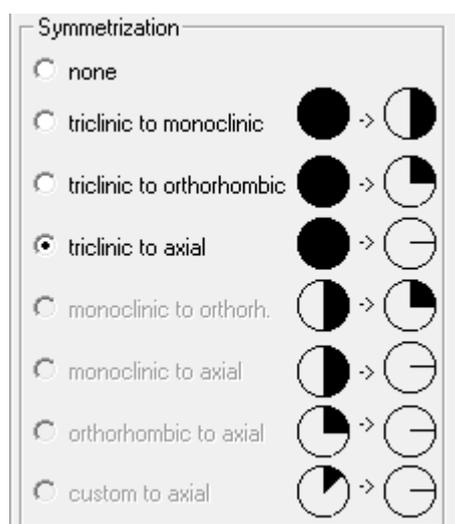


LaboTexのFiber

## Triclinic $\rightarrow$ Axial に関して



2020年12月27日

*HelperTex Office*

概要

Al<sub>2</sub>O<sub>3</sub>で、(0 1 1 0)-Fiberを考える。

LaboTexで、{0 1 1 0}<1 0 0>を作成

Model ODF

Crystal Symmetry:  $D_6$  (Hexagonal)

Sample Symmetry: Orthorhombic

Grid Cells for Output ODF: 5.0\*5.0

Step: 0.50

Diagram Range +/-: 45.0

Component No. 1: 100.0% FWHM  $\phi_1 = 10.0$

Component No. 1: 100.0% FWHM  $\Phi = 10.0$

Component No. 1: 100.0% FWHM  $\phi_2 = 10.0$

No	Texture Component	On	Distribution	FWHM $\phi_1$	FWHM $\Phi$	FWHM $\phi_2$	Volume Fraction
1	{ 0 1 1 0 } < 1 0 0 >	<input checked="" type="checkbox"/>	Gauss	10.0	10.0	10.0	20 %
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 %

Max. Linearity:

Background: 80 %

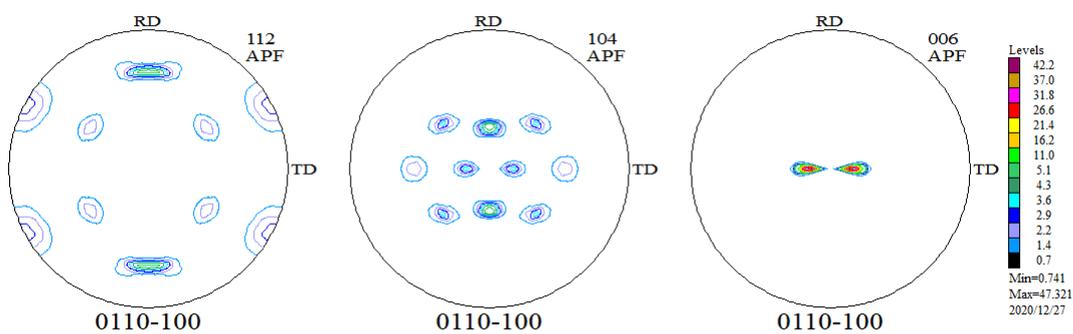
Sample Name: 0110-100

Project Name: Demo

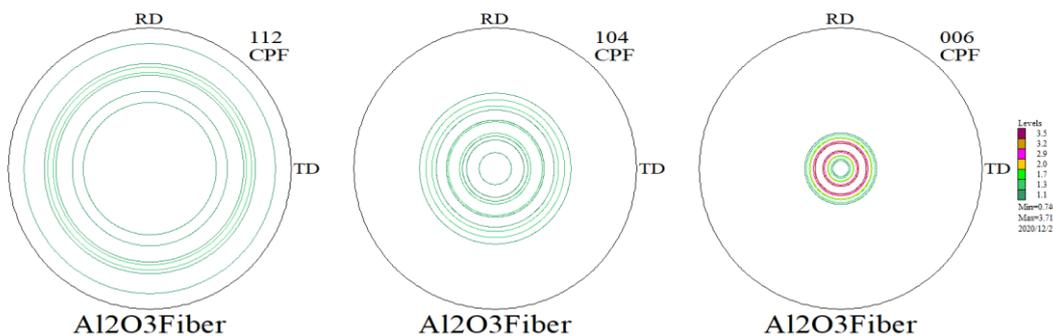
Cell Parameters (Relative): a: 1.0, b: 1.0, c: 2.73,  $\alpha$ : 90.0,  $\beta$ : 90.0,  $\gamma$ : 120.0

