ｂｒａｓｓ、ｃｏｐｐｅｒ方位に関する極点図範囲の影響

ＬａｂｏＴｅｘの場合

Brass,copper の完全極点図{111},{100},{110}を作成し、極点図の範囲が ODF 解析結果に及ぼす結果を確認した。

α範囲	ODF	{111}	{100}	{110}	Rp(%)	DRp(%)	brass(%)	copper(%)	{111}a=0
0-90	28.49	4.238	3.672	4.187	0.26	0.42	9.70	9.80	0.8014
0-85	31.21	4.277	3.670	4.278	0.27	0.46	9.40	10.10	0.8146
0-80	29.44	4.255	3.653	4.187	0.28	0.54	9.60	9.90	0.8015
0-75	28.95	4.202	3.644	4.181	0.29	0.58	9.40	9.90	0.8112
0-70	31.56	4.172	3.625	4.186	0.29	0.50	9.30	9.90	0.7699
0-65	29.46	4.160	3.628	4.182	0.29	0.58	9.70	9.90	0.7636
0-60	30.89	4.232	3.623	4.200	0.40	0.81	9.30	10.60	0.7246
0-55	31.47	4.230	3.626	4.176	0.46	0.67	9.50	10.20	0.7413
0-50	28.68	4.158	3.640	4.176	0.56	0.81	9.70	10.00	0.9937
0-45	29.40	3.907	3.656	4.180	0.53	0.90	9.20	9.90	0.9372
0-40	30.07	3.718	3.662	4.135	0.66	1.18	9.40	9.90	0.8056
0-35	27.82	3.674	3.755	4.118	1.19	0.91	8.80	9.00	0.8205
0-30	23.05	3.397	2.857	4.121	0.96	1.46	5.20	7.80	0.8253

α範囲を制限しても、十分な定量性が得られる。
ただし実測定データは、結晶粒の影響などからこれほど正確な測定は出来ない。
この解析は机上での話であるが、ＡＤＣ法の利点が確認出来た。

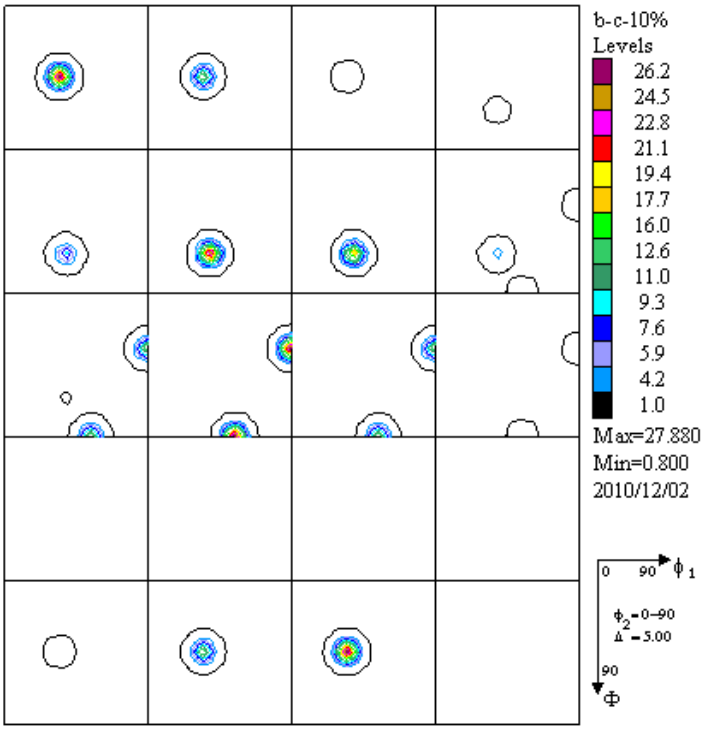
入力ＯＤＦのＭａｘ密度は、２８．８８であり、ほぼ再現される。
ＶｏｌｕｍｅＦｒａｃｔｉｏｎも、α範囲が確保されていれば入力データが再現出来る。
この解析は brass,copper に対して行った結果であり、全ての方位に関する結果ではない。

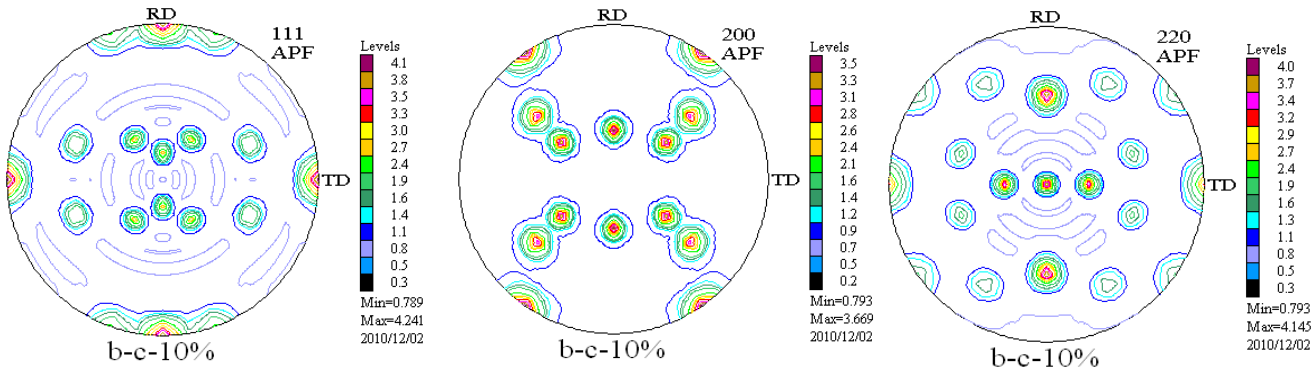
２０１０年１２月０２日
ＨｅｋｐｅｒＴｅｘ

方法、

ＬａｂｏＴｅｘで結晶方位を作成、極点図をＥｘｐｏｒｔして、ＰＦｔｏＯＤＦでＬａｂｏＴｅｘの入力制限を行い、ＬａｂｏＴｅｘのＯＤＦ解析結果を比較する。

ＬａｂｏＴｅｘの結晶方位は、ｂｒａｓｓ，ｃｏｐｐｅｒ　１０％とする。
その他が８０％で、Ｍｉｎレベルに反映される。





111-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:24
200-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:24
220-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:25
b-c-10%ODF-Export.TXT	275 KB	テキスト文書	2010/12/02 8:24

ＰＦｔｏＯＤＦ３に入力するために、ＴＸＴ２フォーマットに変換

111-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:24
200-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:24
220-b-c-10%.TPF	3 KB	TPF ファイル	2010/12/02 8:25
200_5.0deg-rp2.TXT	22 KB	テキスト文書	2010/12/02 8:27
111_5.0deg-rp2.TXT	23 KB	テキスト文書	2010/12/02 8:27
220_5.0deg-rp2.TXT	23 KB	テキスト文書	2010/12/02 8:28

このＴＸＴ２フォーマットデータは完全極点図である。

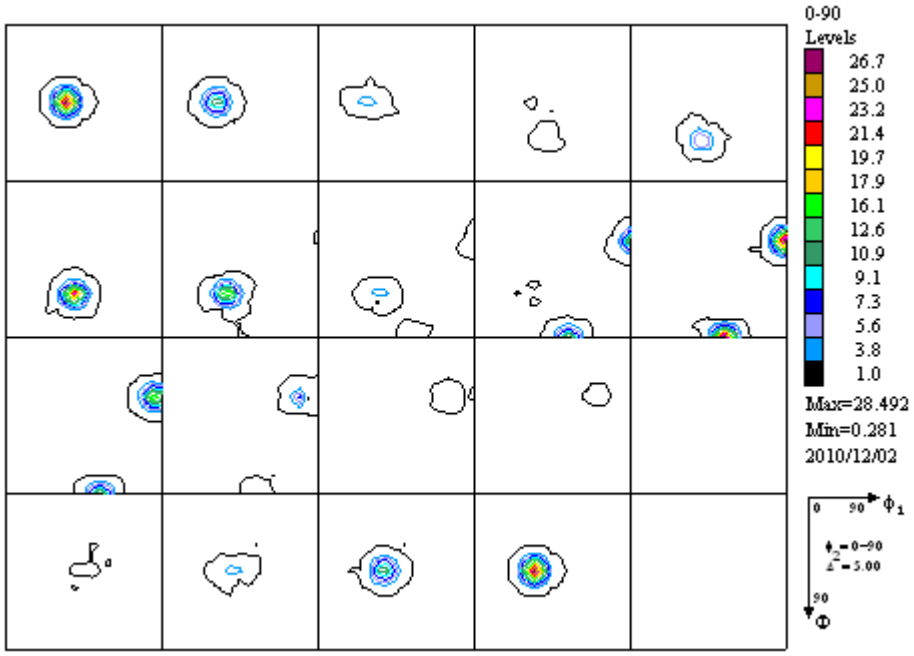
完全極点図をＰＦｔｏＯＤＦ３に読み込み、極点図の範囲制限しながらＴｅｘＴｏｏｌｓの処理結果を評価

