

# T e t r a g o n a l 配向関数

C u b i c の配向関数は  $1 / 3$  である

T e t r a g o n a l では

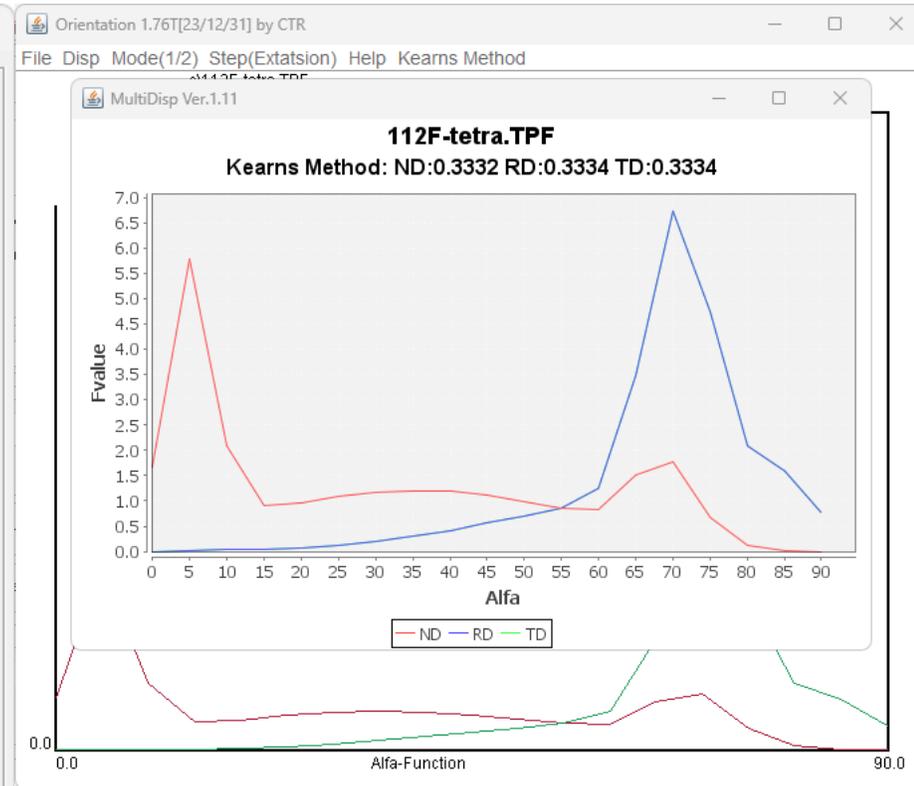
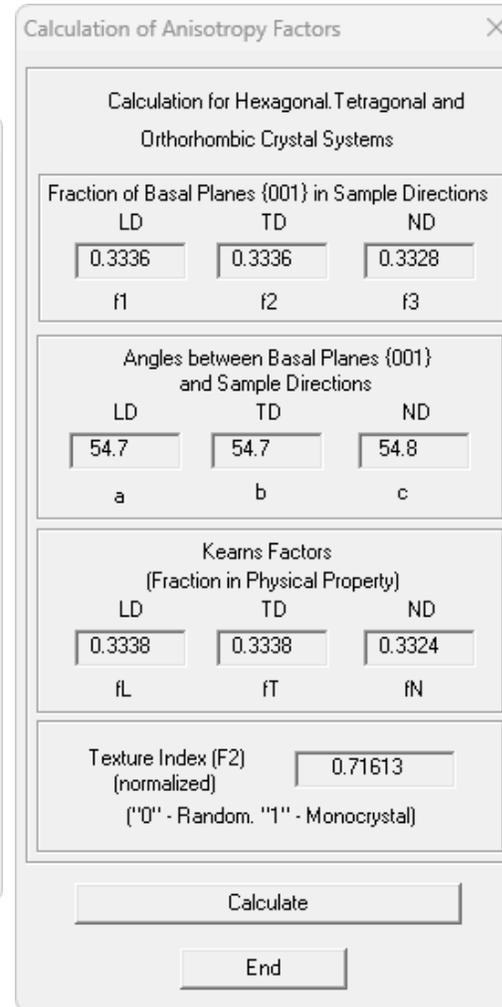
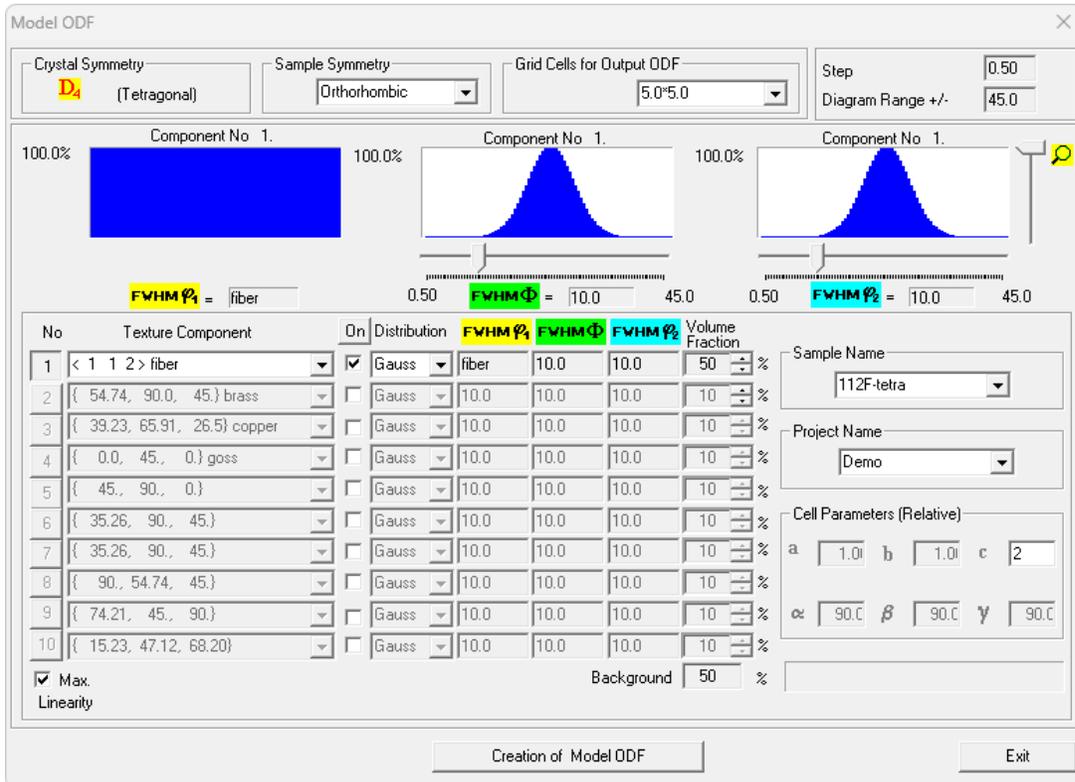
Trigonalのfiber面の配向関数は  $- >$  鈍い

