

# International Centre for Diffraction Data

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30 January 2009

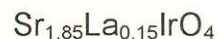
Prof. Carlos Cosio-Castaneda  
Departamento de Física y Química Teórica  
Facultad de Química  
Universidad Nacional Autónoma de México  
Ciudad Universitaria 04510  
México  
DF México

Dear Prof. Cosio-Castaneda:

The 4 powder patterns for the materials listed on the attached sheet have been accepted by the Editors and will appear in the earliest possible set of the Powder Diffraction File. I have enclosed copies of the accepted patterns. If they do not meet with your approval, please notify me as soon as possible indicating the patterns' reference numbers.

Also enclosed is a copy of the Editor's worksheet for the pattern listed below which has not been approved for the File. The worksheet explains the reason for the exclusion.

Strontium Lanthanum Iridium Oxide



The International Centre appreciates your interest and contribution to the Powder Diffraction File.

Yours truly,

A handwritten signature in dark ink, appearing to read "Soorya", is written over a light-colored background.

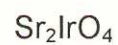
Dr. Soorya N. Kabekkodu  
Editor-in-Chief

SK:jah

cc: A. Rohrman

Prof. Cosio-Castaneda  
30 January 2009  
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Strontium Iridium Oxide



Strontium Lanthanum Iridium Oxide



Strontium Lanthanum Iridium Oxide



Strontium Lanthanum Iridium Oxide



d	2.88	2.75	1.61	6.42	Formula Sr <sub>1.80</sub> La <sub>0.20</sub> Ir <sub>04</sub>
I/I	999	565	255	251	Name Strontium Lanthanum Iridium Oxide

Rad.	Lambda	Filter	Crystal Sys.	Space Group	S.G. #
CuKa	1.5418	Mono. Type: Graph	Tetragonal	I41/acd	142

Intensities	d values	a	b	c
Diffraction. X	Diff. Guinier	5.4967		25.6966
Densitom. -	Debye	(0.0001	) B	(0.0001
Visual Calc. -	Calc.	A	C	) C

d value std.	Cut off	I/I cor.	D calc.	mp
Internal -	44.2		7.558	
External -		Z	D exp.	Dia.
		B		

Reference (Powder Data)  
 Cosio-Castaneda, C., Dept. de Fisica y Quimica Teorica, Fac. de Quimica, Univ. Private Communication (2008)

Reference (Unit Cell)  
 Cosio-Castaneda, C., Tavizon, G., Baeza, A., de la Mora, P., Escudero, R., J. Phys.: Condens. Matter, 19, 44 (2007)

Preparation & Chemistry  
 Prepared by solid-state reaction. Iridium, strontium carbonate and lanthanum oxide were mixed and heated for 30 minutes at 1423 K.

d	A	I/I0	h	k	l
1.1639	251	7	0	2	20
1.1565	148	35	0	4	12
1.1186	10	18	1	1	22
1.1088	999*	26	2	4	10
1.2621	565	15	2	3	13
1.2380	48	9	1	3	14
1.2291	8	7	1	3	14
1.2072	48	41	2	2	15
1.3496	200	34	0	2	2
1.3742	217	44	2	2	4
1.4391	200	44	2	2	4
1.3866	48	34	1	3	2
1.5404	8	119	2	1	11
1.6934	119	119	1	1	14
1.6597	227	255	0	2	13
1.7225	34	5	1	2	13

Additional Comments  
 Material has a saturation magnetization of 0.05 \$GM#B.  
 Pattern taken at 298 K.  
 Structure and magnetic properties of the weak ferromagnet \Sr2-x  
 La<sub>x</sub>Ir<sub>04</sub>\.  
 F(29)=448.4(0.0009, 75)  
 PSC: tI 56.00



Formula Sr1.95 Lao.05 Ir 04

Name Strontium Lanthanum Iridium Oxide

d	2.88	2.75	6.44	6.44
I/I1	999	578	309	309

Rad. Lambda  
CuKa 1.5418

Filter Mono. Type: Graph

Crystal Sys. Tetragonal

Space Group I41/acd

S.G. # 142

Intensities

d values

a 5.4950 ) b ) c 25.7458 )  
(0.0001 ) B ( ) (0.0008 )

Density X Diff. Guinier X  
Visual Debye - -  
Calc. Calc. - -

d value std. Cut off

I/I cor. D calc. mp

7.417

D exp. Dia.

Z B

Reference (Powder Data)  
Cosio-Castaneda, C., Dept. de Fisica y Quimica Teorica, Fac. de Quimica, Univ., Private Communication (2008)

Reference (Unit Cell)  
Cosio-Castaneda, C., Tavizon, G., Baeza, A., de la Mora, P., Escudero, R., J. Phys.: Condens. Matter, 19, 44 (2007)

Preparation & Chemistry  
Prepared by solid-state reaction. Iridium, strontium carbonate and lanthanum oxide were mixed and heated for 30 minutes at 1423 K.