Buttons: Creation of Model ODF, Exit

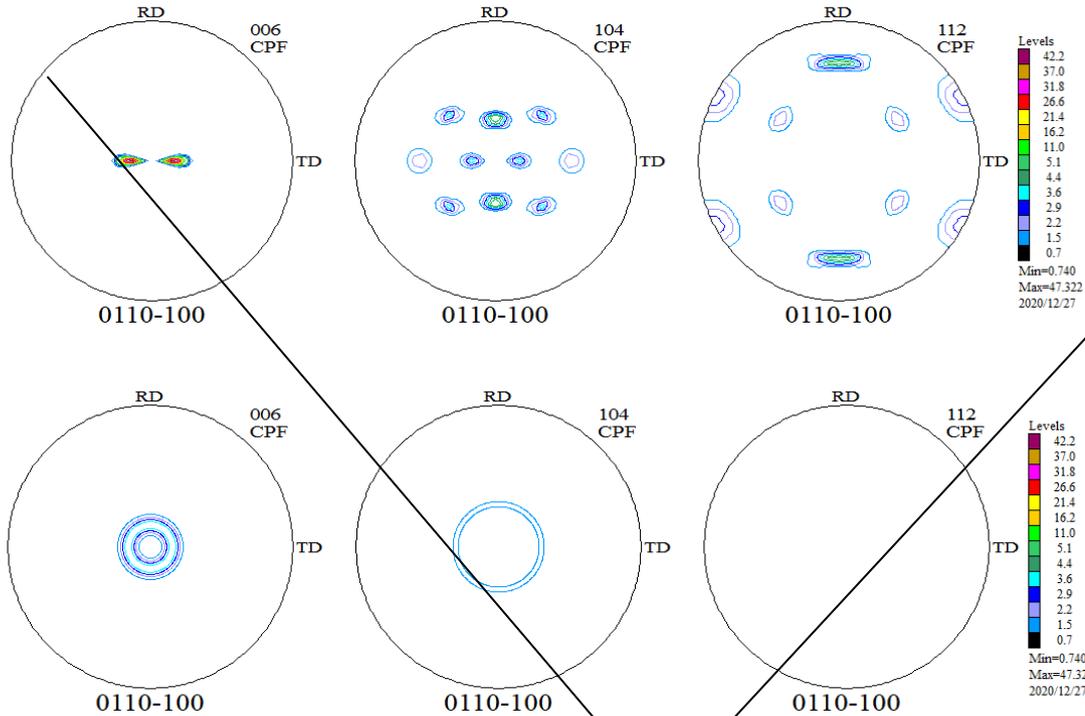
極点図は



Fiberであれば



LaboTexのTrilcnic->Axial



ODF Resolution (deg) 5.0

Symmetrization

- none
- triclinic to monoclinic
- triclinic to orthorhombic
- triclinic to axial
- monoclinic to ortho.
- monoclinic to axial
- orthorhombic to axial
- custom to axial

Pole Figure (hkl) [006] (3)

Rotation of PF step 2.5 deg

Apply to all PFs

-90 -60 -30 0 30 60 90

none

triclinic to monoclinic

triclinic to orthorhombic

triclinic to axial

monoclinic to ortho.

monoclinic to axial

orthorhombic to axial

custom to axial

Pole Figure (hkl) [006] (3)

Rotation of PF step 2.5 deg

Apply to all PFs

-90 -60 -30 0 30 60 90

LaboTex - AL2O3 User

File Edit View Calculation Analysis Modelling Help

CPF NPF RPF BPF INV ODF

0110-100 Levels

Max=1.651

Min=0.633

2020/12/27

Color	No	Value	Color	No	Value
Black	1	0.7	Green	8	1.2
Blue	2	0.8	Yellow	10	1.3
Light Blue	3	0.8	Orange	11	1.4
Dark Blue	4	0.9	Red	12	1.5
Cyan	5	1.0	Magenta	13	1.5
Dark Green	6	1.0	Brown	14	1.6
Light Green	7	1.1			

Dec. Digit 1 None All Sort

Adjustment of Isolines (Automatic Mode)

Balance

Fill

Background Color Isoline

AUTOMATIC

ODF Isolines Mode / Load ODF Isolines

Color  Value  State

Save ODF Isolines

Smoothness  Min. Max.

Global ODF values

Maximal 1.651 Minimal 0.633

ODF Properties

ODF Projection Sample

D6-Hexagonal Demo 0110-100

を使わないで

# PF to ODF 3でFiber化

The top part of the image shows three pole figure (PF) plots for different crystallographic planes: {006} (intensity 47.32), {104} (intensity 6.14), and {112} (intensity 5.91). Each plot is a circular map with RD (Rolling Direction) and TD (Transverse Direction) axes. The {006} plot shows two small lobes, {104} shows a cluster of lobes, and {112} shows a more complex pattern with multiple lobes.