# C / a = 2 の Fiber の場合は 1 / 3 である

{112} // Fiber

{001} の配向関数

{112} の配向関数



$c/a=2, \{112\} \langle 1-10 \rangle$

{112}極点図は1/3である

{001}の配向関数

{112}極点図の配向関数

{112} <1-10>

Model ODF

Crystal Symmetry: **D<sub>2</sub>** (Tetragonal) | Sample Symmetry: Orthorhombic | Grid Cells for Output ODF: 5.0\*5.0 | Step: 0.50 | Diagram Range +/-: 45.0

Component No. 1. 100.0% | Component No. 1. 100.0% | Component No. 1. 100.0%

FWHM  $\phi_1 = 10.0$  | FWHM  $\phi = 10.0$  | FWHM  $\phi_2 = 10.0$

No	Texture Component	On	Distribution	FWHM $\phi_1$	FWHM $\phi$	FWHM $\phi_2$	Volume Fraction
1	{ 1 1 2 } < 1 -1 0 >	<input checked="" type="checkbox"/>	Gauss	10.0	10.0	10.0	50 %
2	{ 54.74, 90.0, 45. } brass	<input checked="" type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
3	{ 39.23, 65.91, 26.5 } copper	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
4	{ 0.0, 45., 0. } goss	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
5	{ 45., 90., 0. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
6	{ 35.26, 90., 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
7	{ 35.26, 90., 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
8	{ 90., 54.74, 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
9	{ 74.21, 45., 90. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
10	{ 15.23, 47.12, 68.20 }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %