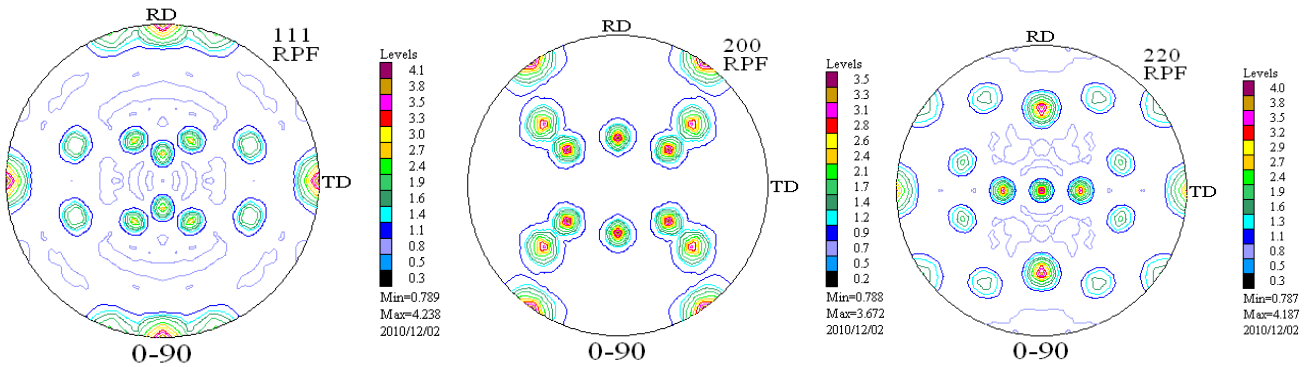
PF Data

SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	90.0	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	90.0	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	90.0	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.26	0.44
3	69	209	0.26	0.43
3	70	210	0.26	0.42

Creation of pole figures files NPF and RPF





No	Texture Component	On	△φ1	△Φ	△φ2	Volume Fraction [%]
1	{ 1 1 0}< 1 -1 2> brass	☑	10.0	10.0	10.0	9.29 %
2	{ 1 1 2}< 1 1 -1> copper	☑	10.0	10.0	10.0	9.45 %
3	{ 1 0 1}< 5 2 -5>	☐	10.0	10.0	10.0	%

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.7	10.1	9.5	9.8	{ 1 1 0}< 1 -1 2> brass
2:	9.8	11.6	9.3	10.7	{ 1 1 2}< 1 1 -1> copper
3:	80.46	Background Volume Fraction			

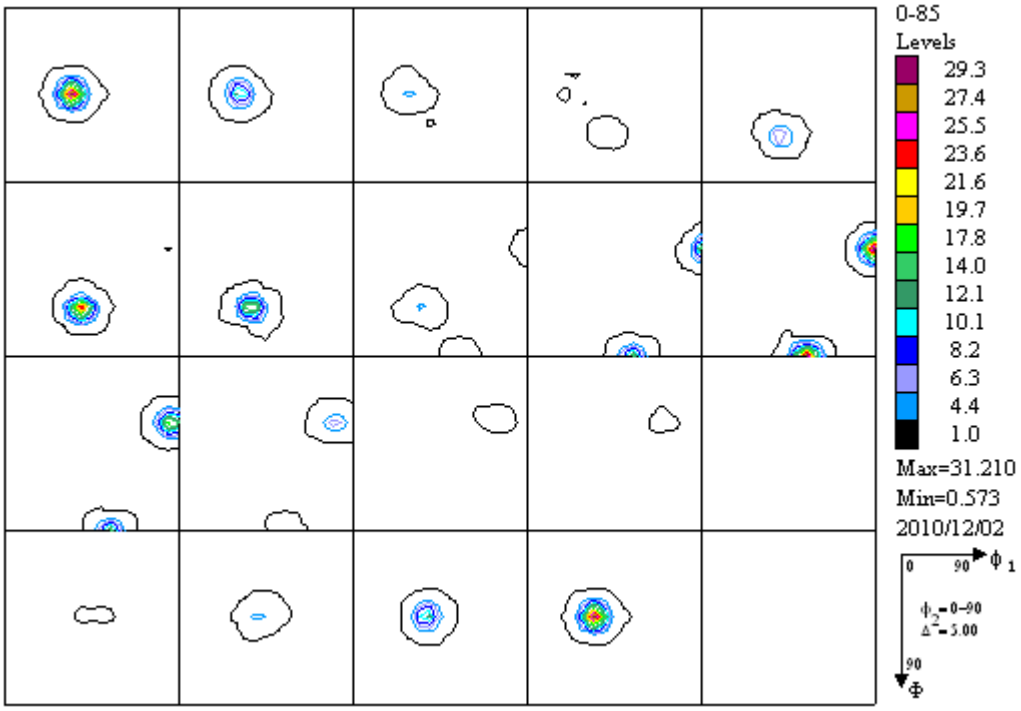
０－８５の場合

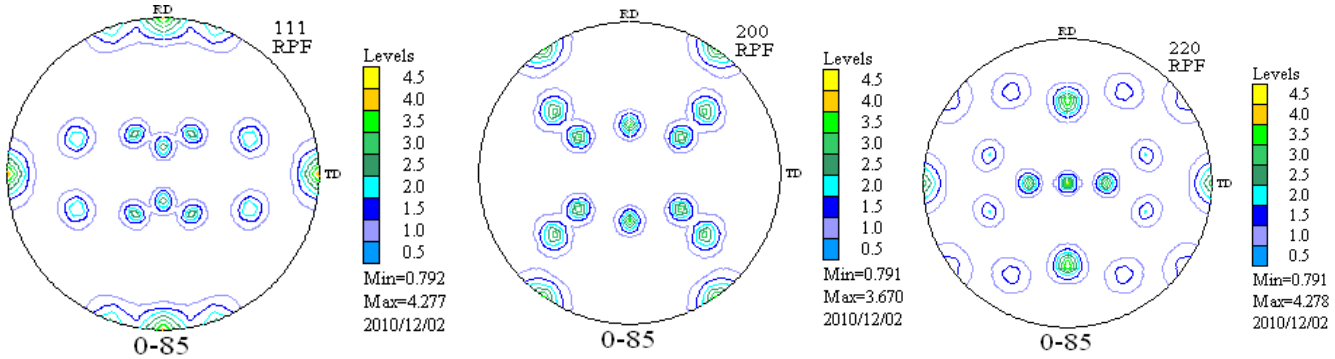
PF Data

	SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
	111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	85	☑
	200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	85	☑
	220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	85	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	69	209	0.27	0.46
3	70	210	0.27	0.46

Creation of pole figures files NPF and RPF





No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]	
1	{ 1 1 0}< 1 -1 2> brass	☑	10.0	10.0	10.0	8.43	%
2	{ 1 1 2}< 1 1 -1> copper	☑	10.0	10.0	10.0	8.56	%

