

randomレベルによるRp%の変化とVF%

入力データ				defocusあり						defocusなし					
Brass	Goss	Cube	Ranom	Brass	Goss	Cube	Ranom	Labo	CTR	Brass	Goss	Cube	Ranom	Labo	CTR
10%	10%	10%	70%	10%	10%	10%	70%	0.98	0.40	11%	12%	10%	66%	9.86	9.40
20%	20%	20%	40%	20%	20%	20%	40%	0.95	0.40	19%	21%	21%	39%	9.20	6.20
30%	30%	30%	10%	30%	30%	30%	10%	1.00	0.10	29%	30%	30%	11%	8.41	1.70
33%	33%	33%	1%	36%	33%	30%	1%	2.35	0.10	36%	33%	30%	1%	8.71	1.70

randomレベルとRp%の関係は、defocus補正なしで、randomレベルが高いとRp%が低下している。すなわち、defocusはrandomレベルに影響しているように思われる。試しに、randomレベル無しの単純方位を調べると、defocus補正なしでも正解が得られた。

randomは、極点図全体に一様に存在する為、defocusの影響を受け易いことが原因と思われる。

言い換えれば、defocusはrandom方位により多く作用する。

LaboTexとCTRのRp%計算は異なり、CTRでは計算限界値以下は扱わない。

2019年11月26日

HelperTex Office

1. 概要

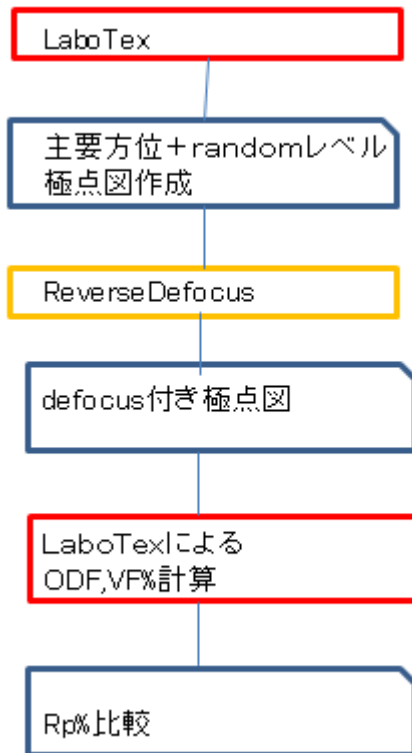
ODF計算のVolumeFraction (VF%) 計算はdefocusに左右されるかrandomレベルを変えながら比較してみます。

比較する極点図はLaboTexのModelODF機能から計算し、

実測したrandomデータを整形し、

ReverseDefocusでModelODF再計算極点図のdefocus付き極点図を作成

defocus補正ありなしでODF計算を行い比較する。

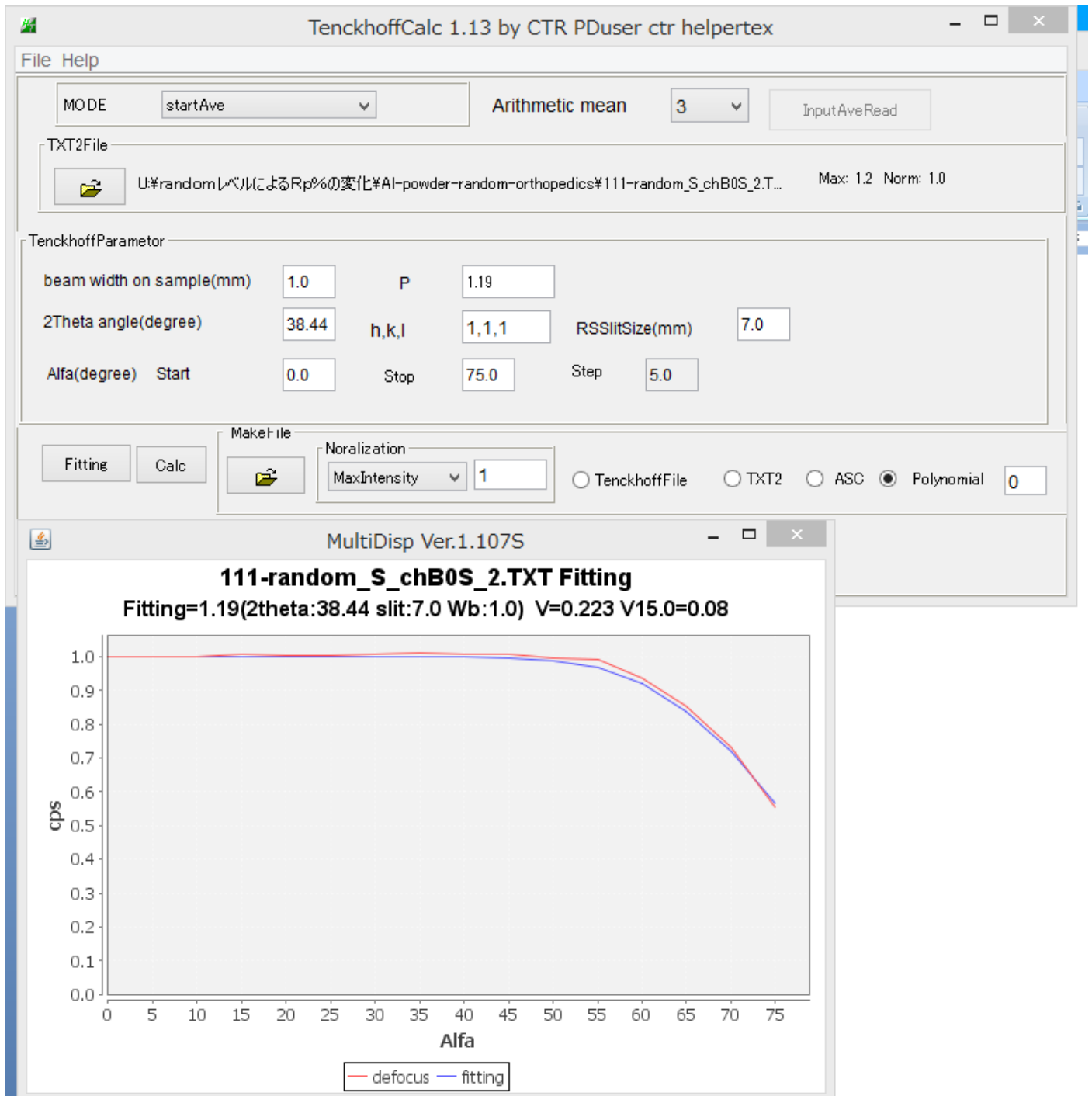


2. 整形 defocus ファイル作成

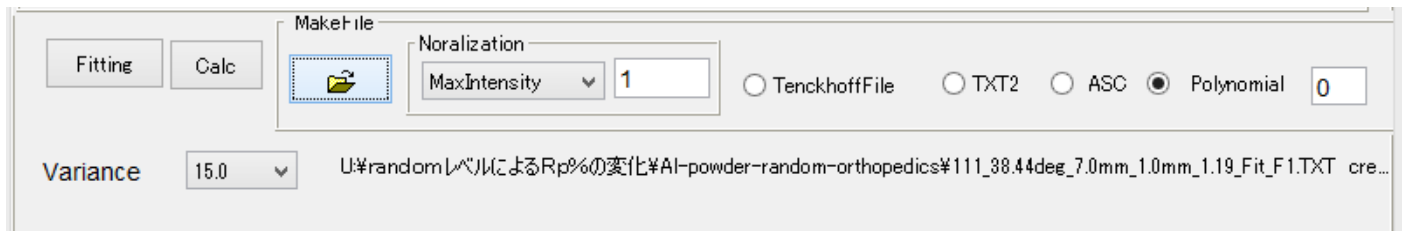
2. 1 バックグラウンド除去した TXT 2 ファイル作成

The screenshot displays the ODFPolefigure 1.5.1.62 software interface. At the top, three circular pole figure plots are shown, each with a title: $\{1,1,1\}4711.0$, $\{2,0,0\}2402.0$, and $\{2,2,0\}1561.0$. Below these plots is the main software window with a menu bar (File, Linear(3D), ToolKit, Help, InitSet, Rp%, Minimum, All background, Transmissionblinds=30.0) and a toolbar. The main panel contains several sections: "Files select" with a dropdown menu showing "ASC(RINT-PC)" and a file list; "Calculation Condition" with buttons for "Previous" and "Next", and a text field for "hkl" set to "1,1,1"; "Background delete mode" with radio buttons for "DoubleMod...", "SingleMode", "LowMode", "HighMode", "Nothing", "Minimum(α , β)", and "MiniAver X" (set to 1.0); "AbsCalc" with checkboxes for "Ref" and "Trans", a "Schulz reflection method" dropdown, "Absorption coefficient" (133.0), "Thickness" (0.2), and "2Theta" (38.44); "Defocus file Select Transmission defocus HKL+T" with a "TextDisp" dropdown set to "1/Ra"; and "OutFiles" with radio buttons for "Ras", "Asc", "TXT2", and "TXT". At the bottom right, there are buttons for "ValueODF-B", "ValueODF-A", "Cancel", "Calc", "Connect", and "ODF File", along with the text "Select crystal : Cubic 19/11/25".