Additional Comments

Material has a saturation magnetization of 0.13  $\mu$ Gm#B.  
Pattern taken at 298 K.  
Structure and magnetic properties of the weak ferromagnet \Sr2-x  
La\_x Ir O\_4\  
F(2 $\theta$ )=151.5(0.0026, 75)  
PSC: tI 56.00

d	A	I/I0	h	k	l
---	---	------	---	---	---

6.436	309	0	0	4
3.7198	175	0	1	2
3.2182	112	0	0	8
2.8802	999*	1	1	6
2.7475	578	0	2	0
2.5269	50	0	2	4
2.3625	5	1	2	3
2.1455	266	0	2	12
1.9428	222	0	2	0
1.8599	48	2	2	4
1.7221	37	1	3	2
1.6948	131	2	1	11
1.6622	115	1	1	14
1.6091	244	0	0	16
1.5420	5	1	2	13
1.4614	4	2	3	5
1.4401	143	2	0	12
1.3885	127	2	0	16
1.3738	39	0	4	0
1.3503	33	1	3	12
1.2893	5	1	2	17
1.2630	6	1	3	14
1.2399	49	2	2	16
1.2287	43	2	4	0
1.2078	13	2	3	13
1.1657	5	0	2	20
1.1569	34	0	4	12
1.1205	16	0	1	12
1.1089	22	1	4	10

d	2.89	2.75	6.47	6.47	Formula Sr2 Ir O4
I/I	999	587	310	310	Name Strontium Iridium Oxide
Rad.	Lambda	Filter	Mono. Type	X	Crystal Sys. Tetragonal
CuKa	1.5418	Graph			Space Group I41/acd
Intensities	d values	d values	a 5.50003 (0.00098)	b ( )	c 25.823 (0.005)
Diffractom.	X	Diff. Guinier	A	B	C 4.69507
Densitom.	-	Debye Calc.	I/I cor.	D calc.	mp
Visual Calc.	-			7.337	
d value std.	Cut off			D exp.	Dia.
Internal External	-	44.2	Z	B	
Reference (Powder Data)					
Cosio-Castaneda, C., Dept. de Fisica y Quimica Teorica, Fac. de Quimica, Univ. Private Communication (2008)					
Reference (Unit Cell)					
Cosio-Castaneda, C., Tavizon, G., Baeza, A., de la Mora, P., Escudero, R., J. Phys.: Condens. Matter, 19, 44 (2007)					
Preparation & Chemistry					
Prepared by solid-state reaction. Iridium and strontium carbonate were mixed and heated for 30 minutes at 1423 K.					
Additional Comments					
Cell parameters generated by least squares refinement.					
Reference reports: a=5.4921(8), c=25.7666(6).					
Material has a saturation magnetization of 0.18 $\mu\text{GM}\#B$ .					
Pattern taken at 298 K.					
Structure and magnetic properties of the weak ferromagnet \Sr2-xLax Ir O4\					
F(2 $\theta$ )= 5.2(0.0720, 77)					
PSC: t1 56.00					

P

d	2.89	2.75	1.61	6.46	Formula Sr1.85 Ir O4
I/I	999	560	275	253	Name Strontium Lanthanum Iridium Oxide

Rad.	Lambda	Filter	Crystal Sys.	Space Group	S. G. #
	1.5418	Mono. Type: Graph	Tetragonal	I41/acd	142

Intensities	d values	a	b	c
Diffraction. Visual Calc.	Diff. Guinier Debye Calc.	5.5027 (0.0010)	) (	25.804 (0.005)

d value std.	Cut off	I/I cor.	D calc.	mp
Internal	44.2		7.466	
External		Z	D exp.	Dia.
		B		

Reference (Powder Data)  
 Cosio-Castaneda, C., Dept. de Fisica y Quimica Teorica, Fac. de Quimica, Univ., Private Communication (2008)

Reference (Unit Cell)  
 Cosio-Castaneda, C., Tavizon, G., Baeza, A., de la Mora, P., Escudero, R., J. Phys.: Condens. Matter, 19, 44 (2007)

Preparation & Chemistry  
 Prepared by solid-state reaction. Iridium, strontium carbonate and lanthanum oxide were mixed and heated for 30 minutes at 1423 K.

Additional Comments

d A	I/I0	h k l
1.169	6	0 2 20
1.159	37	0 4 12
1.123	19	1 1 22
1.106	29	1 4 10
1.291	8	1 3 17
1.264	9	1 3 14
1.242	52	2 2 16
1.231	48	2 2 14
1.208	13	2 3 13
1.346	33	1 3 12
1.463	7	2 3 5
1.443	124	2 2 12
1.392	45	2 0 16
1.375	45	0 4 10
1.346	33	1 3 12

Reflect: solid solution; nearly identical to Z10255, LRB 1/09.  
 Cell parameters generated by least squares refinement.  
 Reference reports: a=5.4965(1), c=25.7052(1).  
 Material has a saturation magnetization of 0.04  $\mu\text{GM}\#B$ .  
 Pattern taken at 298 K.  
 Structure and magnetic properties of the weak ferromagnet \Sr2-x  
 La<sub>x</sub>IrO<sub>4</sub>\.  
 F(2 $\theta$ ) = 5.1(0.0738, 77)  
 PSC:  $\theta$  56.00