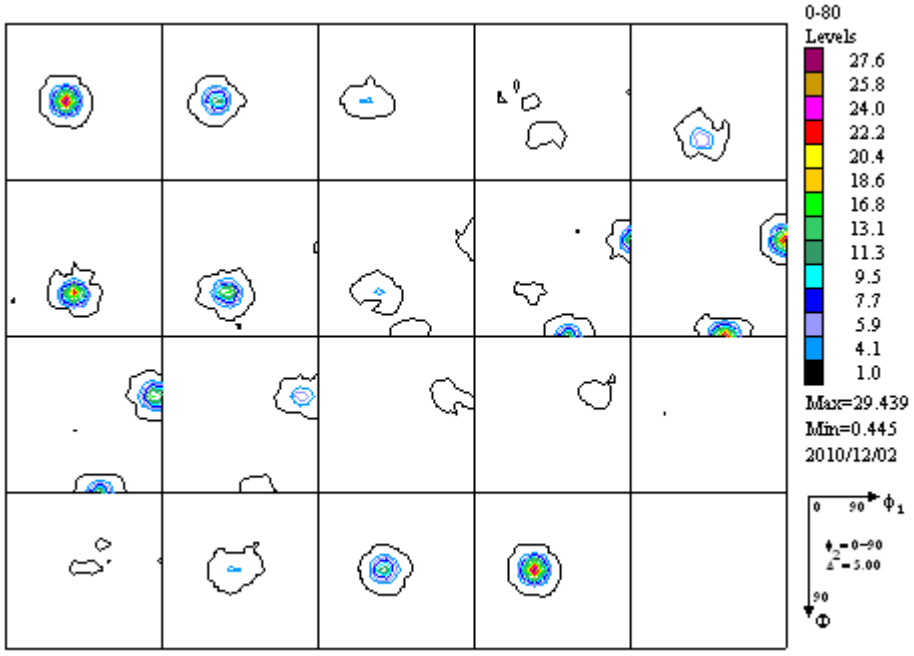
No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.4	10.5	9.6	9.9	{ 1 1 0}< 1 -1 2> brass
2:	10.1	11.2	9.0	10.4	{ 1 1 2}< 1 1 -1> copper
3:	80.52	Background Volume Fraction			

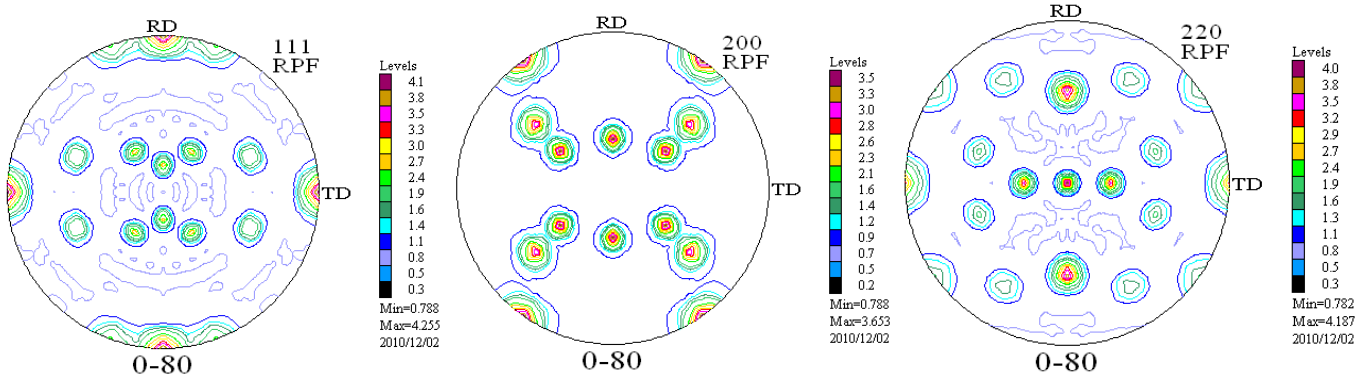
0－80

PF Data

	SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
	111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	80	☑
	200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	80	☑
	220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	80	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	69	209	0.28	0.54
3	70	210	0.28	0.54





No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]	
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	8.93	%
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	8.99	%

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.6	10.6	9.7	9.9	{1 1 0}<1 -1 2> brass
2:	9.9	11.2	9.1	10.4	{1 1 2}<1 1 -1> copper
3:	80.56	Background Volume Fraction			

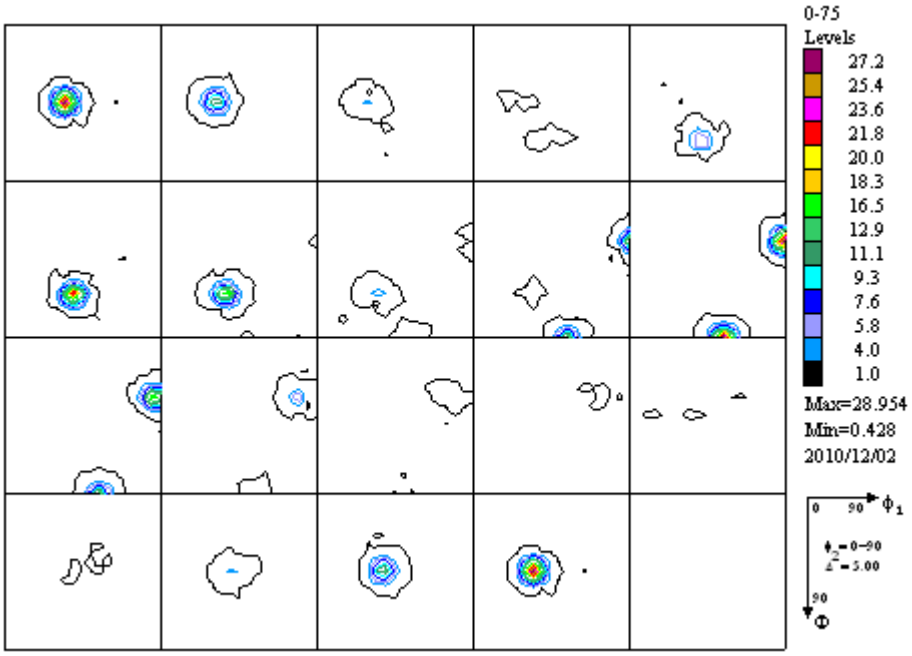
0－75

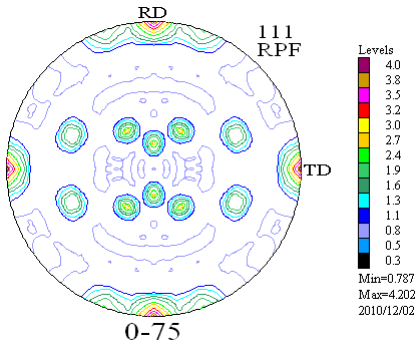
PF Data

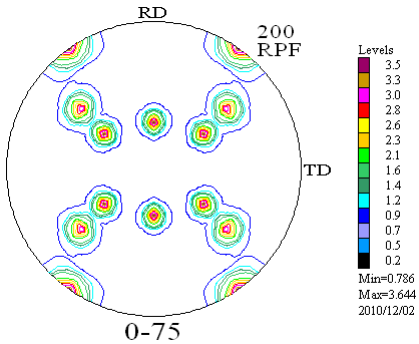
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	75	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	75	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	75	☑

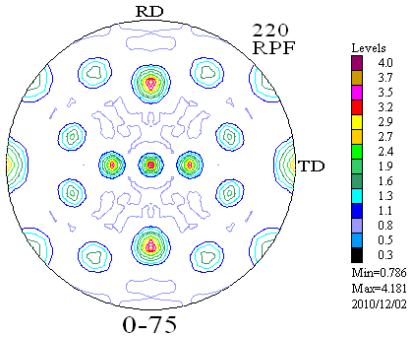
Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	69	209	0.29	0.59
3	70	210	0.29	0.58

Creation of pole figures files NPF and RPF









No	Texture Component	On	△φ1	△Φ	△φ2	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	8.97 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.05 %

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.4	10.3	9.7	9.7	{1 1 0}<1 -1 2> brass
2:	9.9	11.1	9.2	10.1	{1 1 2}<1 1 -1> copper
3:	80.73	Background Volume Fraction			