Sample Name: 112-1-10 | Project Name: Demo | Cell Parameters (Relative): a: 1.0, b: 1.0, c: 2 |  $\alpha: 90.0, \beta: 90.0, \gamma: 90.0$

Creation of Model ODF | Exit

Calculation of Anisotropy Factors

Calculation for Hexagonal, Tetragonal and Orthorhombic Crystal Systems

Fraction of Basal Planes {001} in Sample Directions

LD	TD	ND
0.2322	0.4305	0.3373
f1	f2	f3

Angles between Basal Planes {001} and Sample Directions

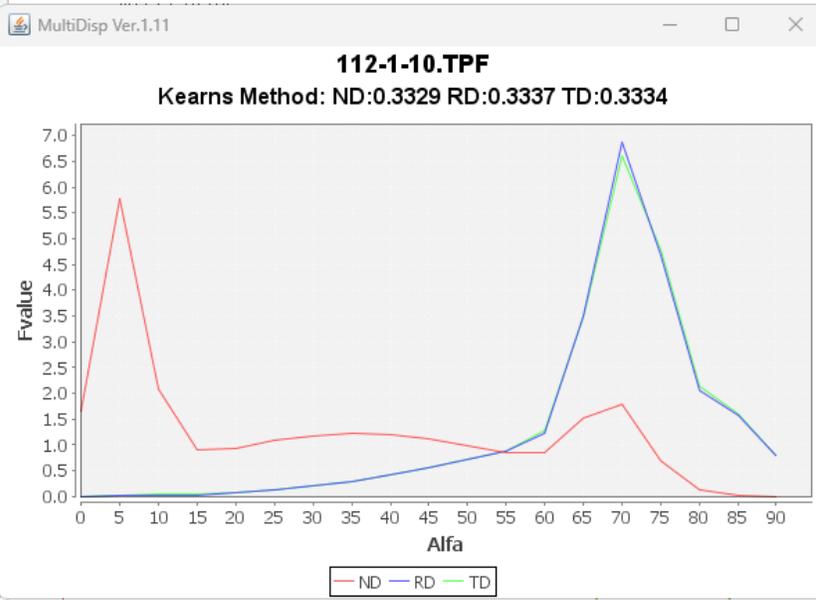
LD	TD	ND
65.8	45.1	54.8
a	b	c

Kearns Factors (Fraction in Physical Property)

LD	TD	ND
0.1686	0.4989	0.3324
fL	fT	fN

Texture Index (F2) (normalized): 0.98120 ("0" - Random, "1" - Monocrystal)

Calculate | End



# C/a = 5のFiberの場合は1/3ではない 感度が鈍い

{112} // Fiber

{001}の配向関数

{112}の配向関数

Model ODF

Crystal Symmetry: **D<sub>2d</sub>** (Tetragonal) | Sample Symmetry: Orthorhombic | Grid Cells for Output ODF: 5.0\*5.0 | Step: 0.50 | Diagram Range +/-: 45.0

Component No. 1. | Component No. 1. | Component No. 1.

FWHM  $\phi_1$  = fiber | FWHM  $\Phi$  = 10.0 | FWHM  $\phi_2$  = 10.0

No	Texture Component	On	Distribution	FWHM $\phi_1$	FWHM $\Phi$	FWHM $\phi_2$	Volume Fraction
1	< 1 1 2 > fiber	<input checked="" type="checkbox"/>	Gauss	fiber	10.0	10.0	50 %
2	{ 54.74, 90.0, 45. } brass	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
3	{ 39.23, 65.91, 26.5 } copper	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
4	{ 0.0, 45., 0. } goss	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
5	{ 45., 90., 0. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
6	{ 35.26, 90., 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
7	{ 35.26, 90., 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
8	{ 90., 54.74, 45. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
9	{ 74.21, 45., 90. }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %
10	{ 15.23, 47.12, 68.20 }	<input type="checkbox"/>	Gauss	10.0	10.0	10.0	10 %

Sample Name: 112F5 | Project Name: Demo

Cell Parameters (Relative): a: 1.0 | b: 1.0 | c: 5

$\alpha$ : 90.0 |  $\beta$ : 90.0 |  $\gamma$ : 90.0

Background: 50 %

Max. Linearity:

Creation of Model ODF | Exit

Calculation of Anisotropy Factors

Calculation for Hexagonal, Tetragonal and Orthorhombic Crystal Systems

Fraction of Basal Planes {001} in Sample Directions

LD	TD	ND
0.3406	0.3406	0.3187
f1	f2	f3

Angles between Basal Planes {001} and Sample Directions

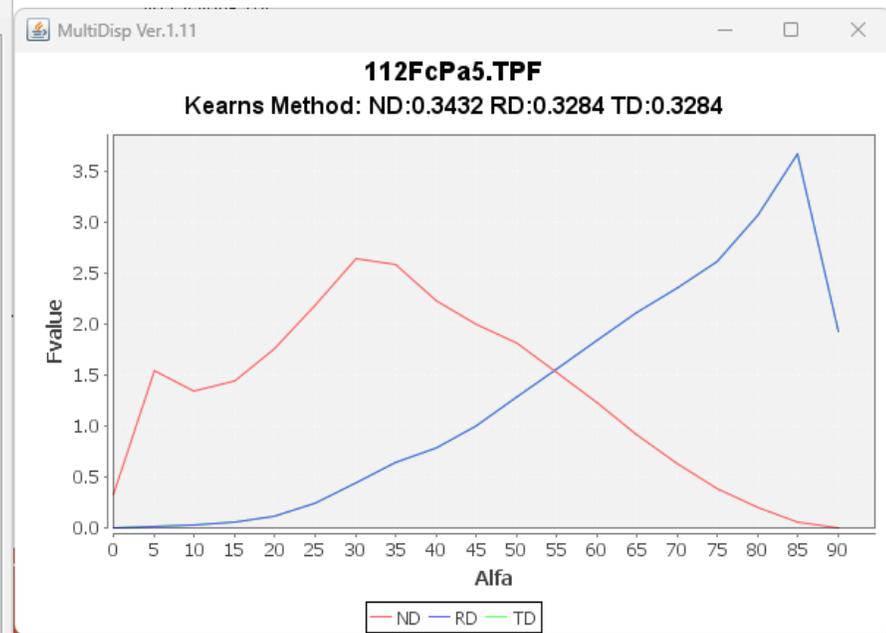
LD	TD	ND
54.0	54.0	56.3
a	b	c

Kearns Factors (Fraction in Physical Property)

LD	TD	ND
0.3460	0.3460	0.3080
fL	fT	fN

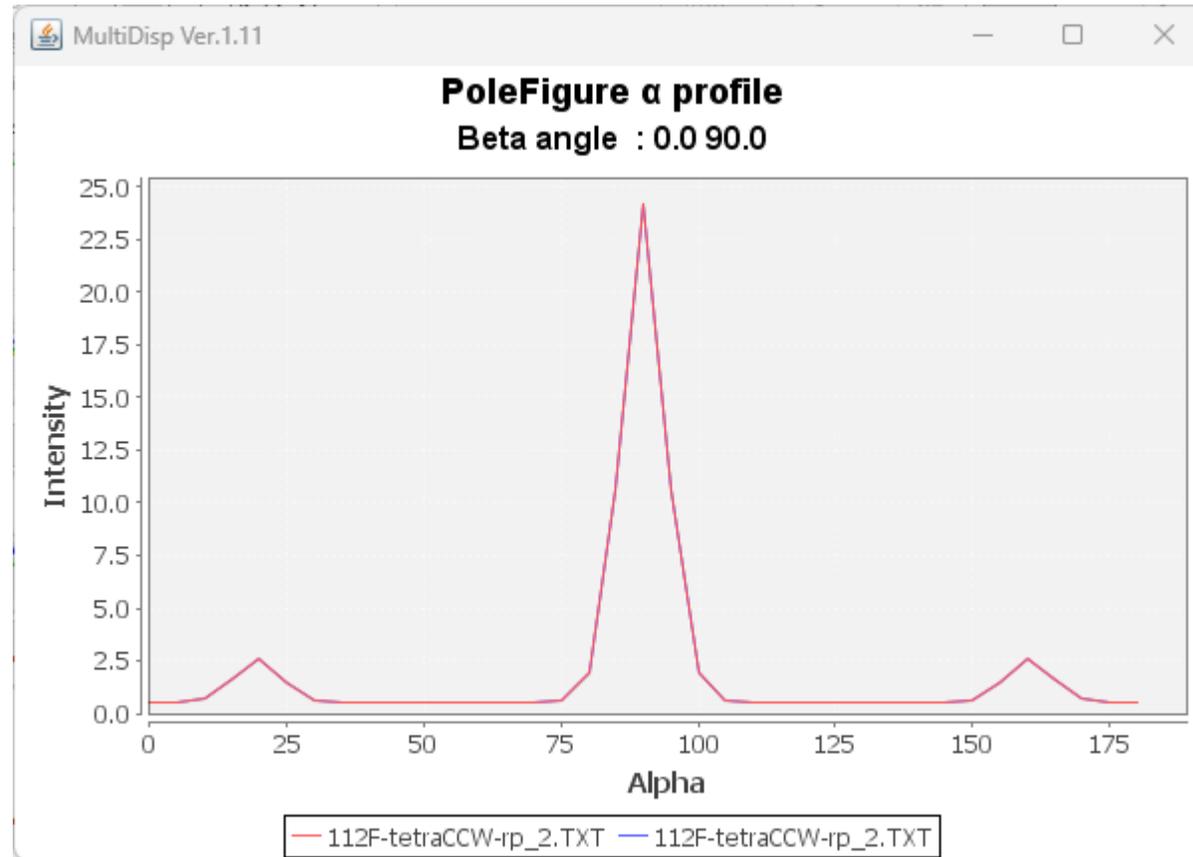
Texture Index (F2) (normalized): 0.04658  
("0" - Random, "1" - Monocrystal)