2. Tenckhoff曲線にFitting整形

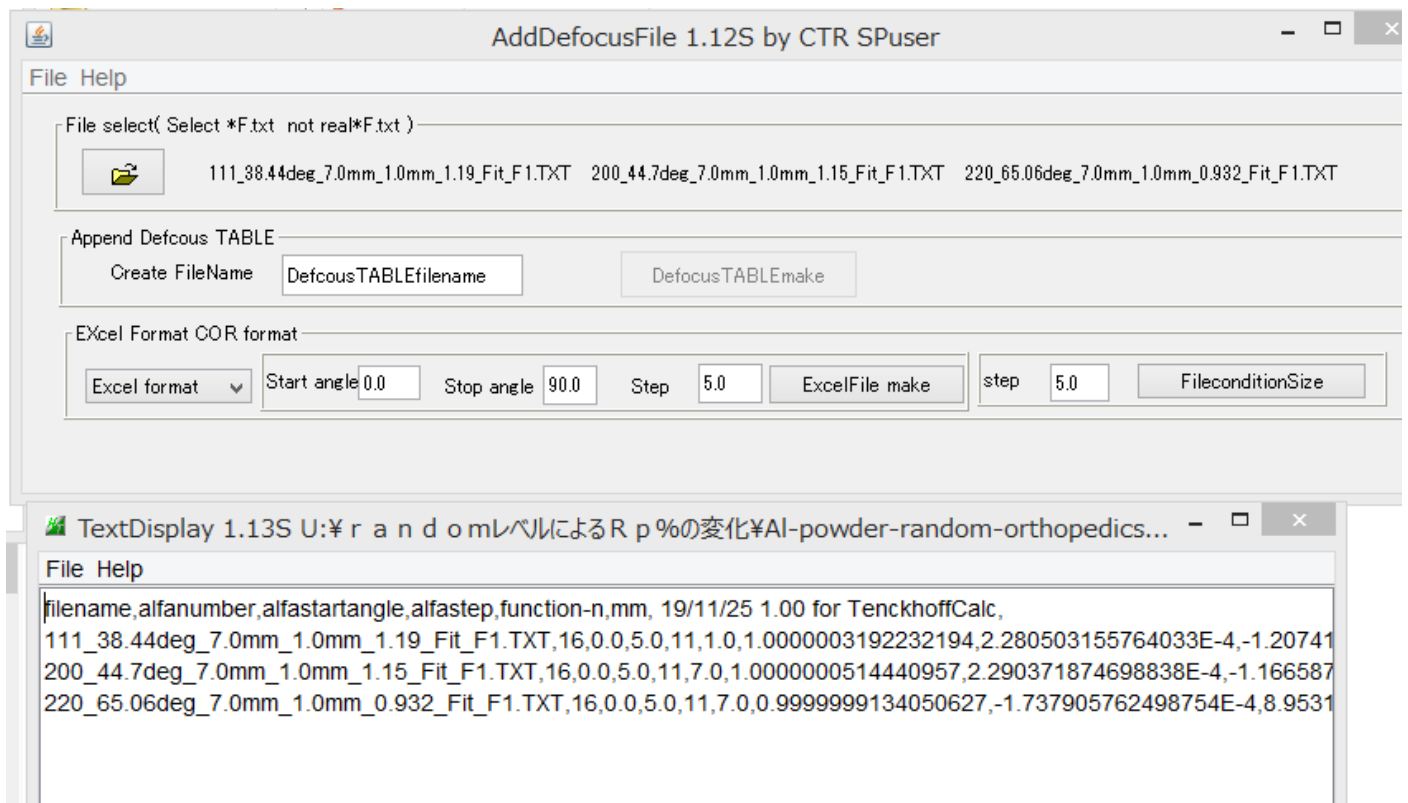


多項式ファイル作成

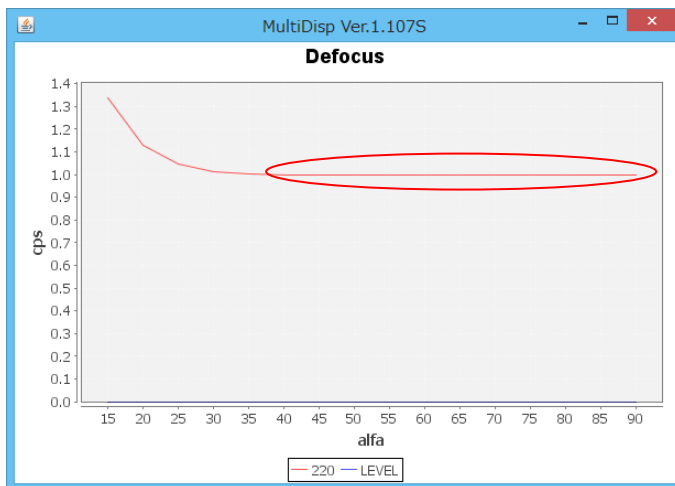
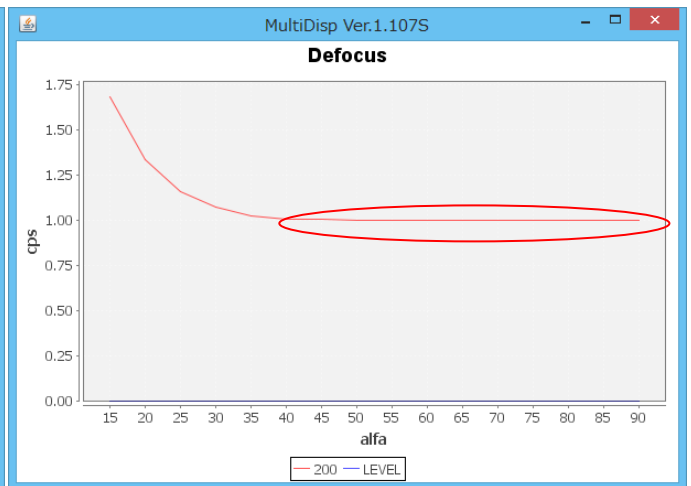
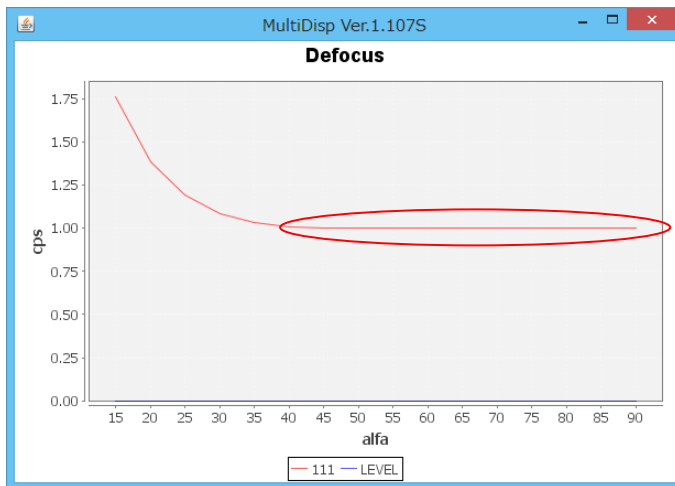
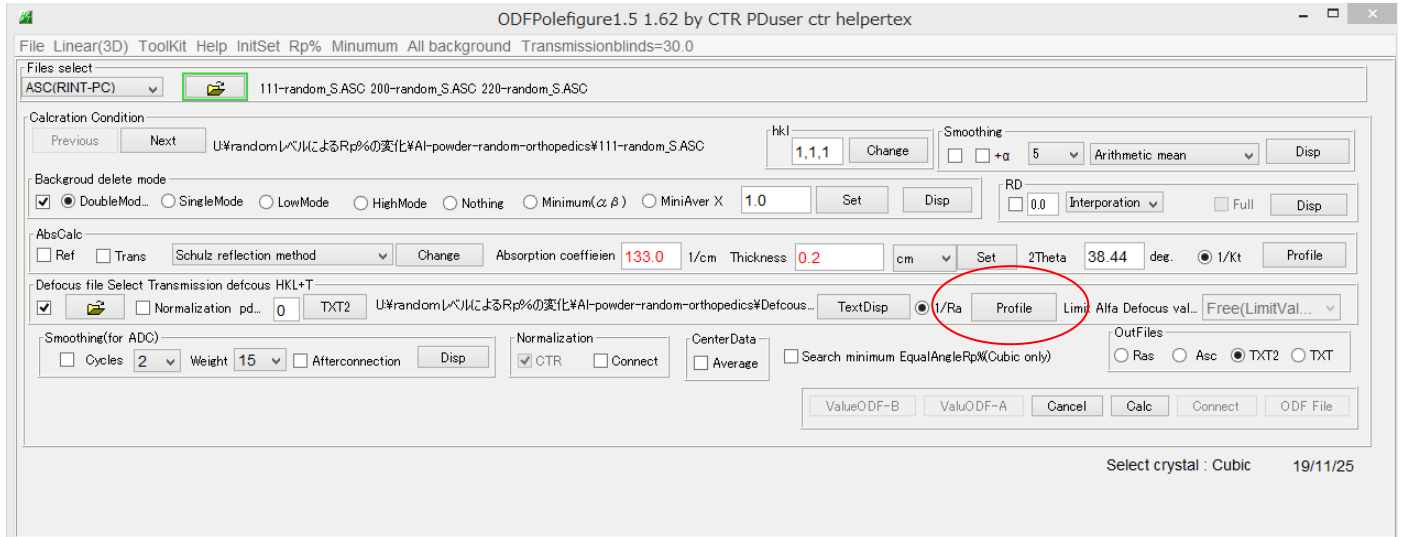


{200}, {220} 極点図も同様に

2. 3 多項式ファイルをまとめてdefocusTABLEリスト作成



2. 4 TABLEリストデータをODFPoleFigure1.5で確認



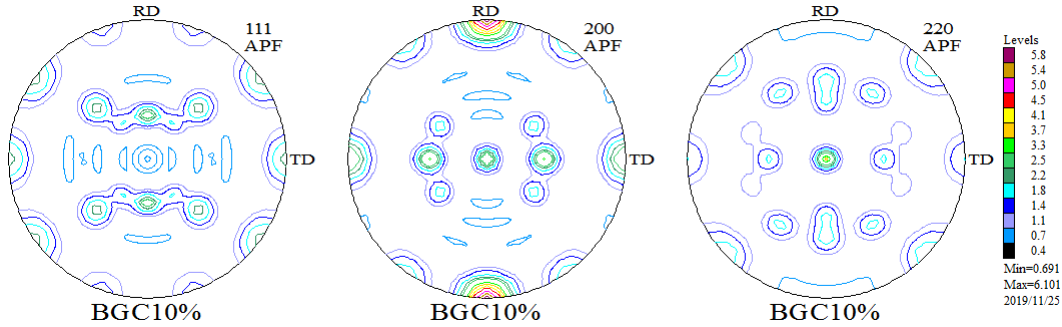
整形により凸凹のない綺麗な defocus 曲線が確認出来ます。

3. LaboTexのModelODFで作成した極点図をdefocusファイルでReverseし
defocus補正ありなしを比較する。

3. 1 Brass,Goss,Cube が 10%の場合

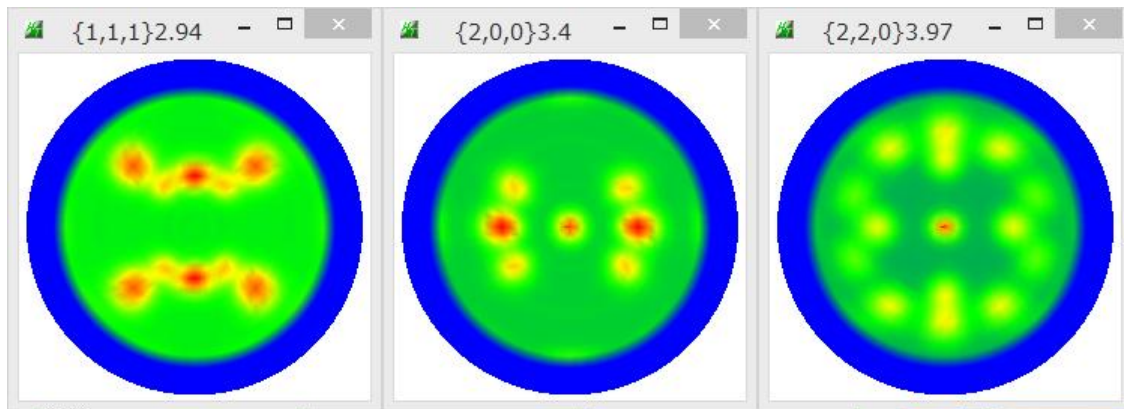
No	Texture Component	On	Distribution	FWHM ϕ_1	FWHM ϕ_2	FWHM ϕ_3	Volume Fraction
1	{ 1 1 0 } < 1 -1 2 > brass	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	10 %
2	{ 1 1 0 } < 0 0 1 > goss	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	10 %
3	{ 0 0 1 } < 1 0 0 > cube	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	10 %

Sample Name: BGC10%
Project Name:



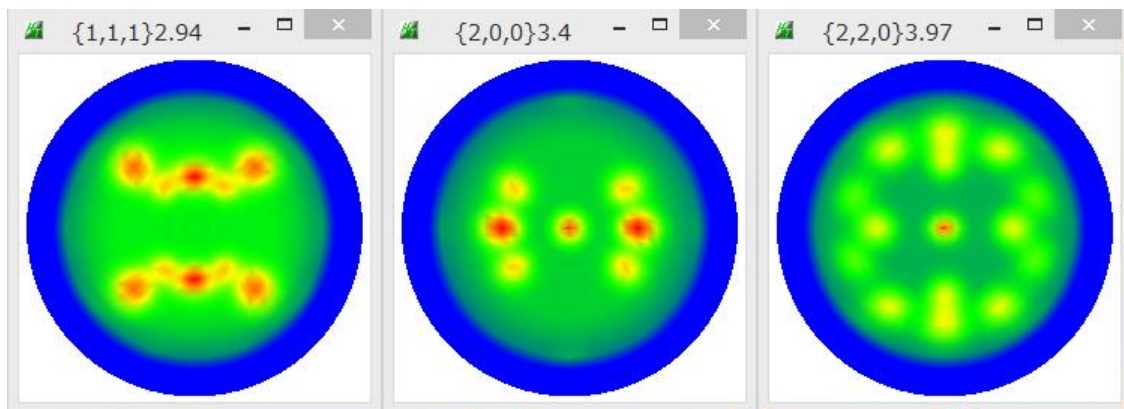
極点図 Export し反射法極点図作成

Reverse 前

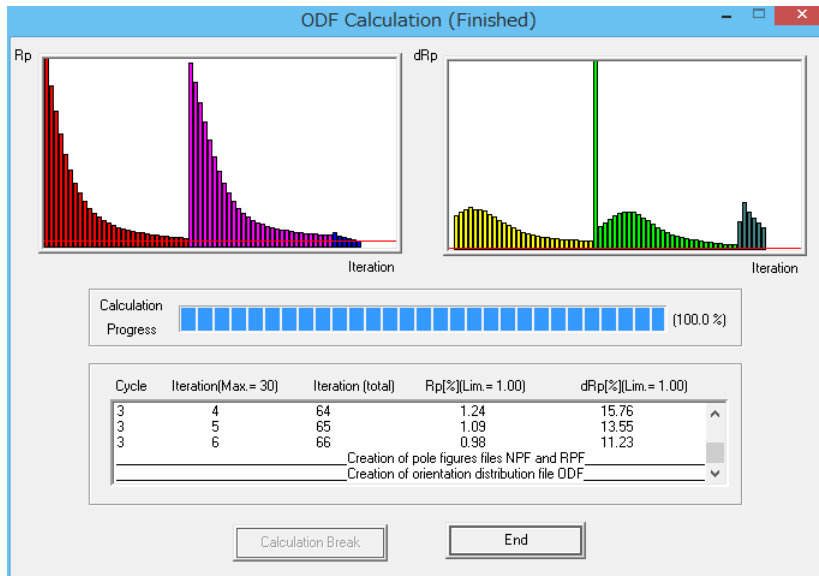


Reverse 後

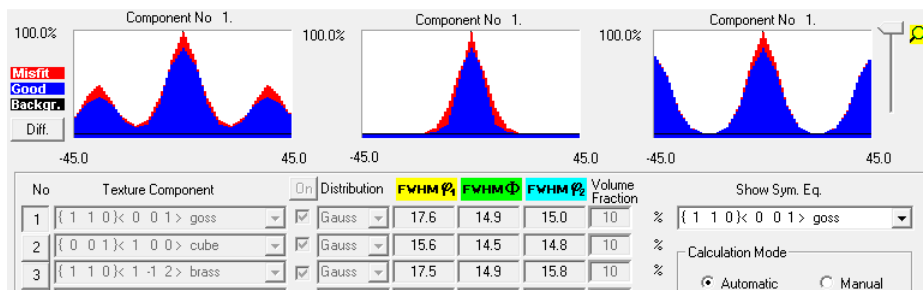
極点図の外周付近の密度が下がっている



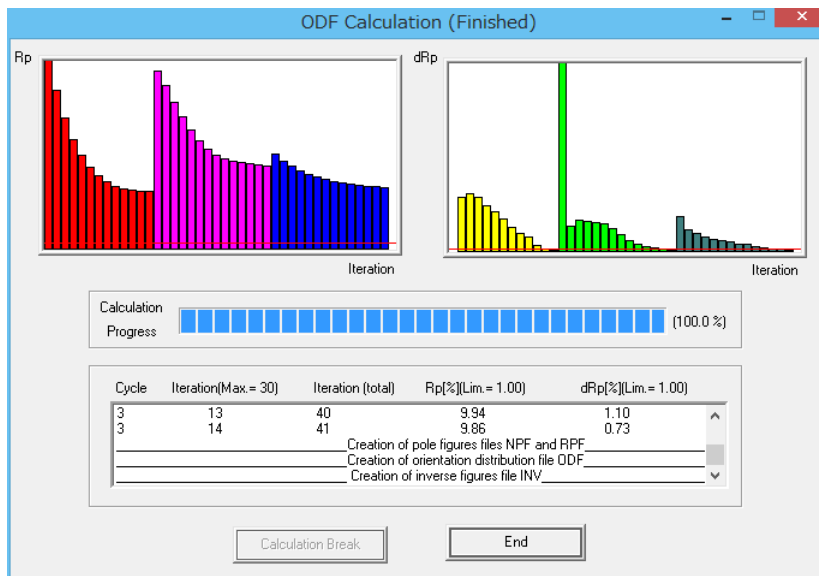
3. 1. 1 Reverse 前 (defocus 補正あり) を解析



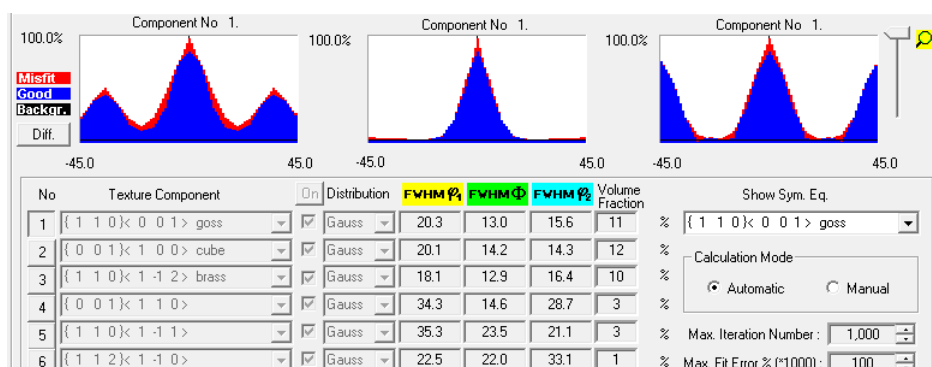
VolumeFraction



3. 1. 2 Reverse 後 (defocus 補正なし) を解析

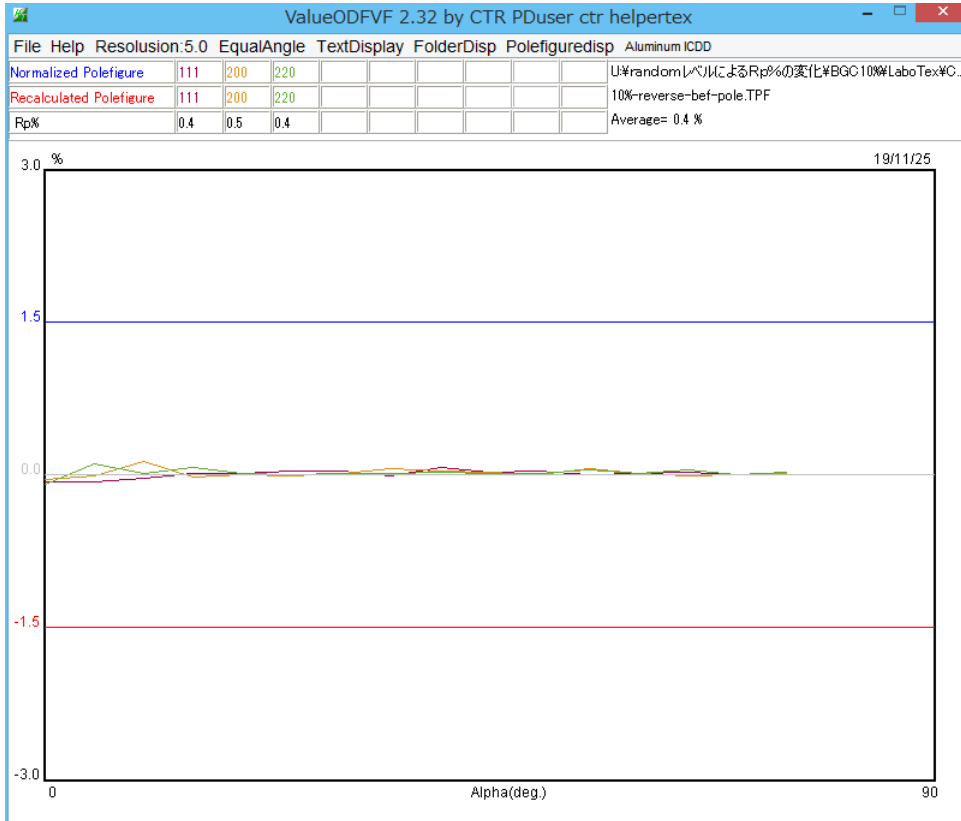


VolumeFraction

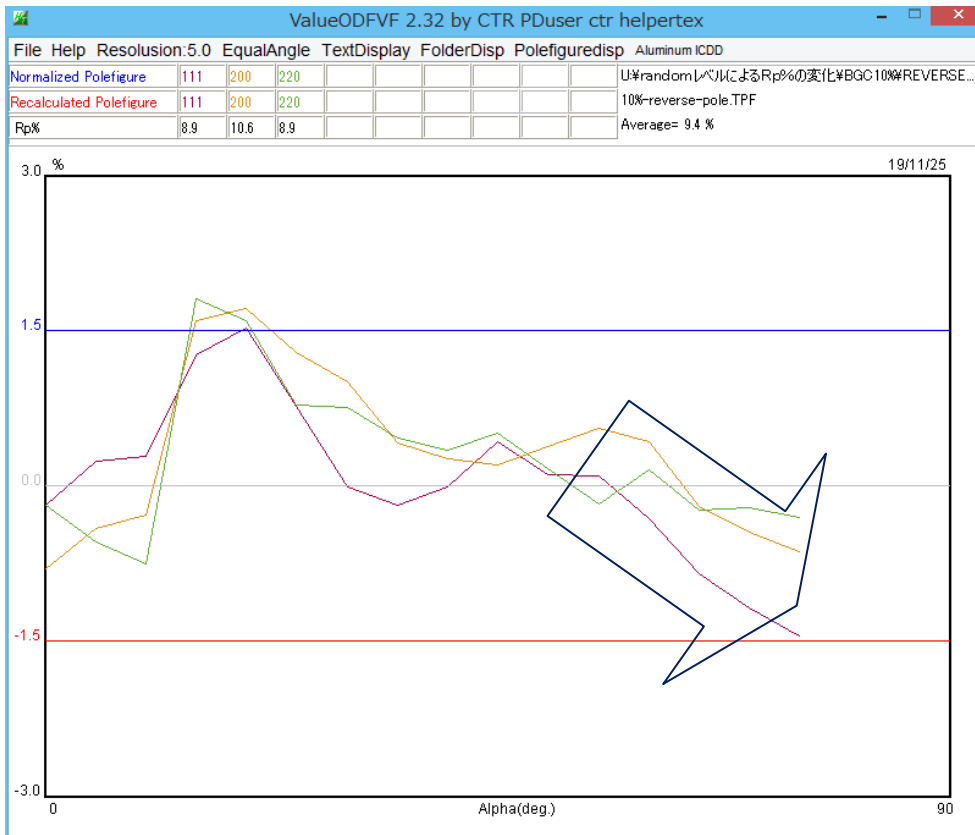


3. 1. 3 Rp%比較

Reverse 前 (defocus 補正あり) を解析



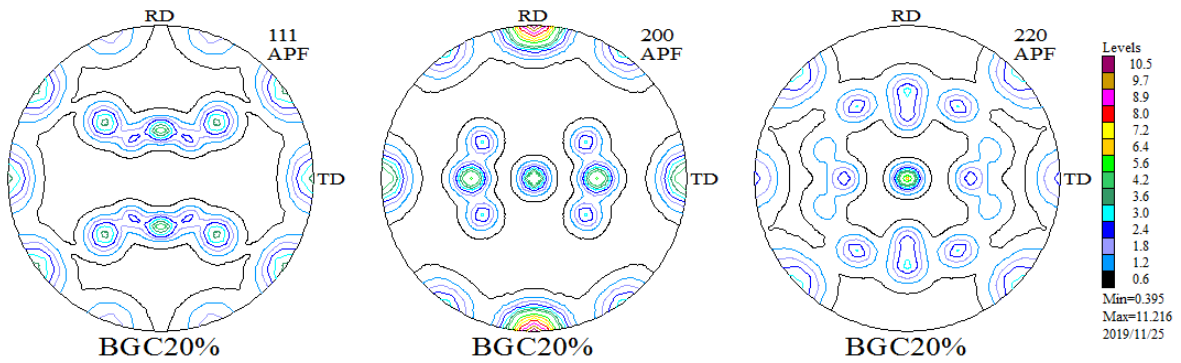
Reverse 後 (defocus 補正なし) を解析



3. 2 Brass,Goss,Cube が 20%の場合

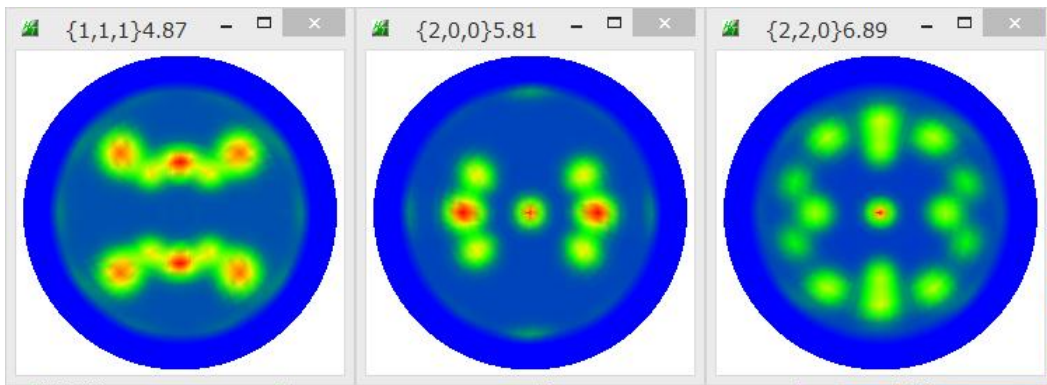
No	Texture Component	On	Distribution	FWHM ϕ	FWHM Φ	FWHM ψ	Volume Fraction
1	{ 1 1 0 } < 1 -1 2 > brass	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	20 %
2	{ 1 1 0 } < 0 0 1 > goss	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	20 %
3	{ 0 0 1 } < 1 0 0 > cube	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	20 %

Sample Name: BGC20%
Project Name:

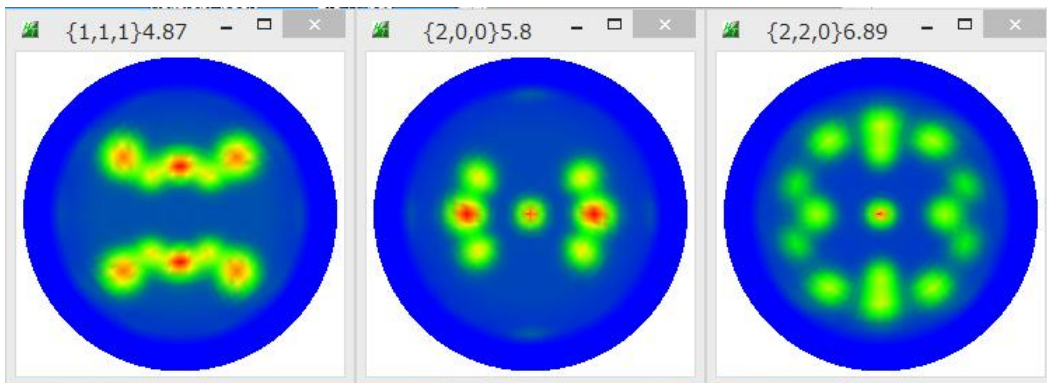


極点図 Export し反射法極点図作成

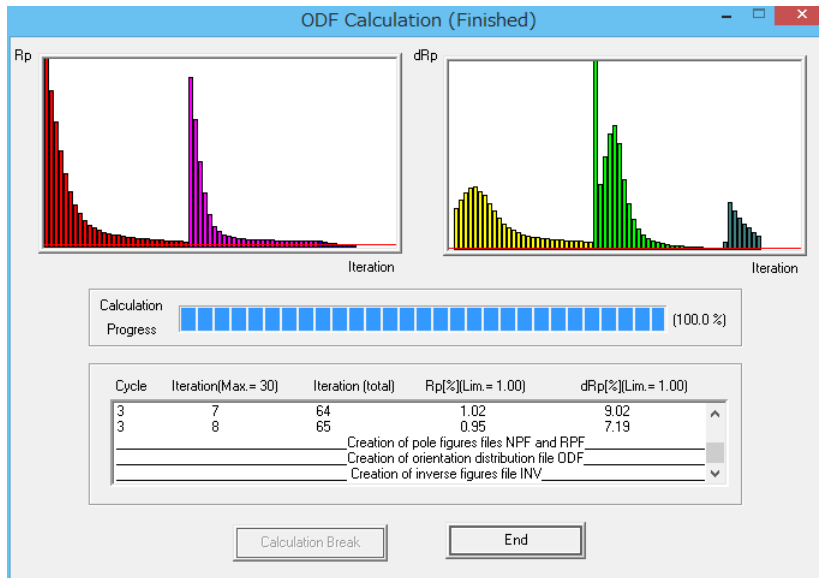
Reverse 前



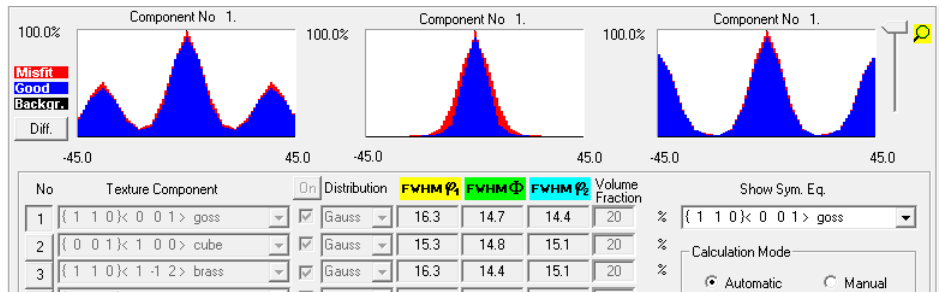
Reverse 後



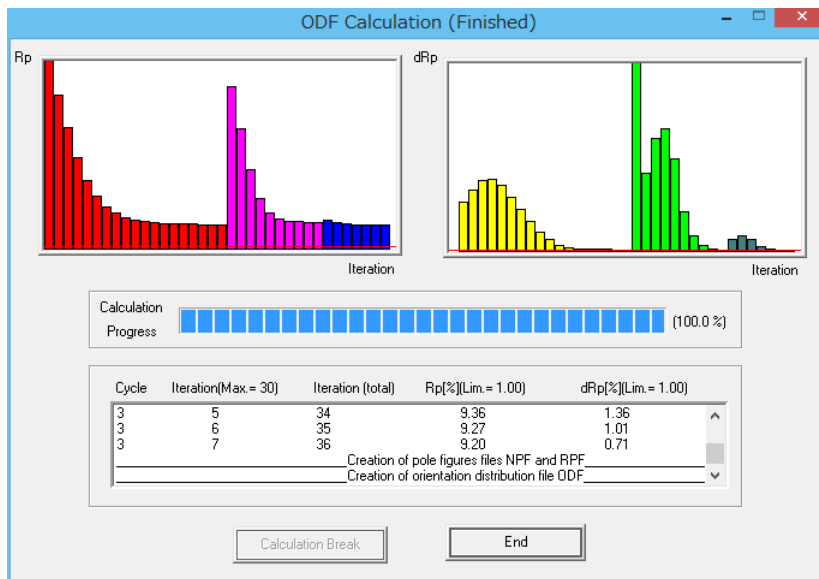
3. 2. 1 Reverse 前 (defocus 補正あり) を解析



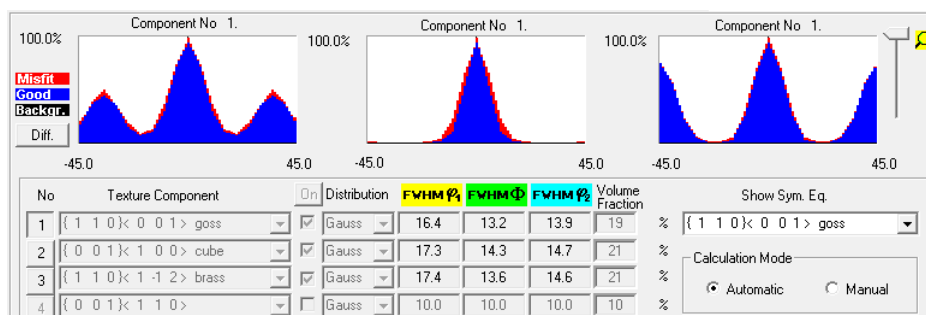
VolumeFraction



3. 2. 2 Reverse 後 (defocus 補正なし) を解析

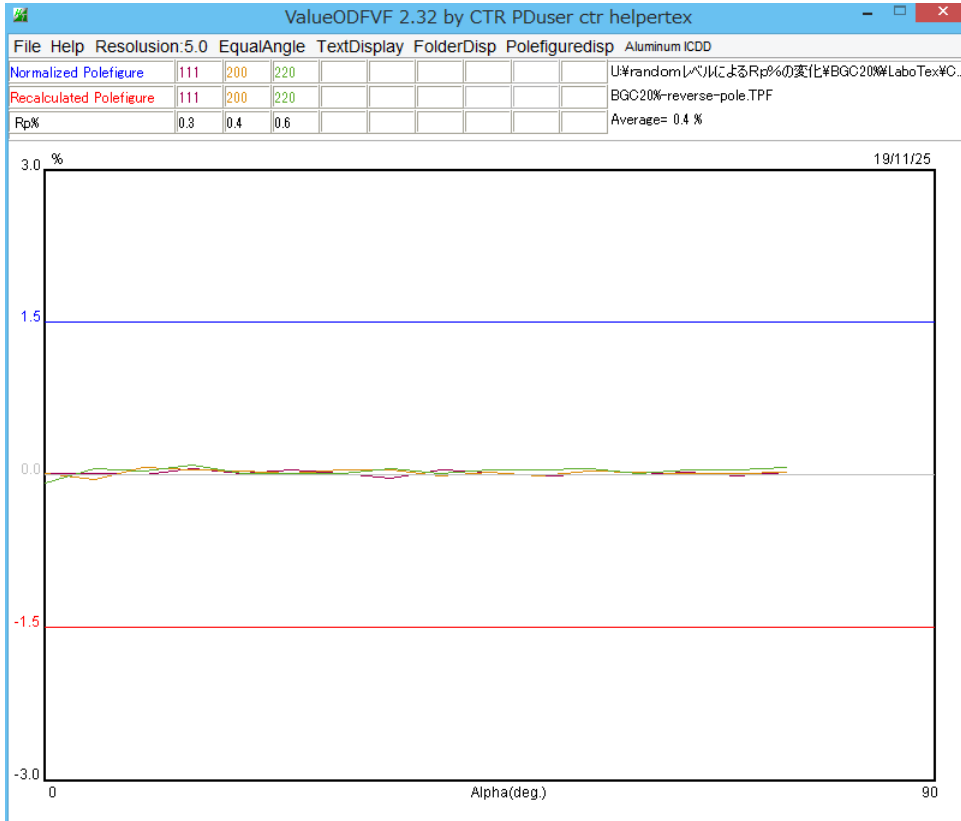


VolumeFraction

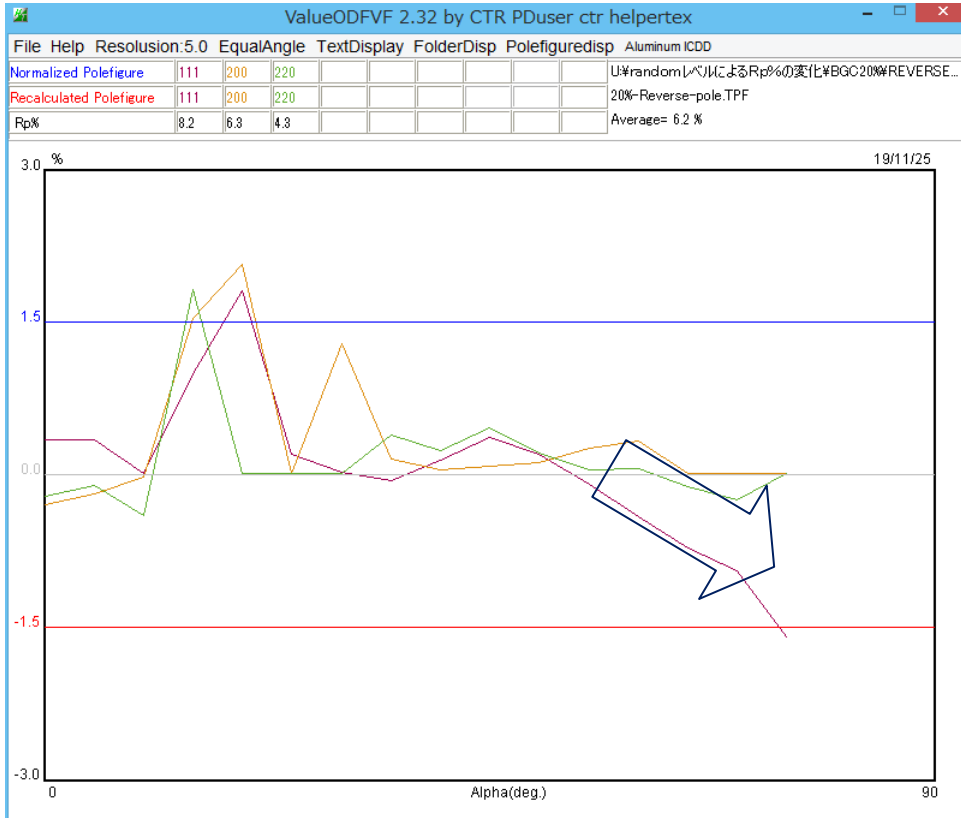


3. 2. 3 Rp%比較

Reverse 前 (defocus 補正あり) を解析



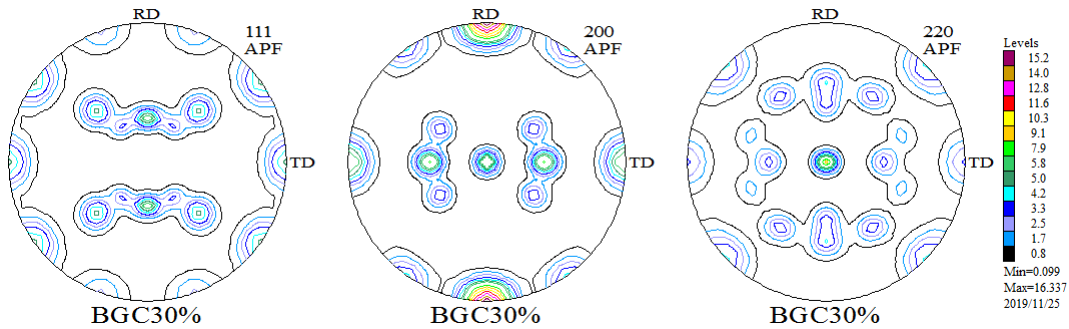
Reverse 後 (defocus 補正なし) を解析



3. 3 Brass,Goss,Cube が 30%の場合

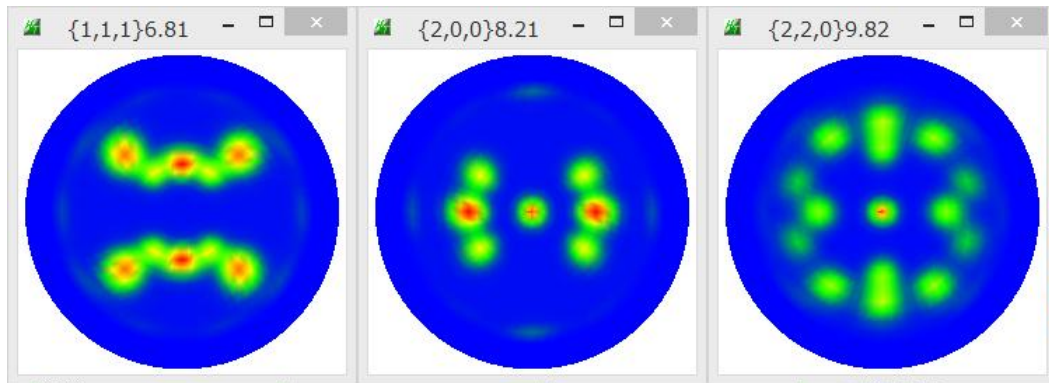
No	Texture Component	On	Distribution	FWHM ϕ	FWHM Φ	FWHM θ	Volume Fraction
1	{ 1 1 0 } < 1 -1 2 > brass	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	30 %
2	{ 1 1 0 } < 0 0 1 > goss	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	30 %
3	{ 0 0 1 } < 1 0 0 > cube	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	30 %

Sample Name: BGC30%
Project Name:

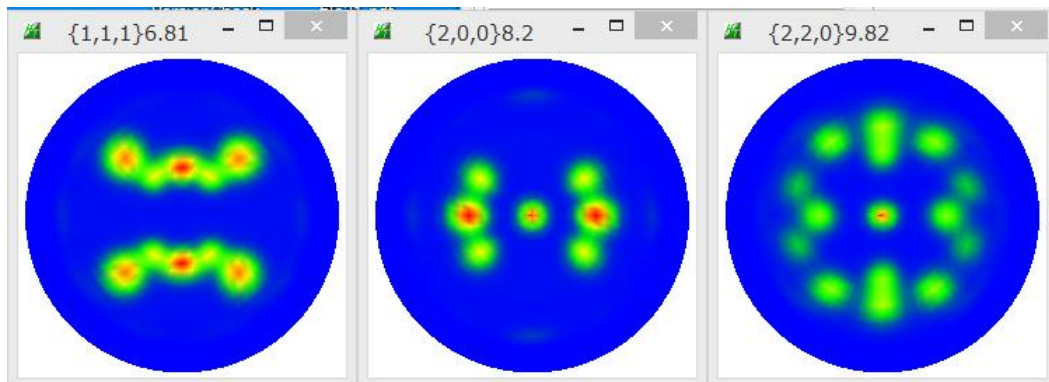


極点図 Export し反射法極点図作成

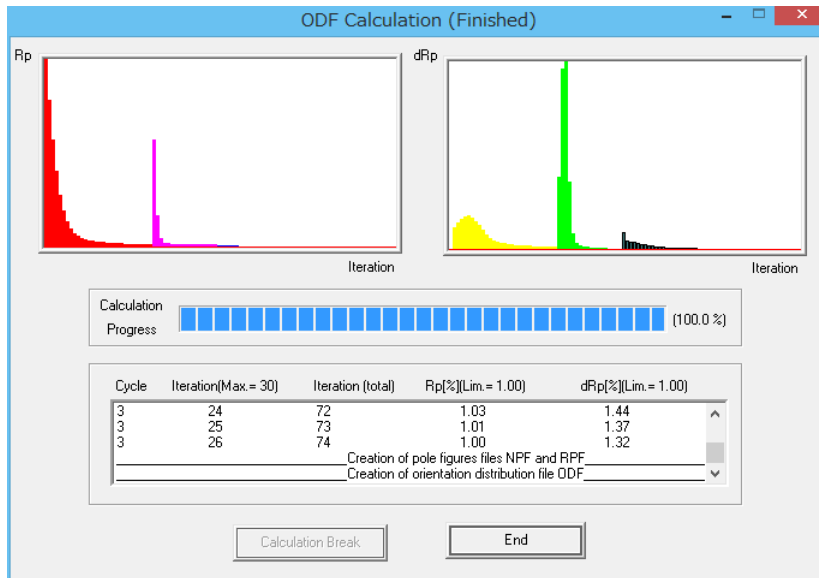
Reverse 前



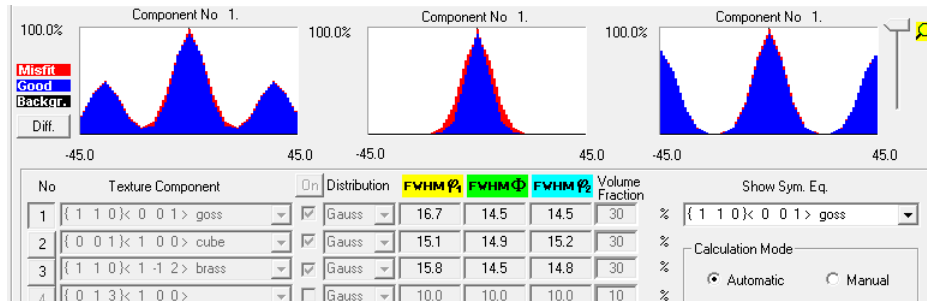
Reverse 後



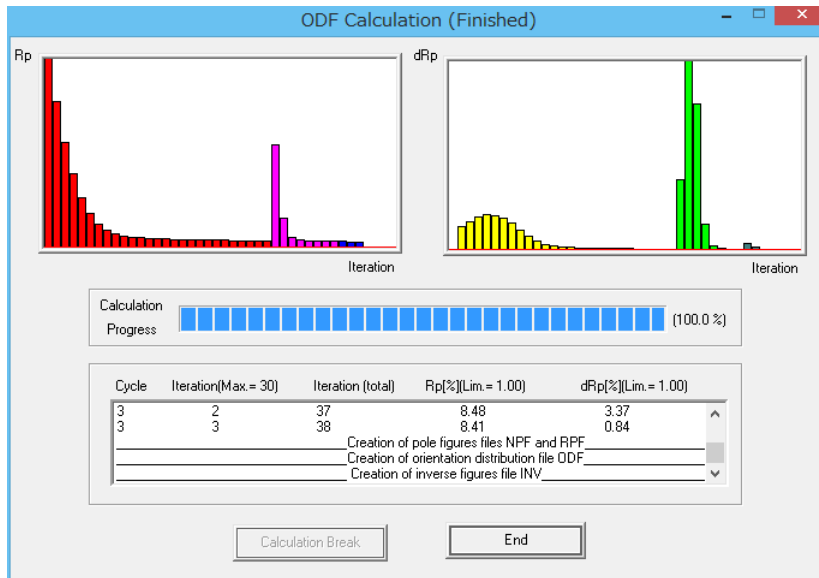
3. 3. 1 Reverse 前 (defocus 補正あり) を解析



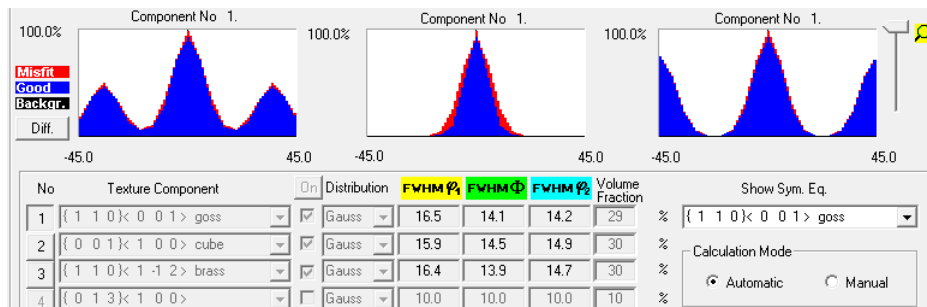
VolumeFraction



3. 3. 2 Reverse 後 (defocus 補正なし) を解析

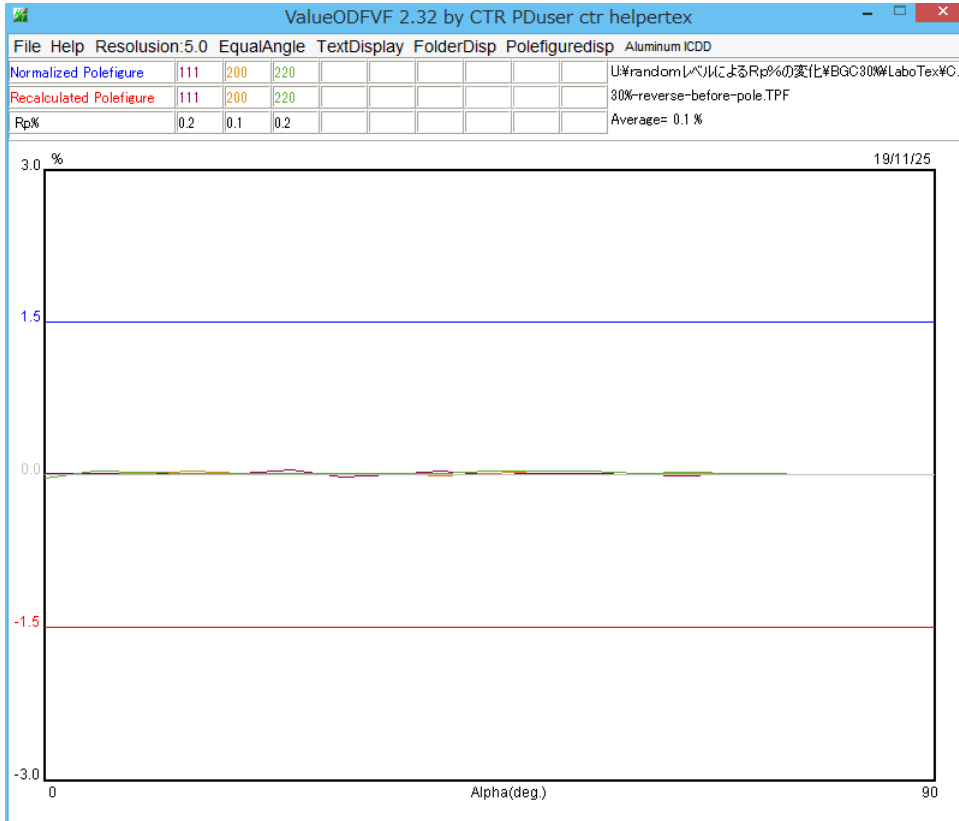


VolumeFraction

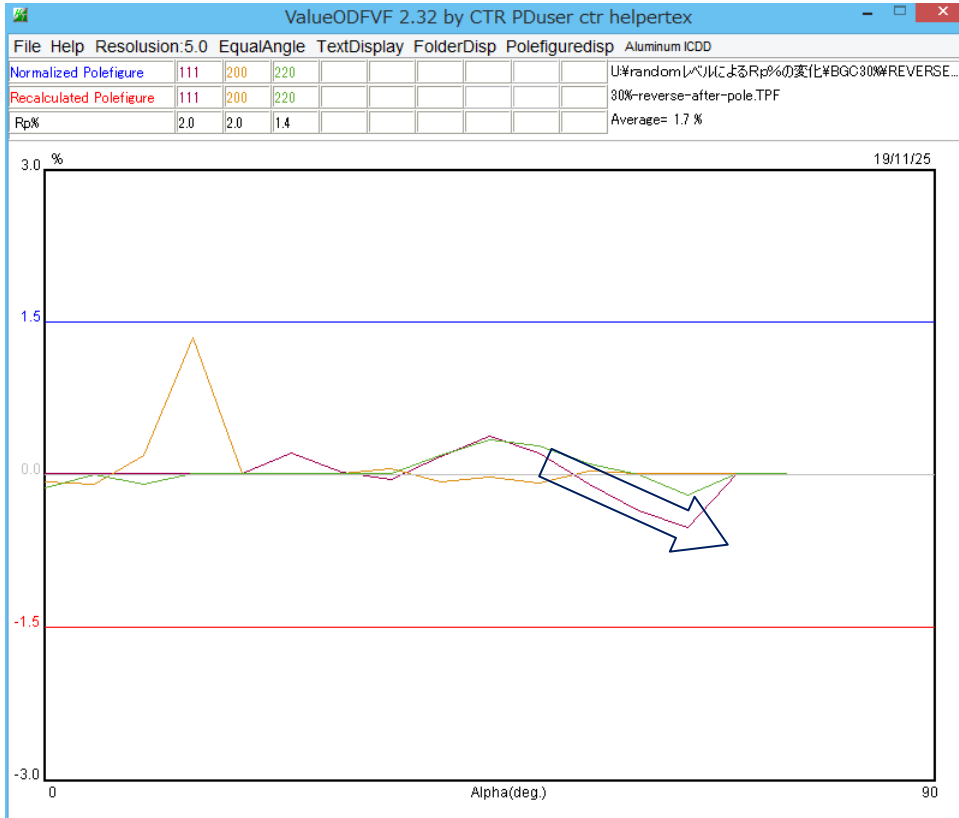


3. 3. 3 Rp%比較

Reverse 前 (defocus 補正あり) を解析

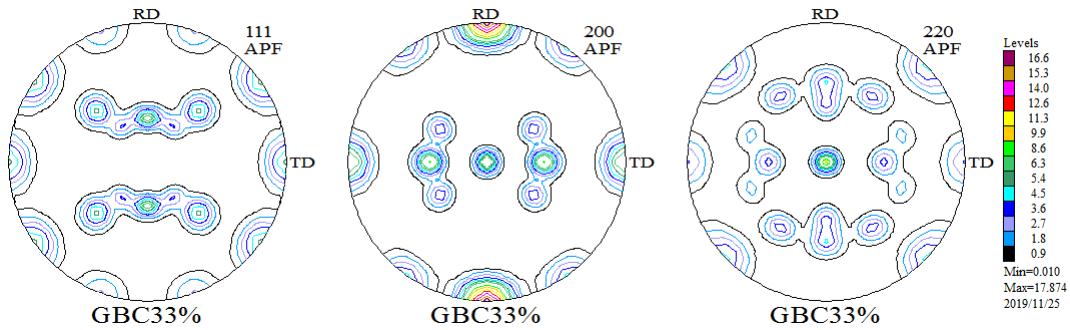


Reverse 後 (defocus 補正なし) を解析



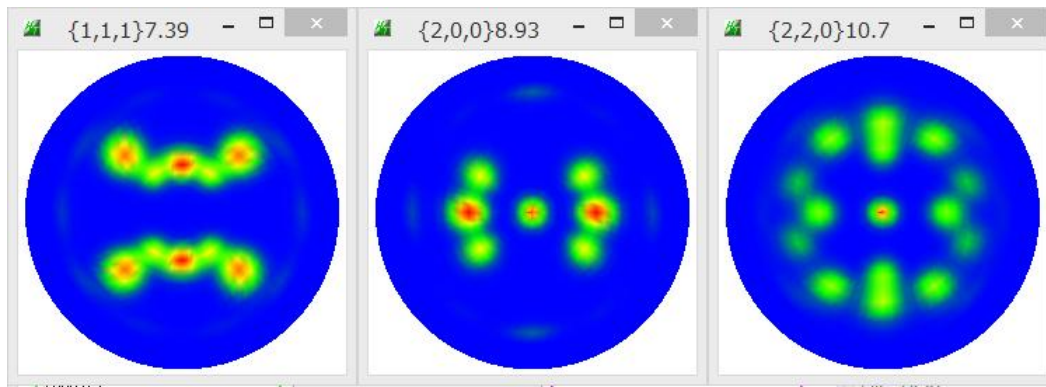
3. 4 Brass,Goss,Cube が 33%の場合

No	Texture Component	On	Distribution	FWHM ϕ	FWHM Φ	FWHM θ	Volume Fraction	Sample Name
1	{ 1 1 0 } < 1 -1 2 > brass	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	33 %	GBC33%
2	{ 1 1 0 } < 0 0 1 > goss	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	33 %	
3	{ 0 0 1 } < 1 0 0 > cube	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	33 %	