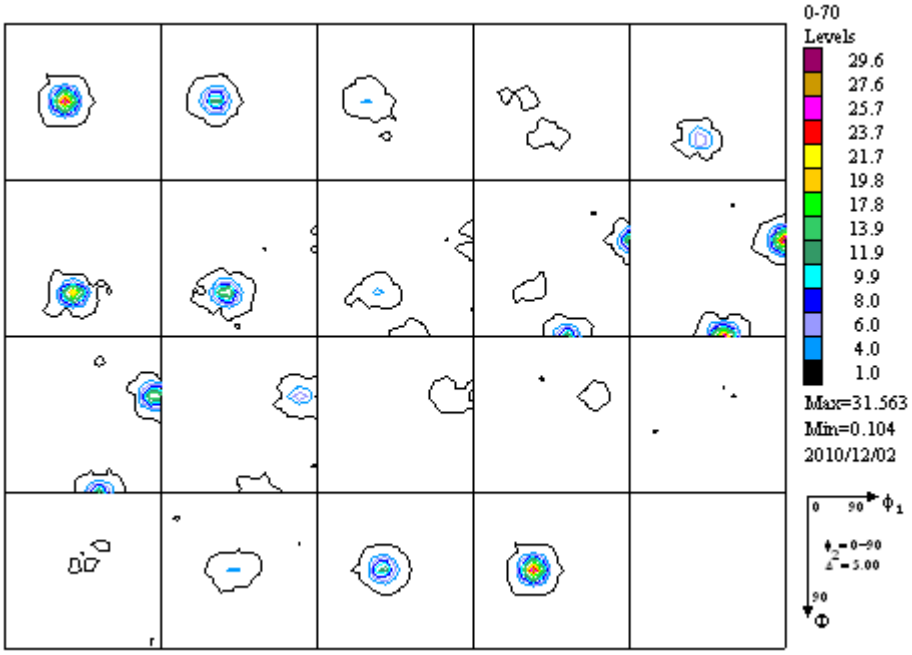
0－70

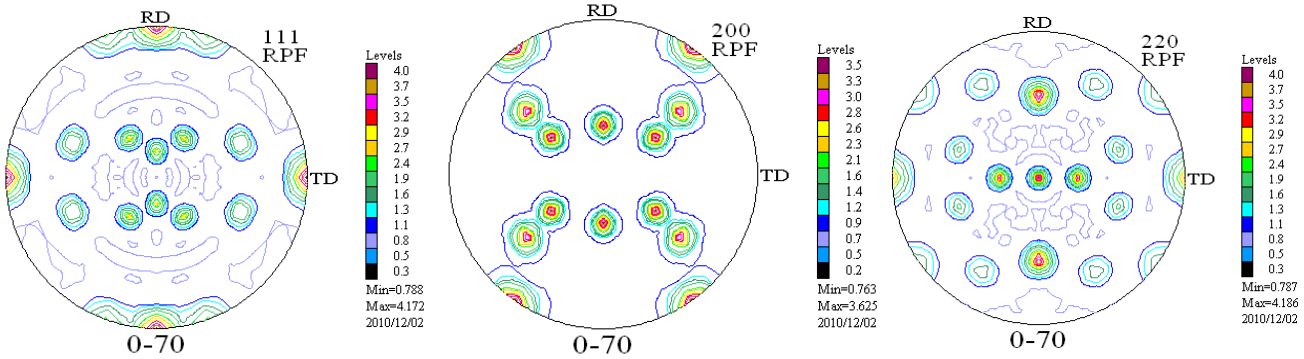
PF Data

	SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
	111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	70	☑
	200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	70	☑
	220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	70	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.29	0.52
3	69	209	0.29	0.52
3	70	210	0.29	0.50

Creation of pole figures files NPF and RPF





No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.65 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.89 %

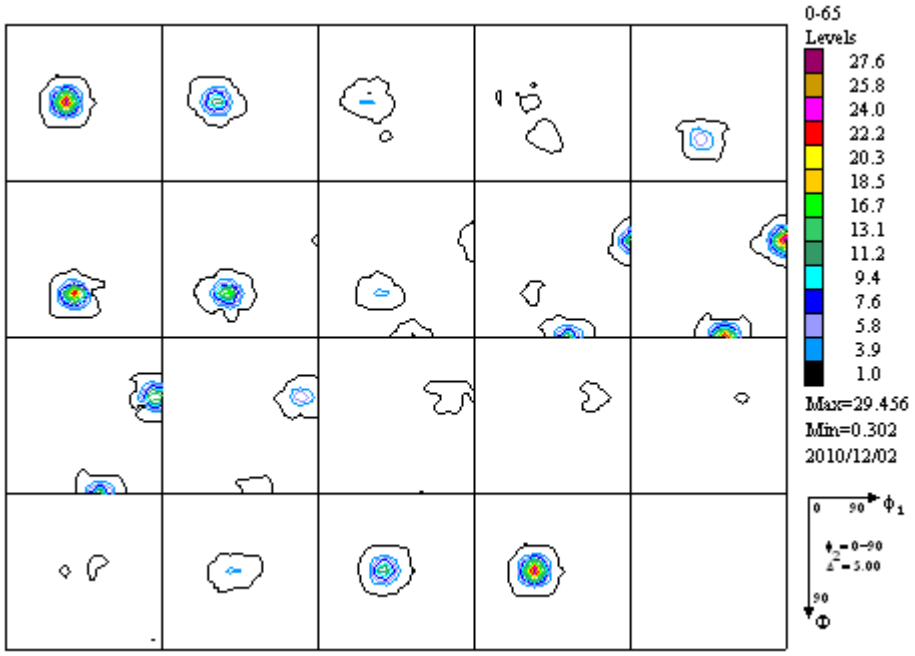
No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.3	10.4	9.6	9.7	{1 1 0}<1 -1 2> brass
2:	9.9	11.0	9.0	10.4	{1 1 2}<1 1 -1> copper
3:	80.78	Background Volume Fraction			

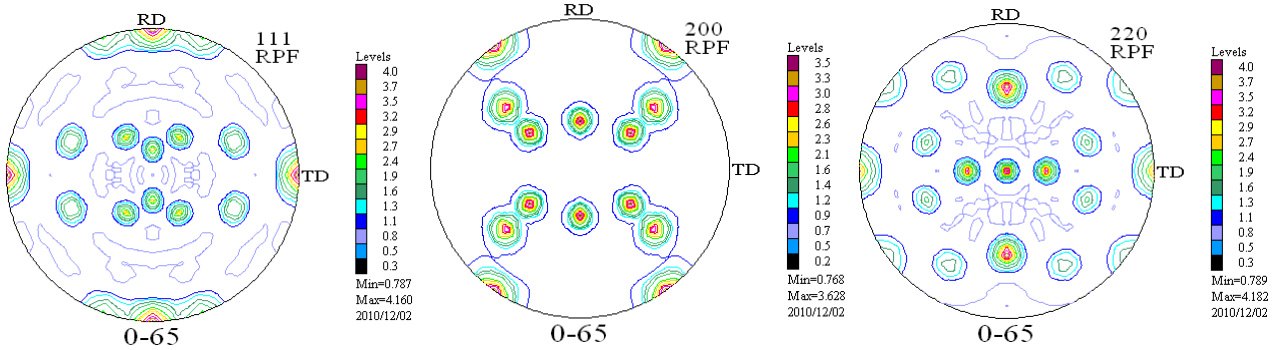
PF Data

SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	65	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	65	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	65	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	69	209	0.29	0.58
3	70	210	0.28	0.57

Creation of pole figures files NPF and RPF
Creation of orientation distribution file ODF





No	Texture Component	On	△φ1	△Φ	△φ2	Volume Fraction [%]	
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.22	%
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.38	%

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.7	10.7	9.8	9.9	{1 1 0}<1 -1 2> brass
2:	9.9	11.4	9.1	10.1	{1 1 2}<1 1 -1> copper
3:	80.44	Background Volume Fraction			

