金属所发现的3种新化合物衍射数据被国际衍射数据中心收录

文章来源：金属研究所 发布时间：2010-03-09 【字号： 小 中 大 】

日前，中科院金属研究所高性能陶瓷材料研究部研究生何灵峰（导师为周延春研究员）发现的三种Hf-Al-C新化合物的X-射线衍射数据被国际衍射数据中心(ICDD)收录。有关化合物和JCPDS卡片号为Hf3Al3C5 59-310、Hf3Al4C6 59-311、Hf2Al4C5 59-312。

59-310 ★

$Hf_3Al_3C_5$

Hafnium Aluminum Carbide

Rad. $CuK\alpha_1$ λ 1.540598 Filter d-sp Diff.
Cut off Int. Diffractometer I/I_{cor}
Ref. See comments box for primary powder pattern reference.

Sys. Hexagonal S.G. $P6_3/mmc$ (194)
a 3.316 b c 27.42 A C 8.2690
α β γ Z [2] mp
Ref. He, L. et al., *Scr. Mater.*, 58 679 (2008)

D_x 8.604 D_m SS/FOM F_{17}=61(.015,19)

Prepared by sintering Hf, Al and graphite powders at 2173 K for 1 hour using drilled and milled powders from as-sintered samples. See PDF 04-008-8870 and 04-009-0320. PSC: hP22. $Al_3C_5Hf_3$ type. Primary pattern reference: Zhou, Y., Shenyang National Laboratory for Materials Science, Inst. of Metal Research, Chinese Academy of Sciences, P.R.China, *Private Communication*, (2008).

dÅ	Int	hkℓ	dÅ	Int	hkℓ
13.72	82	002			
6.85	8	004			
4.572	9	006			
3.430	11	008			
2.857	8	011			
2.808	4	012			
2.741	100	0010,013			
2.649	54	014			
2.543	2	015			
2.432	50	016			
2.317	47	017			
2.286	38	0012			
2.202	25	018			
2.091	23	019			
1.984	<1	0110			
1.960	1	0014			
1.883	5	0111			

59-311 ★

$Hf_3Al_4C_6$

Hafnium Aluminum Carbide

Rad. $CuK\alpha_1$ λ 1.540598 Filter d-sp Diff.
Cut off Int. Diffractometer I/I_{cor}
Ref. See comments box for primary powder pattern reference.

Sys. Rhombohedral (Hex) S.G. $R\bar{3}m$ (166)
a 3.3038(3) b c 48.809(5) A C 14.7736
α β γ Z [3] mp
Ref. He, L. et al., *Scr. Mater.*, 58 679 (2008)

D_x 7.725 D_m SS/FOM F_{19}=213(.004,22)

Prepared by sintering Hf, Al and graphite powders at 2173 K for 1 hour using drilled and milled powders from as-sintered samples. Reference reports: a=3.302, c=48.76. Cell parameters generated by least squares refinement. PSC: hR13. Primary pattern reference: Zhou, Y., Shenyang National Laboratory for Materials Science, Inst. of Metal Research, Chinese Academy of Sciences, P.R.China, *Private Communication*, (2008).

dÅ	Int	hkℓ	dÅ	Int	hkℓ
16.18	100	003			
8.136	2	006			
5.423	10	009			
3.2538	11	0015			
2.8417	4	012			
2.7856	6	104			
2.7459	62	015			
2.7118	19	0018			
2.6471	2	107			
2.5906	48	018			
2.4683	31	1010			
2.4046	1	0111			
2.3247	17	0021			
2.2757	70	1013			
2.2114	1	0114			
2.0872	11	1016			
2.0265	3	0117			
1.9114	1	1019			
1.8566	4	0120			

Ref. He, L. et al., *Scr. Mater.*, **58** 679 (2008)

D_x 6.759 D_m SS/FOM F_{16}=82(.011,18)

Prepared by sintering Hf, Al and graphite powders at 2173 K for 1 hour using drilled and milled powders from as-sintered samples. Reference reports: a=3.310, c=40.82. Cell parameters generated by least squares refinement. PSC: hR11. Primary pattern reference: Zhou, Y., Shenyang National Laboratory for Materials Science, Inst. of Metal Research, Chinese Academy of Sciences, P.R.China, *Private Communication*, (2008).

2.346	4	1010
2.268	60	0111
2.267	14	0018
2.0441	15	0114
1.9059	10	1016

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