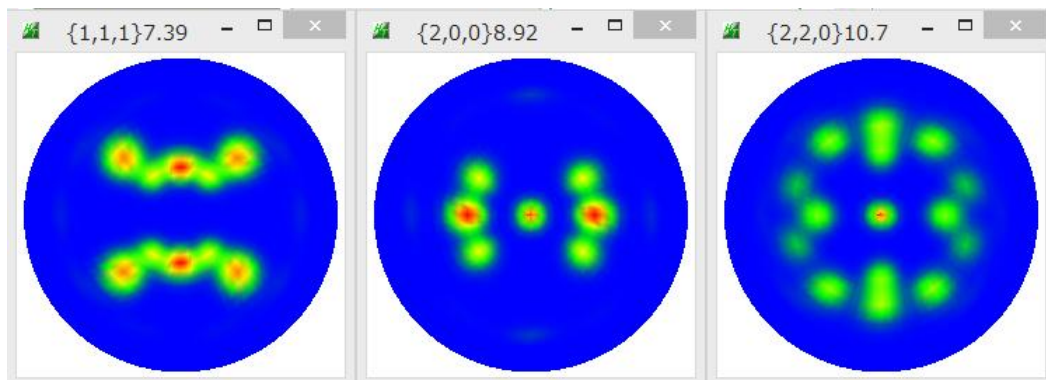


極点図を Export し、反射極点図を作成

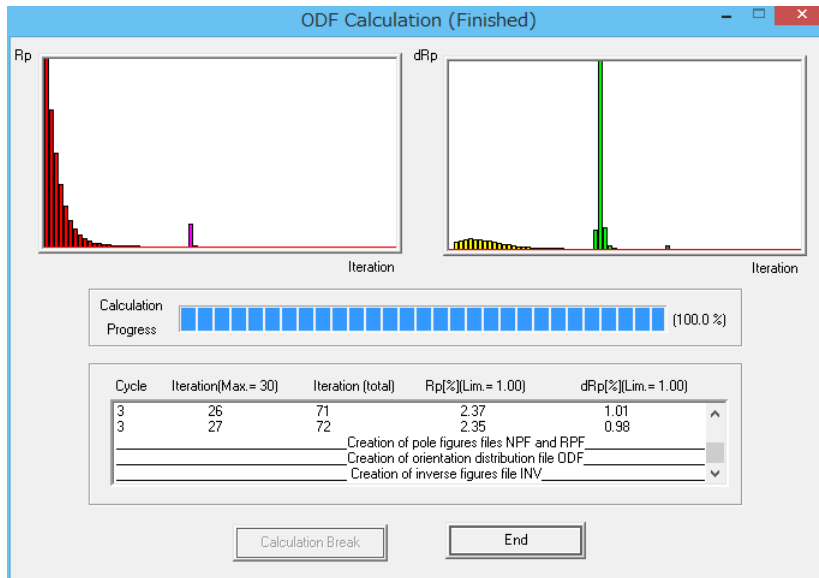
Reverse-before



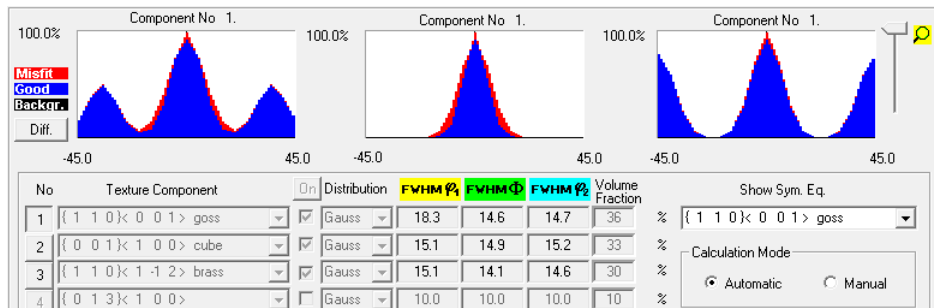
Reverse-after



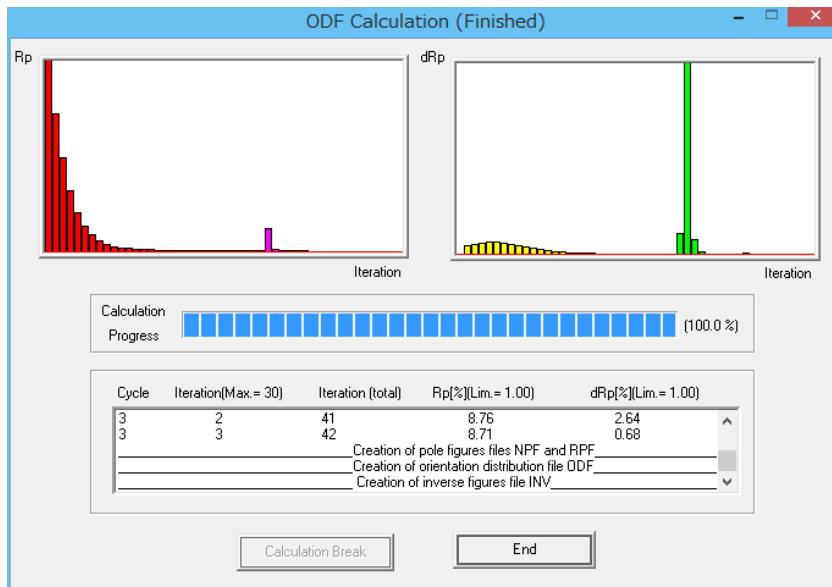
3. 4. 1 Reverse 前 (defocus 補正あり) を解析



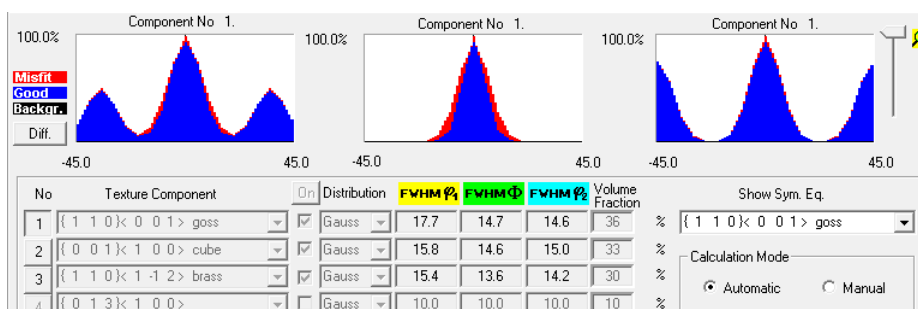
VomueFraction



3. 4. 2 Reverse 後 (defocus 補正なし) を解析

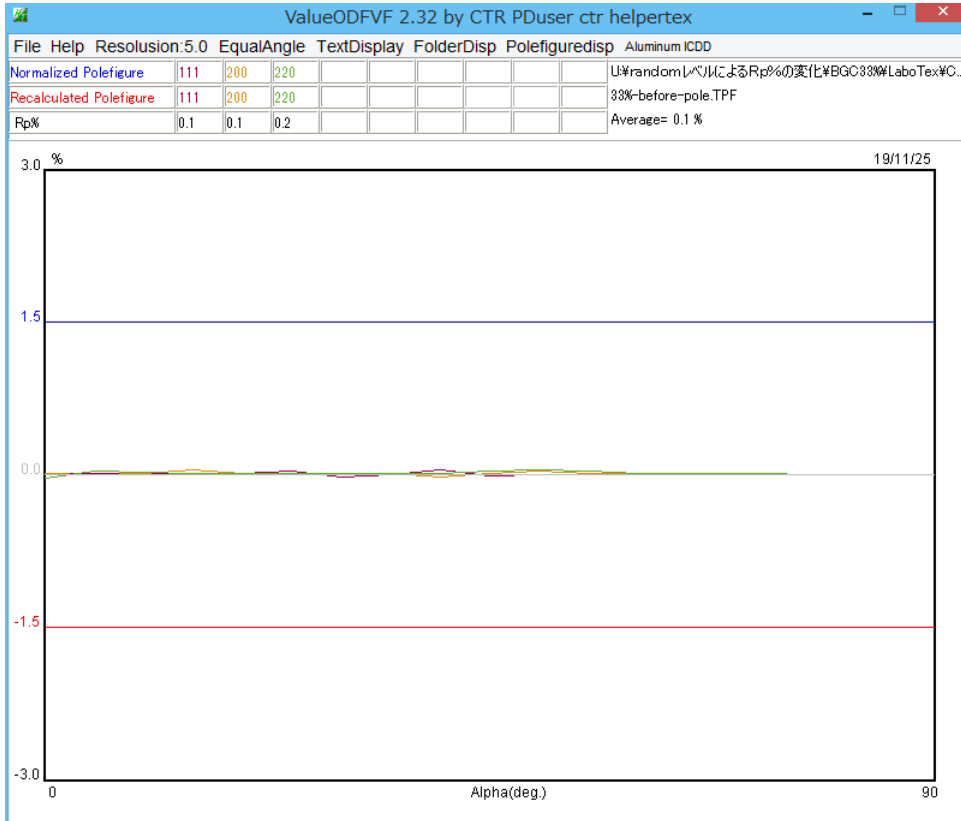


VolumeFraction

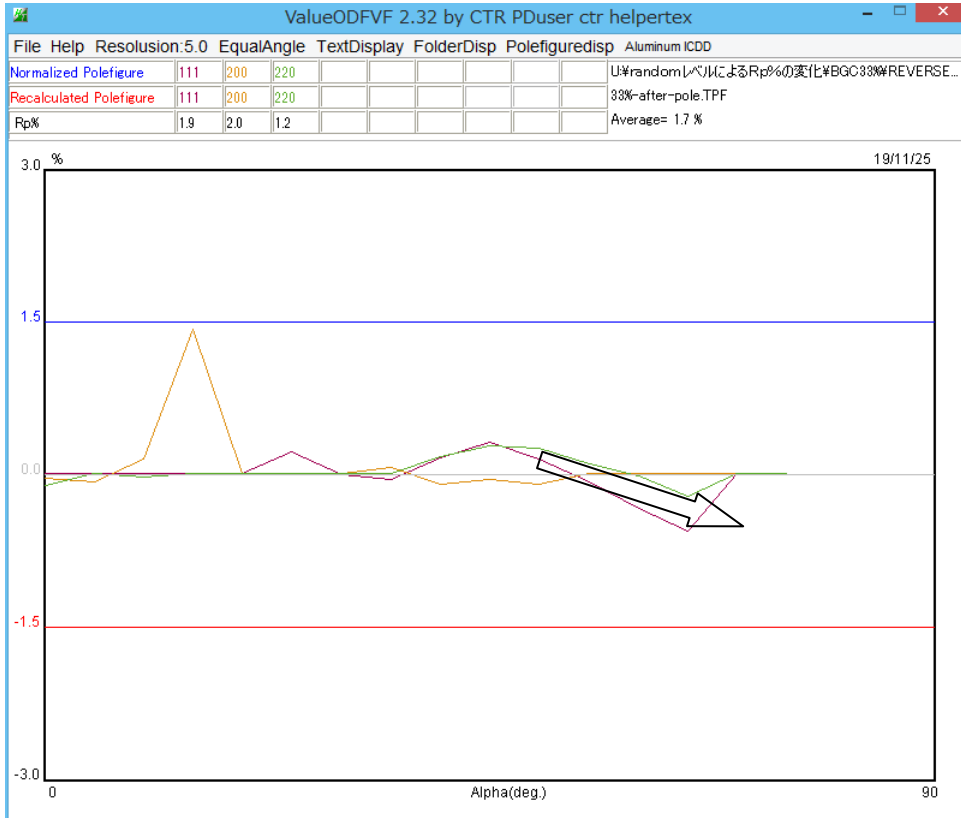


3. 4. 3 Rp%比較

Reverse 前 (defocus 補正あり) を解析



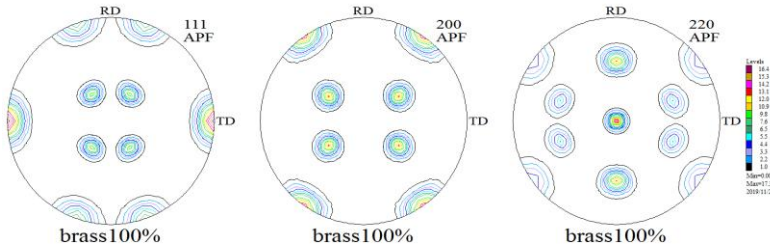
Reverse 後 (defocus 補正なし) を解析



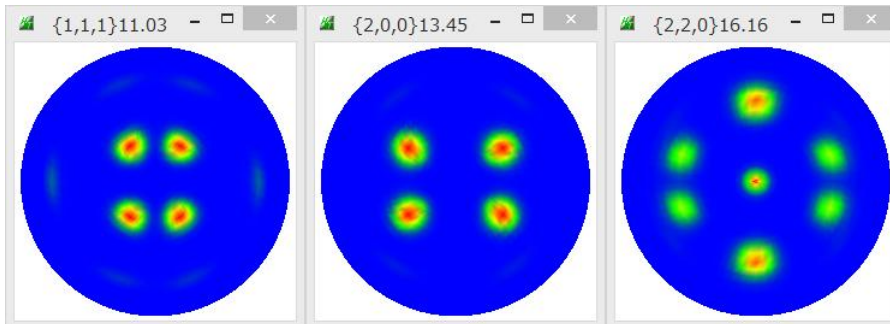
4. 方位別Rp%

4.1 Brass方位では

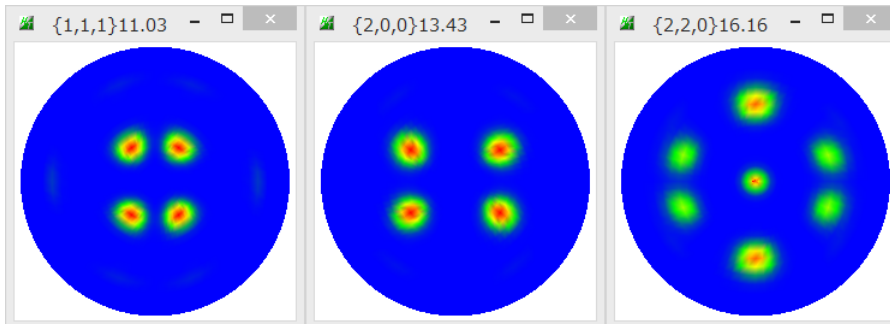
No	Texture Component	On	Distribution	FWHM ϕ	FWHM Φ	FWHM ψ	Volume Fraction	Sample Name
1	{ 1 1 0 } < 1 -1 2 > brass	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	100 %	brass100%
2	{ 1 1 2 } < 1 1 -1 > copper	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %	