0－60

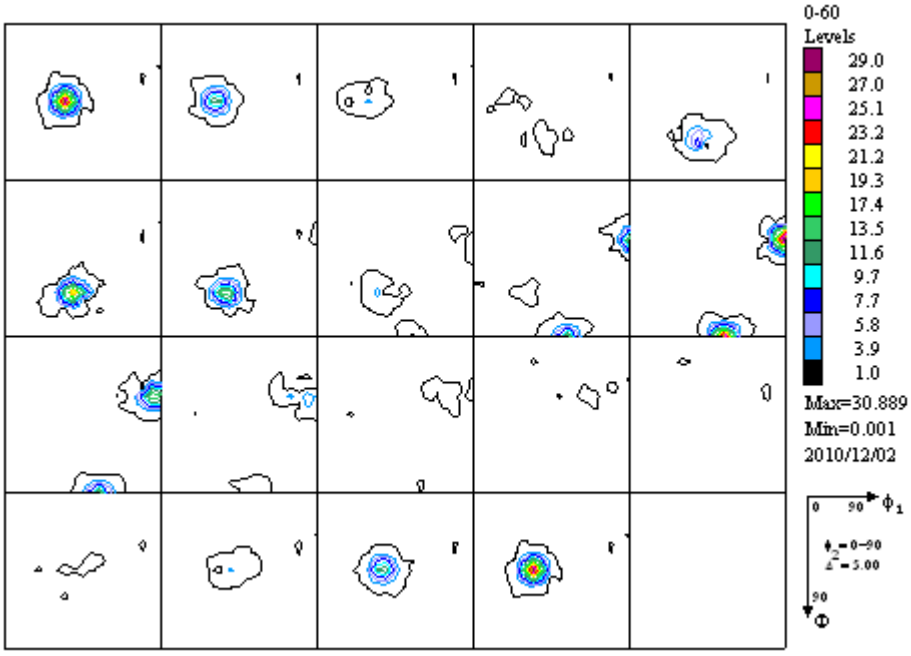
PF Data

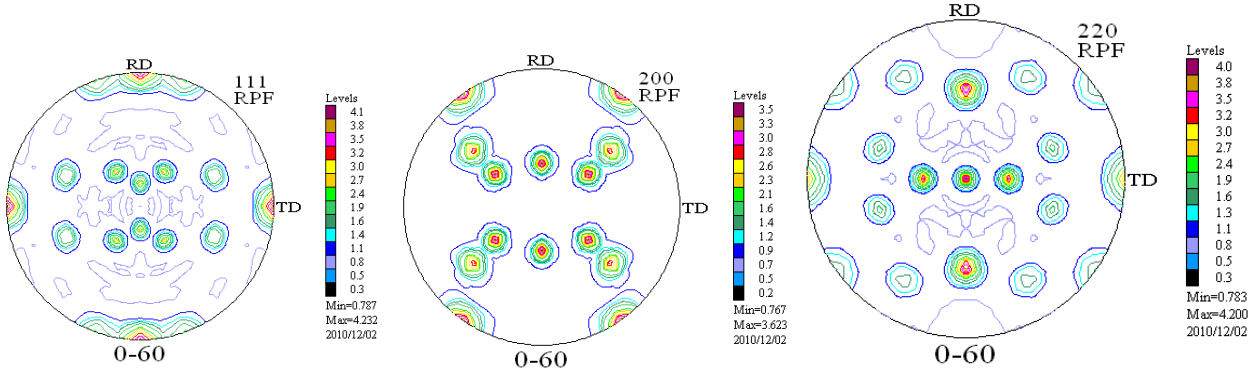
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	60	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	60	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	60	☑

Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	69	209	0.40	0.83
3	70	210	0.40	0.81

Creation of pole figures files NPF and RPF

Creation of orientation distribution file ODF





No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]
1	{ 1 1 0}< 1 -1 2> brass	☑	10.0	10.0	10.0	9.93 %
2	{ 1 1 2}< 1 1 -1> copper	☑	10.0	10.0	10.0	10.19 %

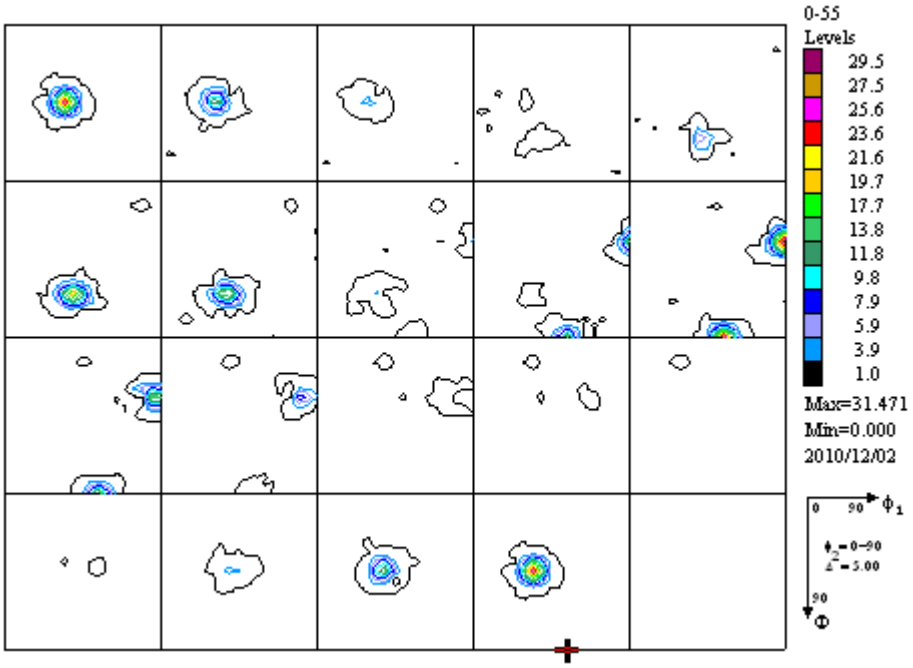
No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.3	10.2	9.7	9.3	{ 1 1 0}< 1 -1 2> brass
2:	10.6	12.3	9.6	10.5	{ 1 1 2}< 1 1 -1> copper
3:	80.11	Background Volume Fraction			

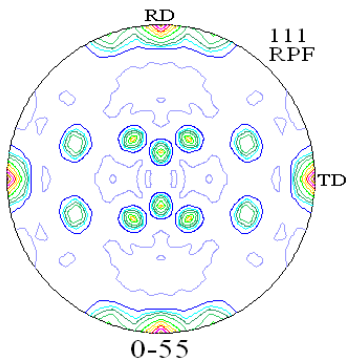
PF Data

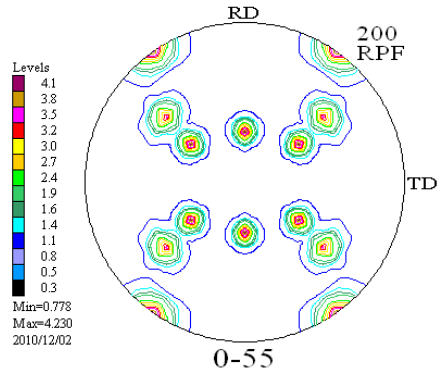
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	55	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	55	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	55	☑

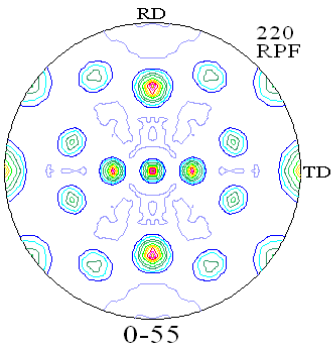
Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.47	0.68
3	69	209	0.46	0.68
3	70	210	0.46	0.67

Creation of pole figures files NPF and RPF









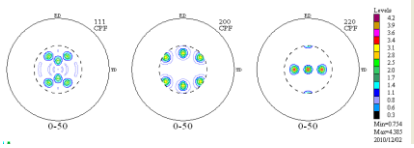
No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.80 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.83 %

