]	2Theta[deg]	I [%]
1	0	2	0	8,05500	10,975	8,1
2	0	4	0	4,02750	22,053	8,7
3	0	2	1	3,48682	25,526	1,8
4	1	1	0	3,37631	26,376	35,7
5	1	3	0	2,90438	30,760	63,8
6	0	4	1	2,78977	32,057	65,8
7	0	6	0	2,68500	33,344	3,1
8	1	1	1	2,54360	35,256	100,0
9	1	5	0	2,35573	38,172	12,8
10	1	3	1	2,32253	38,740	11,0
11	0	6	1	2,20568	40,881	3,6
12	0	8	0	2,01375	44,980	25,3
13	0	0	2	1,93400	46,943	29,4
14	1	7	0	1,91505	47,436	19,6
15	0	2	2	1,88055	48,361	0,3
16	0	8	1	1,78618	51,095	3,8
17	0	4	2	1,74341	52,442	1,3
18	2	0	0	1,72650	52,996	18,8
19	1	7	1	1,71622	53,338	26,6
20	2	2	0	1,68816	54,297	0,3
21	1	1	2	1,67818	54,646	5,1
22	0	10	0	1,60976	57,177	18,0
23	2	4	0	1,58684	58,081	0,9
24	0	6	2	1,56929	58,794	1,0
25	2	2	1	1,54722	59,717	0,4
26	1	5	2	1,49478	62,039	4,9
27	0	10	1	1,48717	62,392	0,5
28	1	9	1	1,46810	63,295	14,8
29	2	6	0	1,45219	64,070	0,8

30	0	8	2	1,39489	67,040	10,0
31	1	7	2	1,36080	68,952	9,0
32	1	11	0	1,34829	69,684	2,7
33	0	12	0	1,34250	70,029	1,2
34	2	8	0	1,31072	71,987	7,4
35	2	0	2	1,28796	73,465	9,9
36	1	11	1	1,27316	74,462	7,6
37	0	12	1	1,26828	74,797	1,8
38	2	8	1	1,24138	76,708	1,8
39	0	10	2	1,23781	76,970	2,6
40	0	4	3	1,22794	77,704	3,5
41	1	1	3	1,20450	79,512	5,1
42	1	3	3	1,17787	81,684	1,9
43	1	13	0	1,16639	82,663	0,1
44	0	6	3	1,16126	83,109	0,7
45	0	14	0	1,15071	84,044	0,1
46	3	1	0	1,14807	84,281	0,4
47	1	5	3	1,13101	85,855	0,2
48	3	3	0	1,12544	86,384	1,9
49	1	13	1	1,11672	87,227	0,6
50	1	11	2	1,10604	88,286	2,4
51	0	14	1	1,10294	88,599	3,3
52	3	1	1	1,10062	88,834	4,3

Stick Pattern