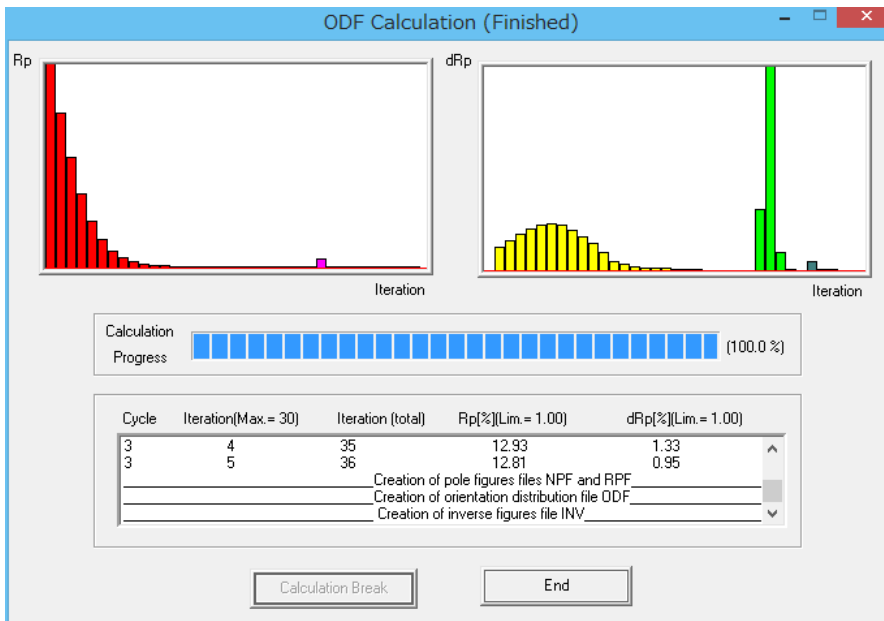
反射極点図



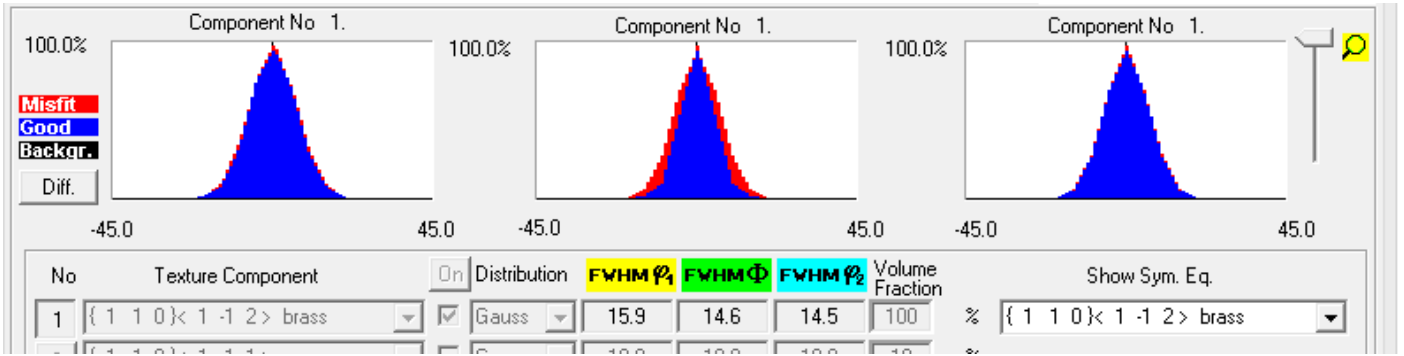
Reversedefous



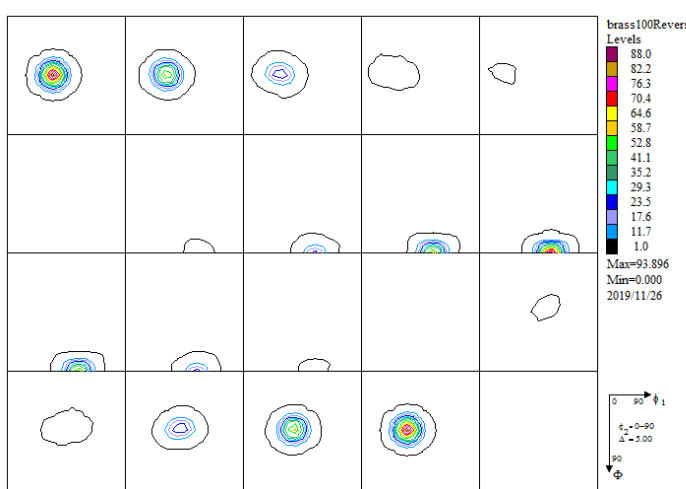
Reverse 極点図の ODF 解析



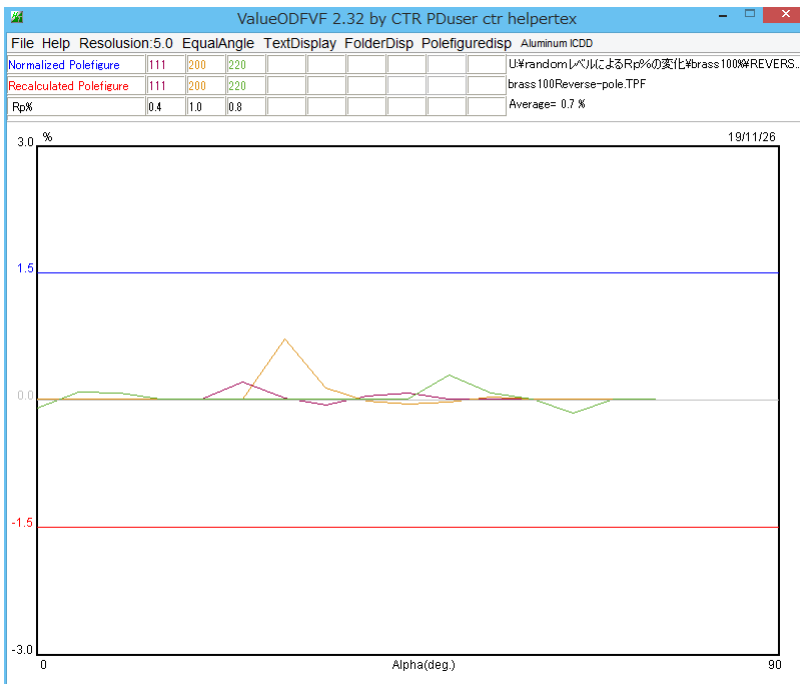
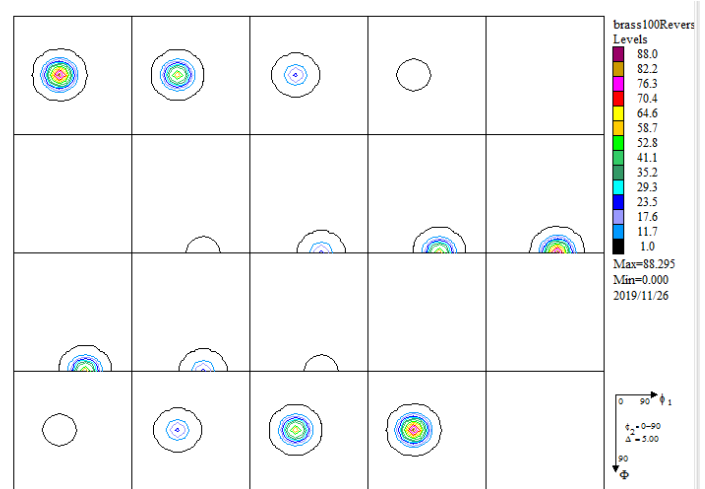
VolumeFraction



入力極点図から ODF 解析



VF%から ODF 解析



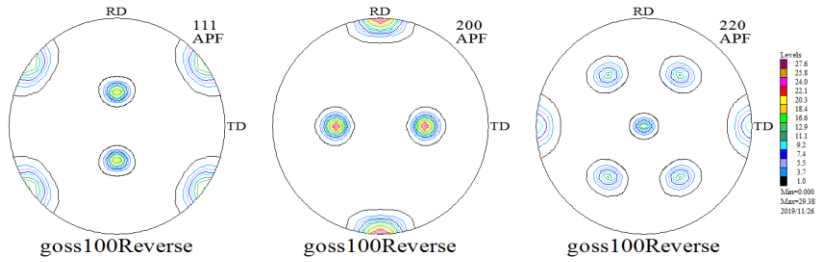
Normalized Polefigure	111	200	220
Recalculated Polefigure	111	200	220
Rp%	0.4	1.0	0.8

brass100Reverse-pole.TPF
Average= 0.7 %

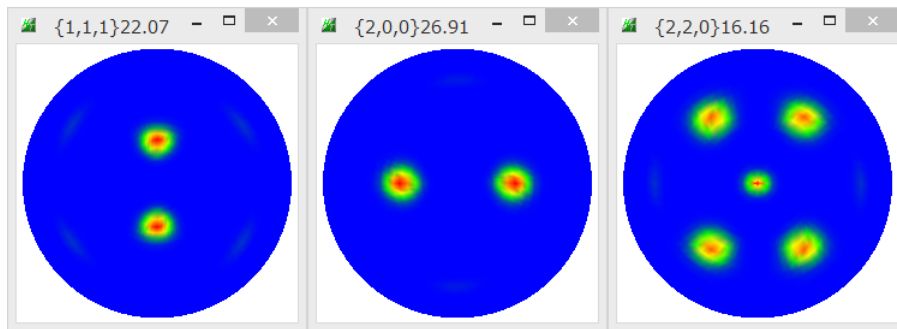
r a n d o mレベルのない brass では d e f o c u s 補正なしでも良い結果が得られる。

4. 2 G o s s 方位では

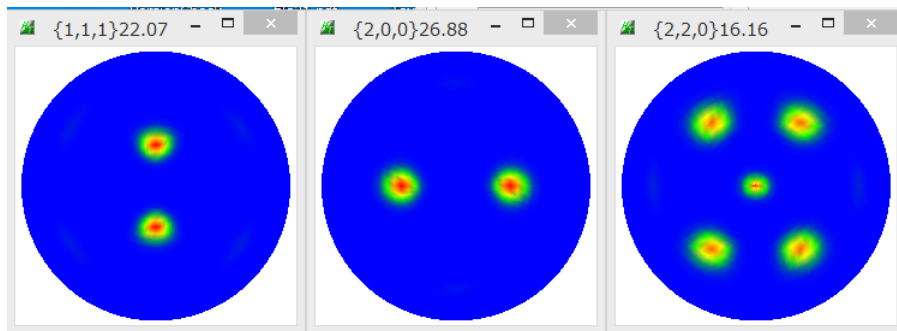
No	Texture Component	On	Distribution	FWHM ϕ	FWHM Φ	FWHM ψ	Volume Fraction	Sample Name
1	{ 1 1 0 } < 0 0 1 > goss	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	100 %	goss100Reverse
2	{ 1 1 0 } < 1 -1 1 >	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %	