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.5	10.7	9.6	9.7	{1 1 0}<1 -1 2> brass
2:	10.2	12.3	9.3	10.5	{1 1 2}<1 1 -1> copper
3:	80.22	Background Volume Fraction			

0－50

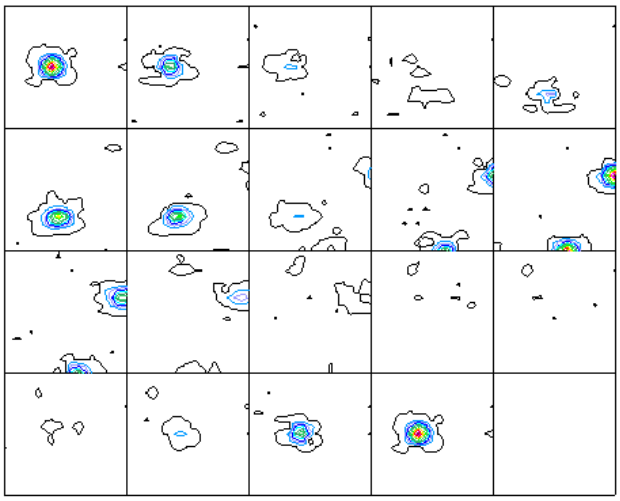
PF Data

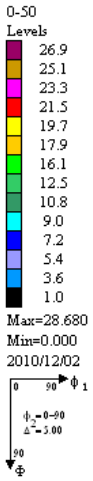
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	50	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	50	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	50	☑

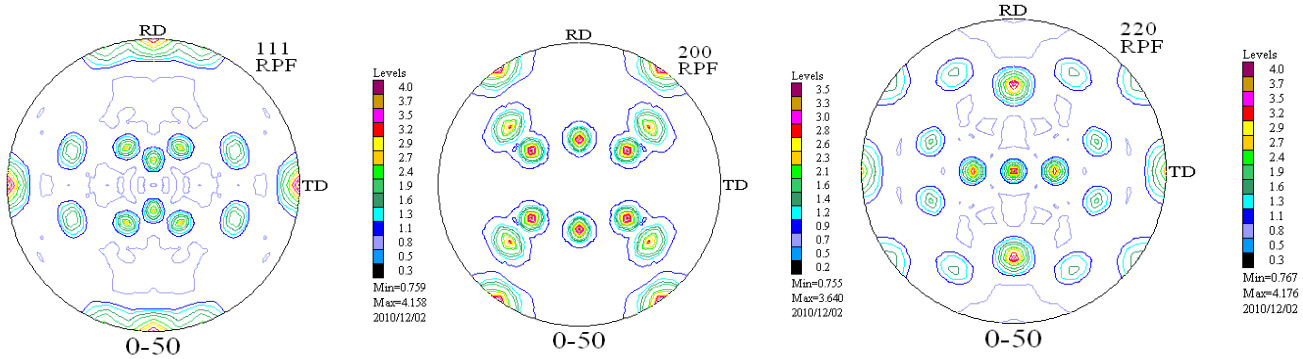


Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.57	0.83
3	69	209	0.56	0.82
3	70	210	0.56	0.81

Creation of pole figures files NPF and RPF





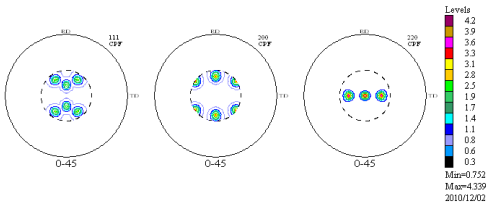


No	Texture Component	On	$\Delta\varphi_1$	$\Delta\Phi$	$\Delta\varphi_2$	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.74 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.66 %

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.7	11.4	9.6	9.8	{1 1 0}<1 -1 2> brass
2:	10.0	13.9	8.8	9.9	{1 1 2}<1 1 -1> copper
3:	80.34	Background Volume Fraction			

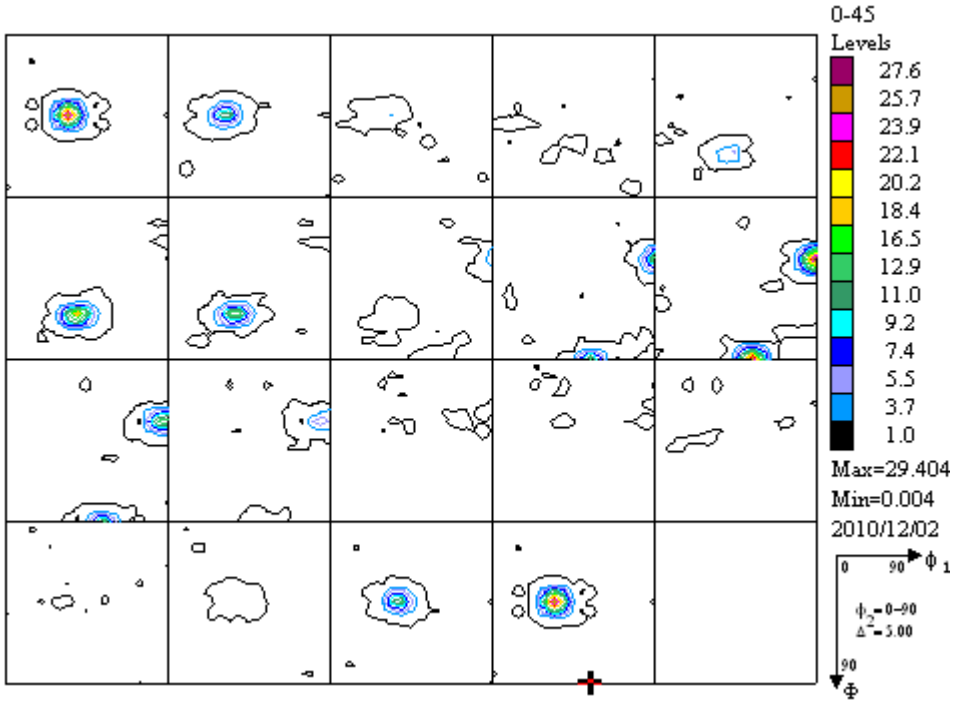
PF Data

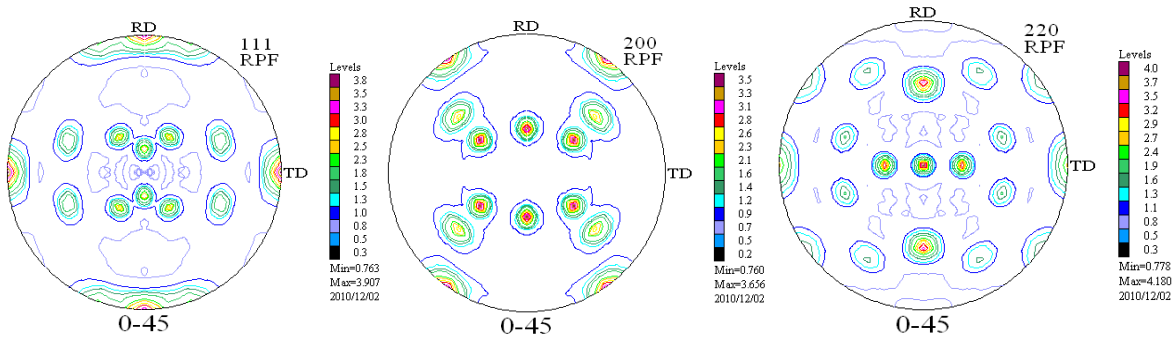
	SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
	111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	45	☑
	200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	45	☑
	220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	45	☑



Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.54	0.93
3	69	209	0.54	0.91
3	70	210	0.53	0.90

Creation of pole figures files NPF and RPF





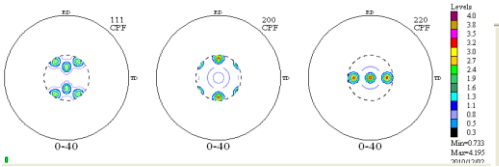
No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]	
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.40	%
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.46	%