Calculate | End



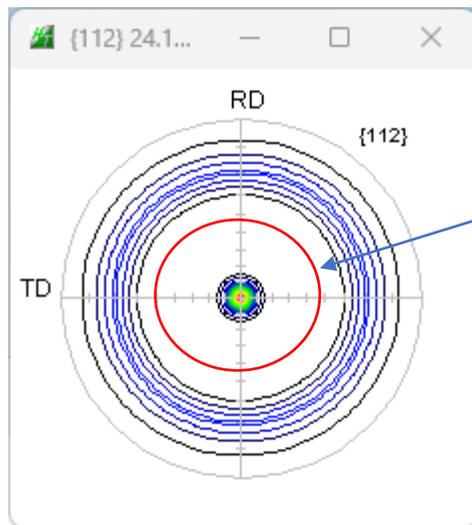
# F i b e r の配向評価方法 1

極点図の半価幅評価



# F i b e r の評価方法 2

T e t r a g o n a l の面配向している面の評価は難しい → 中心部分のみ評価では  
H e x a g o n a l n o { 0 0 1 } 配向は中心部分のみの方が高くなるが T e t r a t o h a 異なる



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研 究

Nd-Fe-B 磁石の成形体および焼結体の X 線配向度評価

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強制的に中心から 4 5 度範囲を切り出し、4 5 から 9 0 は 0 → 4 5 のデータから外挿し評価  
リング部分の評価しない (簡易的な方法、理論的には無理があるが)

# 強制的に $\{112\}$ //Fiber, $\{112\}\langle 1-10\rangle$ の $\{112\}$ 偏り計算

極点図の中心から45度の範囲を評価

The image displays a software interface for pole figure analysis. The top window shows a pole figure plot with RD and TD axes. The bottom window is a configuration dialog for 'MakePoleFile 2.01T[23/12/31] by CTR'. The 'OUT startAlfa...' field is set to 45 and the 'RD(CW)' field is set to 0, both highlighted with a yellow box. The material is set to Polyethylene and the output filename is C:\tmp\tmp\112F\_45labotexCCW-rp\_2.TXT.

File Help

SelectFile  
C:\tmp\tmp\112F-tetra.TPF

Step Angles  
5.0deg

OUT startAlfa... 45

RD(CW) 0

Material Polyethylene  LaboTextoICDD

Out Filename  
PoleFigureCenter : 90  TXT2  TXT  Asc  Ras  TXT2(Center=0)  TXT2 filename HKL.TXT RSSlit 7 mm

C:\tmp\tmp\112F\_45labotexCCW-rp\_2.TXT

to FullFiber  to Orthorhombic OK C:\tmp\tmp\112F\_45labotexCCW-rp\_2.TXT File make Success !!

NextSelect normalizeCheck

# 高木氏方法の計算（一部流用）