The bottom part shows the software interface for PFtoODF3 8.48T[20/12/31] by CTR. The 'Symmetric' menu is open, and 'Fiber' is selected. The 'Structure Code(Symmetry)' is set to '11 - D6 (hexagonal)'. The lattice parameters are: a = 1.0, b = 1.0, c = 2.7501, alpha = 90.0, beta = 90.0, gamma = 120.0. The 'PF Holder' contains the file path 'U:\#2020-12-27-AI2O3Fiber'. The 'PF Data' table is as follows:

SelectFile(TXT(b,intens),TXT2(ab,intens))	h,k,l	2Theta	Alpha scope	AlphaS	AlphaE	Select
006_labotexCW-rp_2.TXT	0,0,6	0.0	0.0->90.0	0.0	90.0	<input checked="" type="checkbox"/>
104_labotexCW-rp_2.TXT	1,0,4	0.0	0.0->90.0	0.0	90.0	<input checked="" type="checkbox"/>
112_labotexCW-rp_2.TXT	1,1,2	0.0	0.0->90.0	0.0	90.0	<input checked="" type="checkbox"/>
	2,1,0	0.0		0.0	0.0	<input type="checkbox"/>

# ODF 解析

The screenshot shows the LaboTex - AL2O3 User interface. The main window displays three ODF (Orientation Distribution Function) plots for Al2O3Fiber, corresponding to the {006}, {104}, and {112} planes. Each plot shows a circular map with RD and TD axes. A color scale on the right indicates intensity levels from 1.1 to 3.5, with a minimum of 0.740 and a maximum of 3.711. The 'Start ODF Calculation' panel is open, showing the following settings:

- Start ODF Calculation: RUN ODF CALCULATION
- ODF Calculation Settings:
  - ODF Resolution (deg): 5.0
  - Symmetrization:
    - none
    - triclinic to monoclinic
    - triclinic to orthorhombic
    - triclinic to axial
    - monoclinic to orthorhombic
    - monoclinic to axial
    - orthorhombic to axial
    - custom to axial
- Pole Figure (hkl): 006 (3)
- Rotation of PF step: 2.5 deg
- Apply to all PFs:
- Lower Range(0.0-85.0 deg): 0.0
- Apply to all PFs:

# VF 計算

## PF to ODF3でFiber化

Quantitative Analysis - Integration Methods - Project: Demo Sample:Al2O3Fiber Job:1

Orientation Set Name : Set from Database (sort by ODF) Save Current Set Step: 2.50 Diagram Range +/-: 45.0 CP View CP: BBB

No	Texture Component	On	$\Delta P_1$	$\Delta \Phi$	$\Delta P_2$	Volume Fraction [%]
1	{ 0.0, 18.43, 0.0}	<input type="checkbox"/>	45.00	15.00	15.00	
2	{ 0 110 < 1 0 0 >	<input type="checkbox"/>	10.0	10.0	10.0	
3	< 0 110 > fiber	<input checked="" type="checkbox"/>	fiber	10.0	10.0	16.66
4	{ 45., 90., 0.}	<input type="checkbox"/>	10.0	10.0	10.0	
5	{ 0.00, 0.00, 0.00} cube	<input type="checkbox"/>	10.0	10.0	10.0	
6	{ 0 0 1 < 1 0 0 >	<input type="checkbox"/>	10.0	10.0	10.0	
7	{ 0 0 1 < 1 0 0 >	<input type="checkbox"/>	10.0	10.0	10.0	
8	{ 0 0 1 < 1 0 0 >	<input type="checkbox"/>	10.0	10.0	10.0	
9	{ 0.00, 0.00, 0.00} CURSOR !!!	<input type="checkbox"/>	10.0	10.0	10.0	
10	< 0 0 1 > fiber	<input type="checkbox"/>	fiber	10.0	10.0	

Background: 49.76 The Rest: 33.57 Orientations Overlap: 0.00

Calculate Volume Fraction of Texture Components View Report Close



によるFiber化では計算できていません。

Quantitative Analysis - Integration Methods - Project: Demo Sample:0110-100 Job:3

Orientation Set Name : Set from Database (sort by ODF) Save Current Set Step: 2.50 Diagram Range +/-: 45.0 CP View CP: BBB

No	Texture Component	On	$\Delta P_1$	$\Delta \Phi$	$\Delta P_2$	Volume Fraction [%]
1	< 0 110 > fiber	<input checked="" type="checkbox"/>	fiber	15.00	15.00	4.93
2	< 0 0 1 > fiber	<input type="checkbox"/>	fiber	10.0	10.0	
3	< 0 0 4 > fiber	<input type="checkbox"/>	fiber	10.0	10.0	
4	< 0 0 1 > fiber	<input type="checkbox"/>	fiber	10.0	10.0	
5	{ fiber , 0.00, 0.00} CURSOR !!!	<input type="checkbox"/>	fiber	10.0	10.0	
6	< 1 0 4 > fiber	<input type="checkbox"/>	fiber	10.0	10.0	
7		<input type="checkbox"/>	10.0	10.0	10.0	
8		<input type="checkbox"/>	10.0	10.0	10.0	
9		<input type="checkbox"/>	10.0	10.0	10.0	
10		<input type="checkbox"/>	10.0	10.0	10.0	

Background: 63.29 The Rest: 31.78 Orientations Overlap: 0.00

Calculate Volume Fraction of Texture Components View Report Close