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.2	12.1	9.2	9.7	{1 1 0}<1 -1 2> brass
2:	9.9	14.7	8.6	10.0	{1 1 2}<1 1 -1> copper
3:	80.94	Background Volume Fraction			

0－40

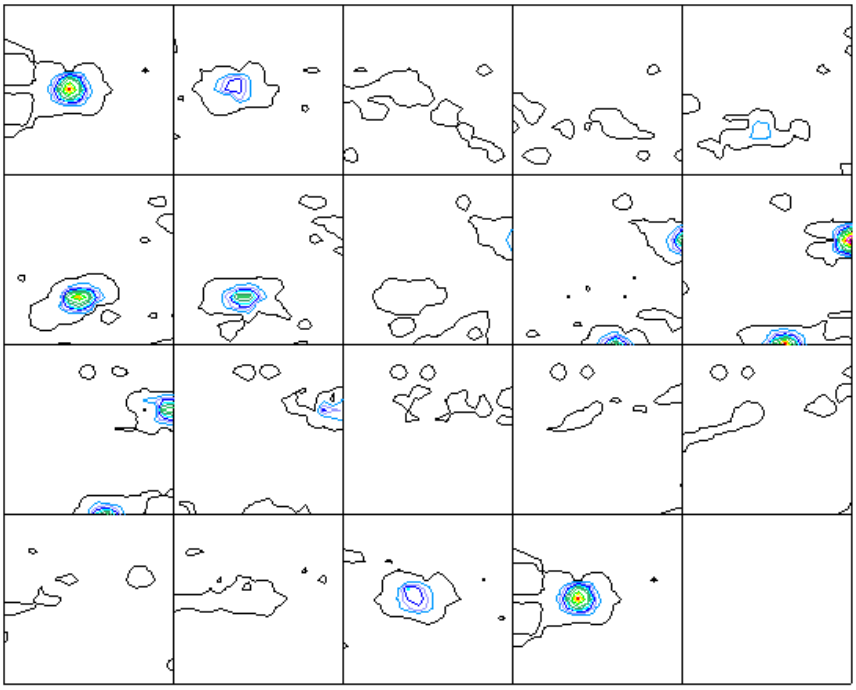
PF Data

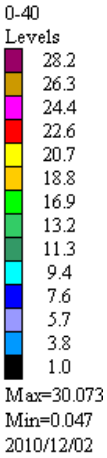
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	40	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	40	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	40	☑

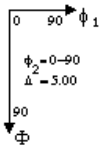


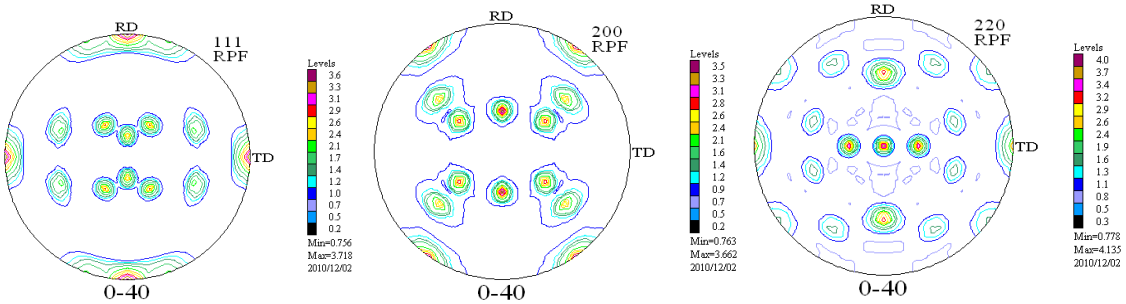
Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	188	0.67	1.22
3	69	189	0.67	1.19
3	70	190	0.66	1.18

Creation of pole figures files NPF and RPF









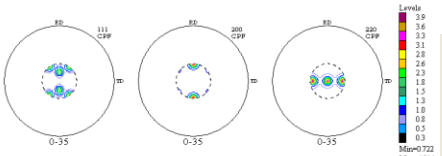
No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	9.00 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	9.18 %

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	9.4	13.4	9.1	9.5	{1 1 0}<1 -1 2> brass
2:	9.9	15.0	8.2	10.0	{1 1 2}<1 1 -1> copper
3:	80.68	Background Volume Fraction			

0－35

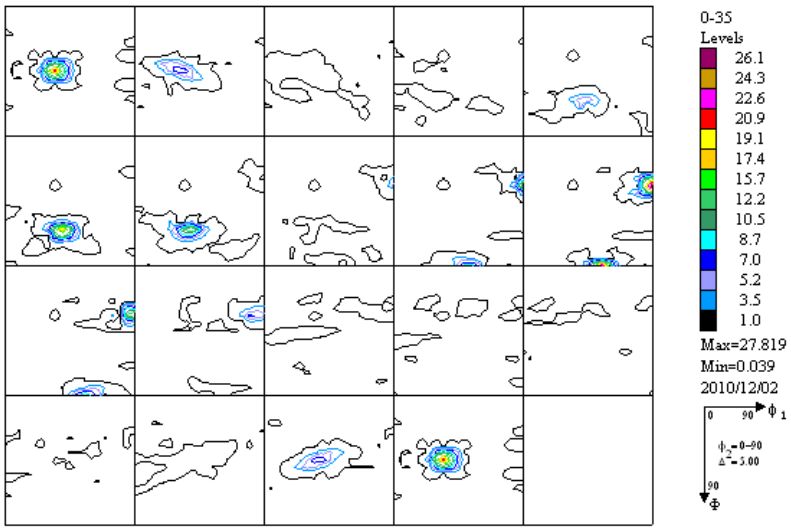
PF Data

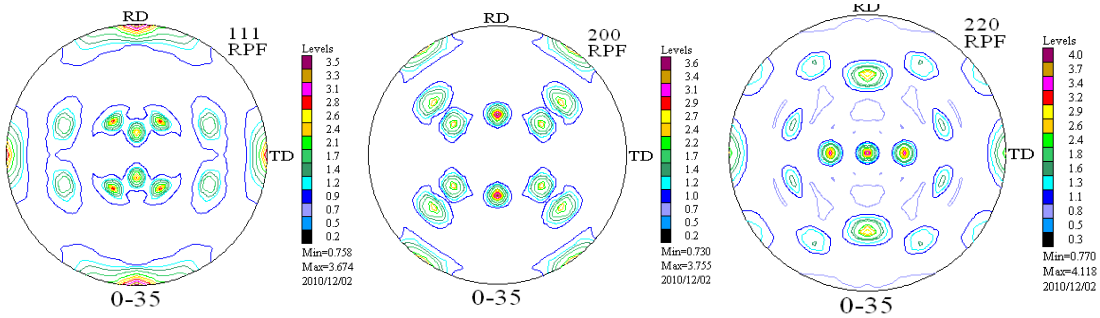
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	35	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	35	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	35	☑



Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	1.18	0.95
3	69	209	1.17	0.93
3	70	210	1.16	0.91

Creation of pole figures files NPF and RPF



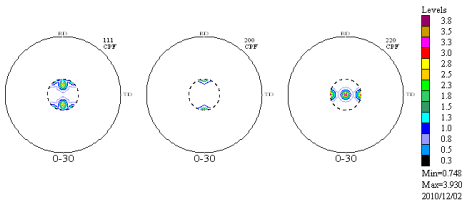


No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]
1	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	7.85 %
2	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	8.69 %

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation
1:	8.9	14.3	9.4	8.9	{1 1 0}<1 -1 2> brass
2:	9.0	15.2	8.2	8.8	{1 1 2}<1 1 -1> copper
3:	82.11	Background Volume Fraction			