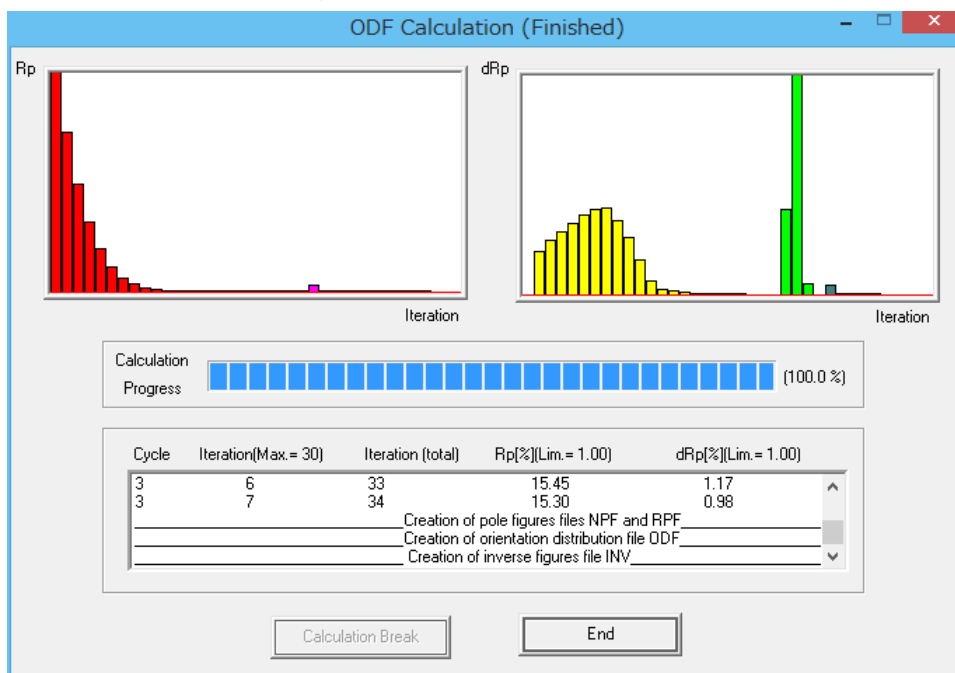
反射極点図



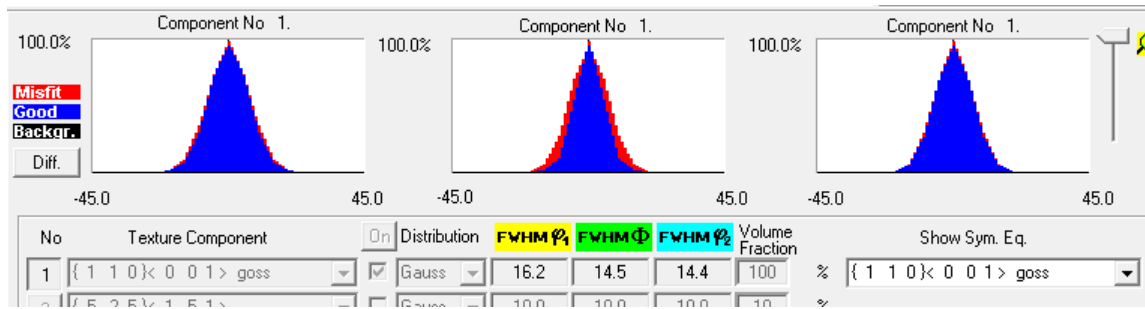
Reversedefocus 極点図



Reverse 極点図の ODF 解析

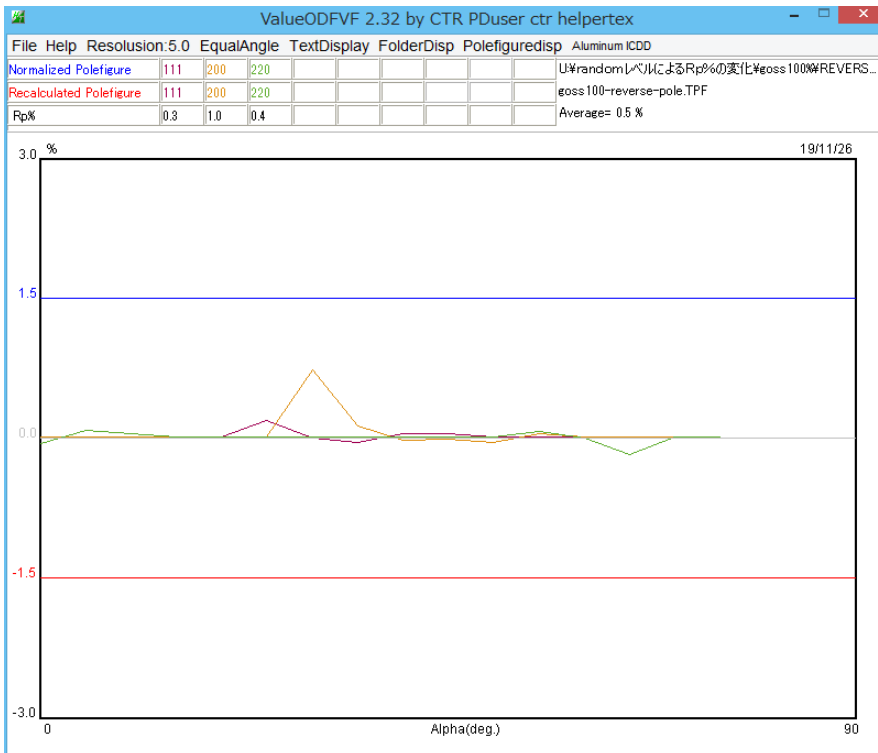
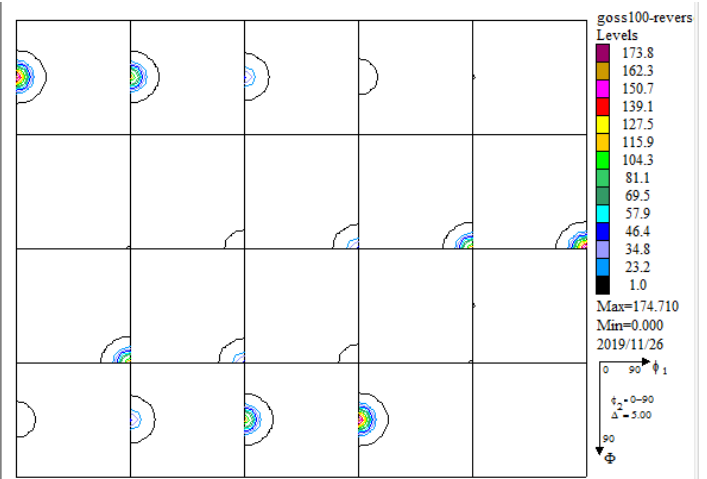
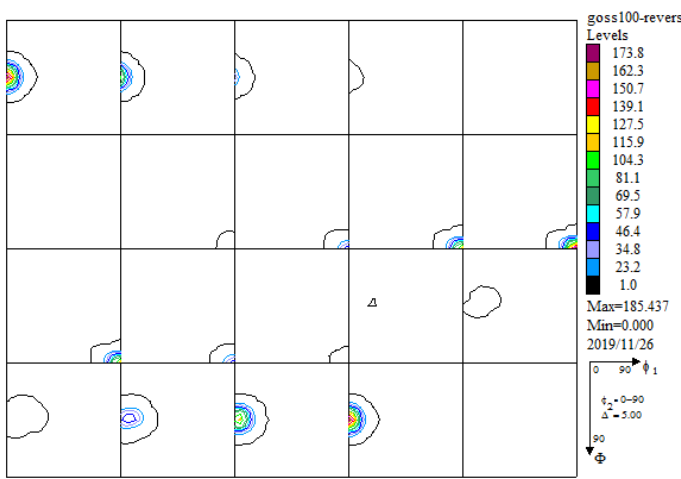


VolumeFraction



入力極点図から ODF 解析

VF%から ODF 解析



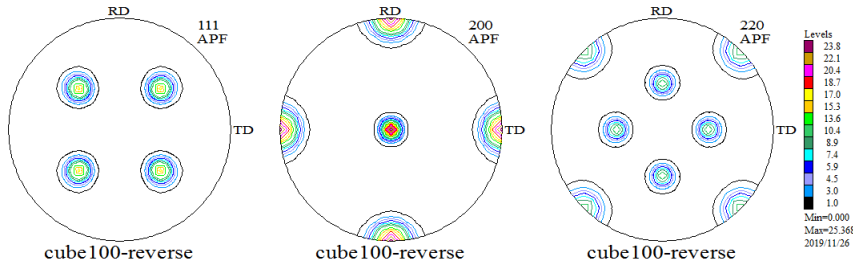
Normalized Polefigure	111	200	220
Recalculated Polefigure	111	200	220
Rp%	0.3	1.0	0.4

goss 100-reverse-pole.TPF
Average= 0.5 %

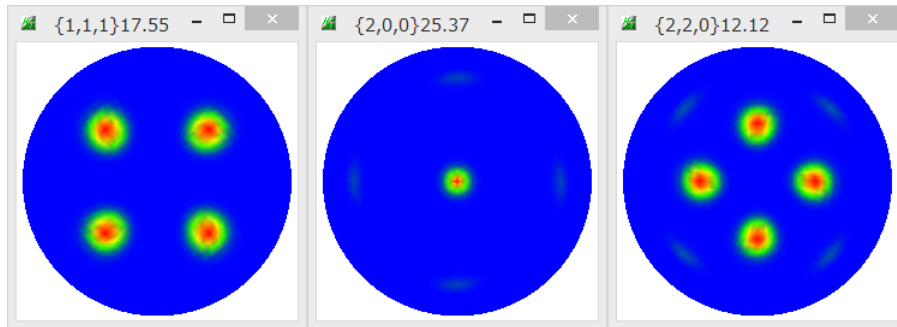
randomレベルのない goss では defocus 補正なしでも良い結果が得られる。

4. 2 Cube方位では

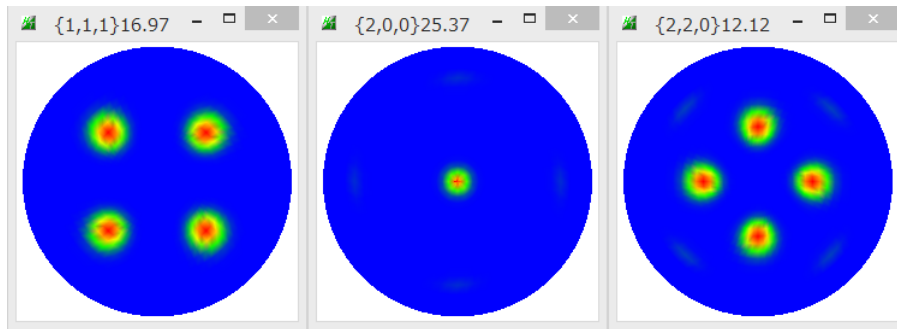
No	Texture Component	On	Distribution	FWHM ϕ_1	FWHM Φ	FWHM ϕ_2	Volume Fraction	Sample Name
1	{ 0 0 1 } < 1 0 0 > cube	<input checked="" type="checkbox"/>	Gauss	15.00	15.00	15.00	100	cube100-reverse
2	{ 1 1 2 } < 1 1 -1 > copper	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10	
3	{ 0 0 1 } < 1 0 0 > cube	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10	



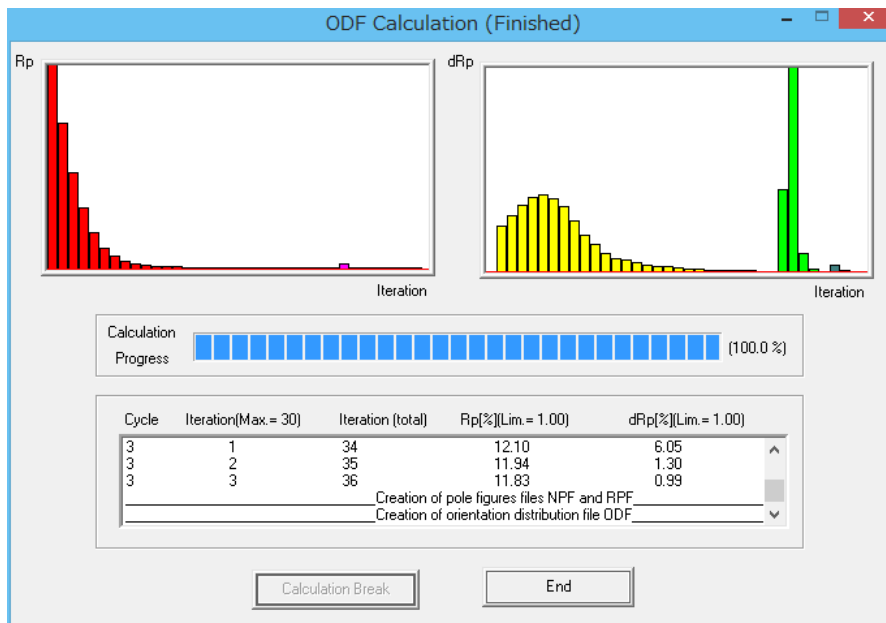
反射極点図



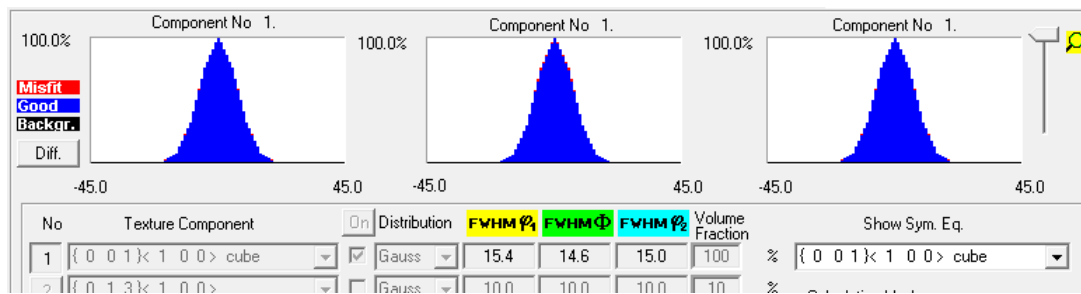
Reversedefocus 極点図



Reverse 極点図の ODF 解析

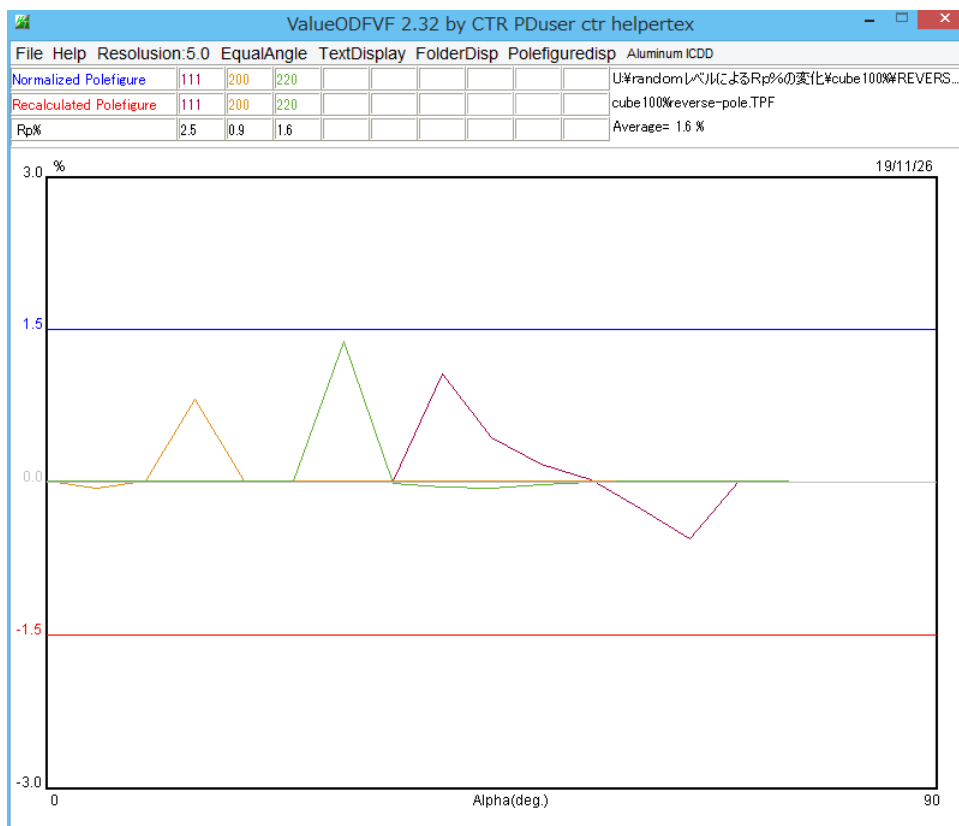
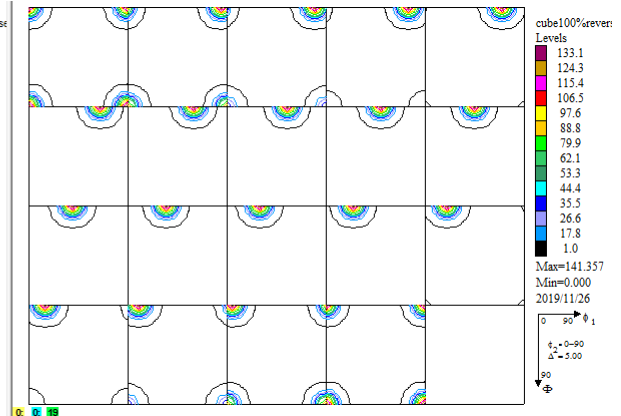
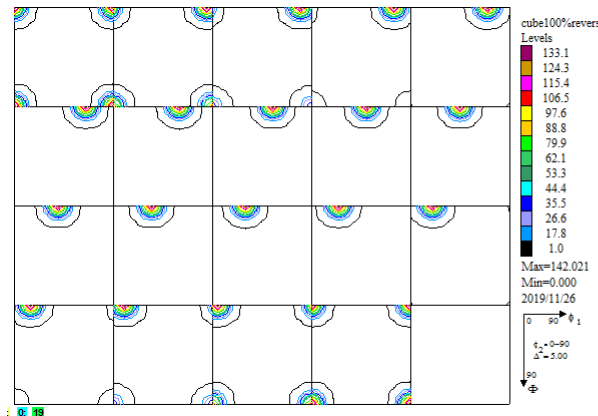


VolumeFraction



入力極点図から ODF 解析

VF%から ODF 解析



乱れはあるが、defocus が足りない状態とは異なり、解析されている。