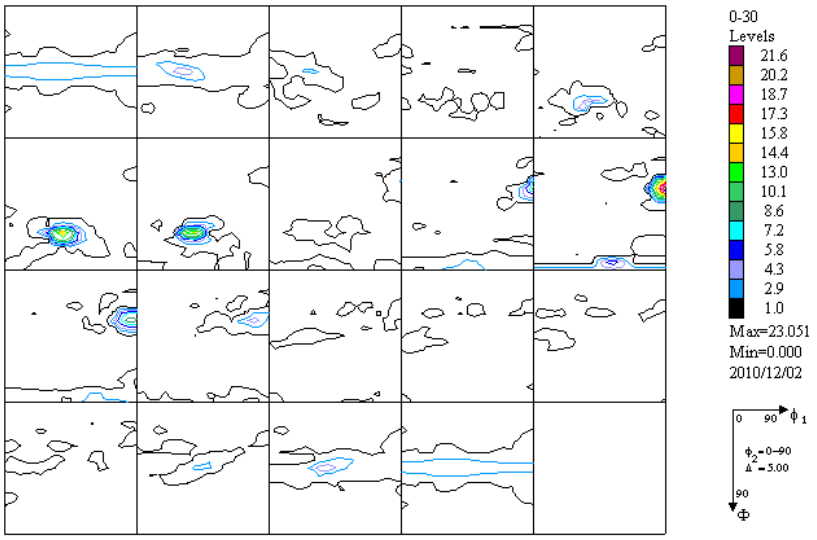
PF Data

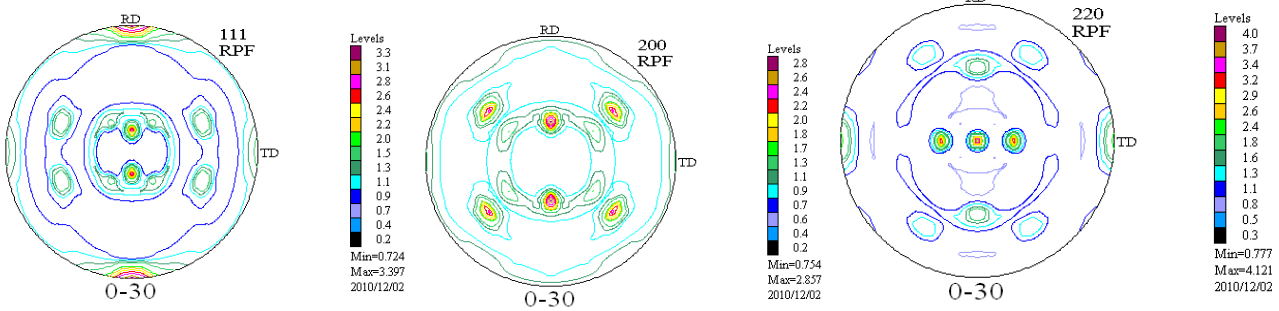
SelectFile(TXT(b,intens),TXT2(a,b,intens))	h,k,l	2Theta	Alfa Area	AlfaS	AlfaE	Select
111_5.0deg-rp2.TXT	1,1,1	0.0	0.0->90.0	0.0	30	☑
200_5.0deg-rp2.TXT	2,0,0	0.0	0.0->90.0	0.0	30	☑
220_5.0deg-rp2.TXT	2,2,0	0.0	0.0->90.0	0.0	30	☑



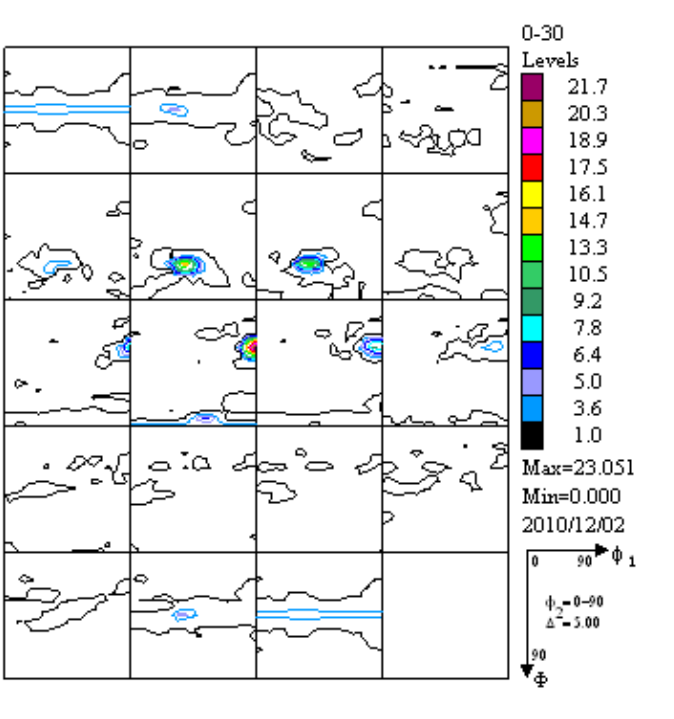
Cycle	Iteration(Max.= 70)	Iteration (total)	Rp[%](Lim.= 0.10)	dRp[%](Lim.= 0.10)
3	68	208	0.99	1.50
3	69	209	0.98	1.47
3	70	210	0.96	1.46

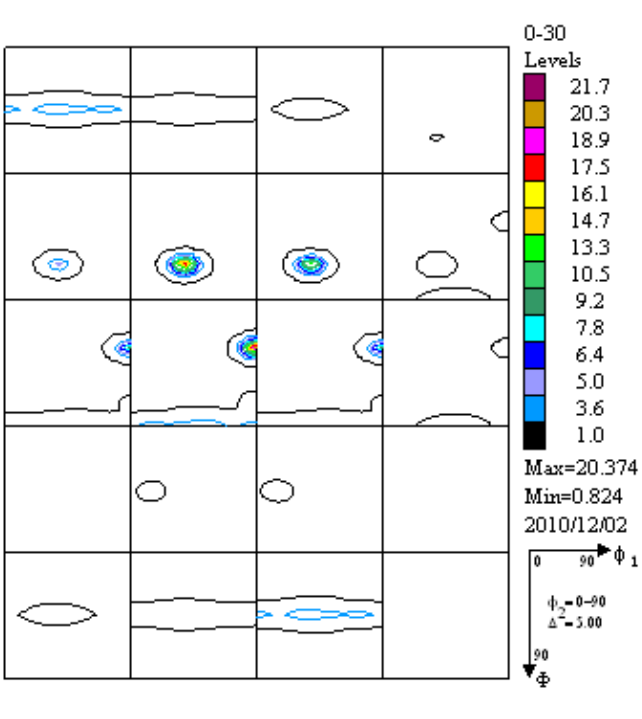
Creation of pole figures files NPF and RPF





No	Texture Component	On	Δφ1	ΔΦ	Δφ2	Volume Fraction [%]	
1	{1 1 2}<1 1 -1> copper	☑	10.0	10.0	10.0	8.45	%
2	{1 1 0}<0 0 1> goss	☑	10.0	10.0	10.0	3.15	%
3	{1 0 1}<5 2 -5>	☑	10.0	10.0	10.0	3.11	%
4	{1 1 0}<1 -1 2> brass	☑	10.0	10.0	10.0	4.88	%
5	{1 1 0}<1 -1 1>	☑	10.0	10.0	10.0	3.65	%
6	{5 2 5}<1 -5 1>	☑	10.0	10.0	10.0	2.73	%
7	(0.00, 35.26, 89.00) CURSOR !!	☐	10.0	10.0	10.0		%





ODFVFGraph 1.113GS by CTR user:HelperTex CTR

File Help

Job JOB2 Sample : 0-30 Project : Demo

No.	VF(%)	Phi1(FWHM)	Phi(FWHM)	Phi2(FWHM)	Orientation	
1:	7.8	15.1	8.3	8.5	{ 1 1 2}{ 1 1 -1 >	copper
2:	1.1	24.9	9.1	8.0	{ 1 1 0}{ 0 0 1 >	goss
3:	2.2	25.7	8.1	8.5	{ 1 0 1}{ 5 2 -5 >	
4:	5.2	31.7	10.1	11.5	{ 1 1 0}{ 1 -1 2 >	brass
5:	0.9	19.1	11.4	10.2	{ 1 1 0}{ 1 -1 1 >	
6:	0.4	17.9	11.3	9.0	{ 5 2 5}{ 1 -5 1 >	
7:	82.39	Background Volume Fraction