２種類のβ－Ｐｏｌｙｐｒｏｐｙｌｅｎｅ

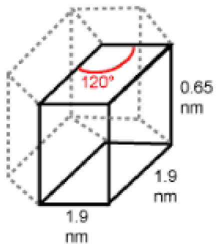
２０２５年１０月２７日

ＨｅｌｐｅｒＴｅｘ　Ｏｆｆｉｃｅ

概要

β－ｐｏｌｙｐｒｏｐｙｌｅｎｅの文献を検索すると以下の２種類がｈｉｔする。

Beta phase



β Phase

- This phase is metastable, and the crystals are pseudo-hexagonal.
- β-phase is mainly found in block PP copolymers and can be generated by addition of specific nucleating agents.
- This form was discovered by Padden and Keith in 1953 and can be improved by crystallization between 130 and 132°C or by orientation with high shear or through addition of specific nucleating agents.
- Presence of β-phase in PP homopolymer generally increase ductility in the finished parts. Maximum effect is observed at 65% of β-phase.

until 1994 that Meille [9] and Lotz [10] independently established that the β-crystal was a rhombohedral crystal structure, and that the unit cell parameters were a = b = 11.01 Å, c = 6.5 Å, α = β = 90°, γ = 60°, and a density of 0.921 g/cm^3. Due to their unique molecular

（１９，１９，６．５，９０，９０，１２０）

（１１．０１，１１．０１，６．５，９０，９０，１２０）

１９と１１．０１は

ｓｉｎ６０＊１１．０１＊２＝１９の関係が成り立つ

11.01

11.01

6.5

90.0

90.0

120.0

1.541838

3

~~0~~	~~0~~	~~1~~	~~1.84~~	~~6.5~~	~~13.612~~
1	1	0	37.03	2.8868	16.087
1	1	1	1.84	4.1919	21.131

19

19

6.5

90.0

90.0

120.0

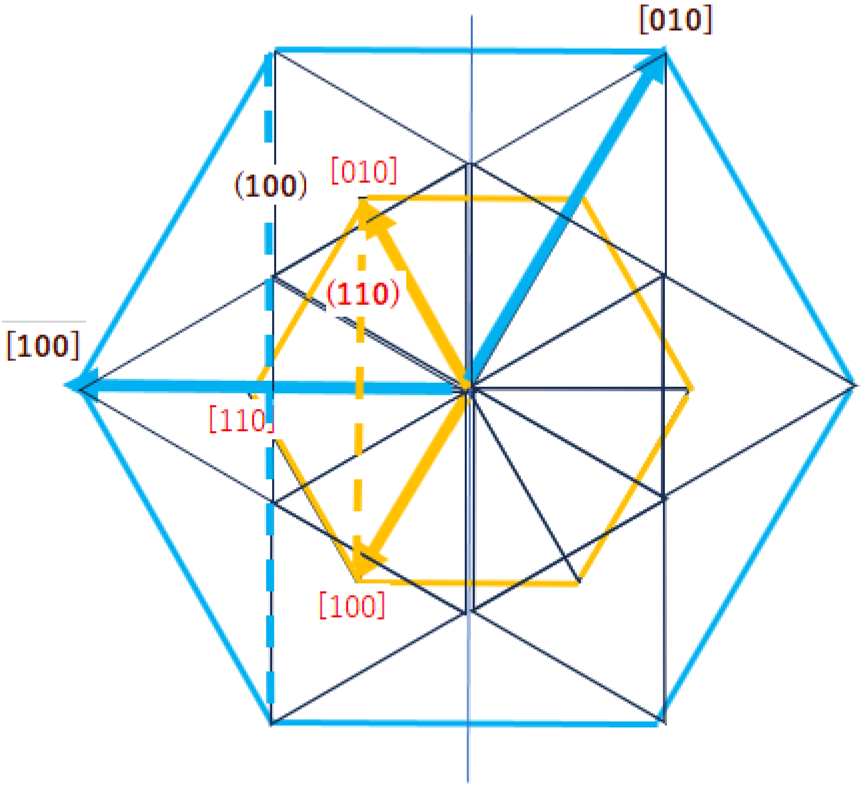
1.541838

3

2	1	0	1.0	6.2192	14.229
3	0	0	37.03	5.4848	16.146
3	0	1	1.84	4.1919	21.177

（１９，１９，６．５，９０，９０，１２０）をＢ－ＰＰＬ
（１１．０１，１１．０１，６．５，９０，９０，１２０）をＢ－ＰＰＳとする。

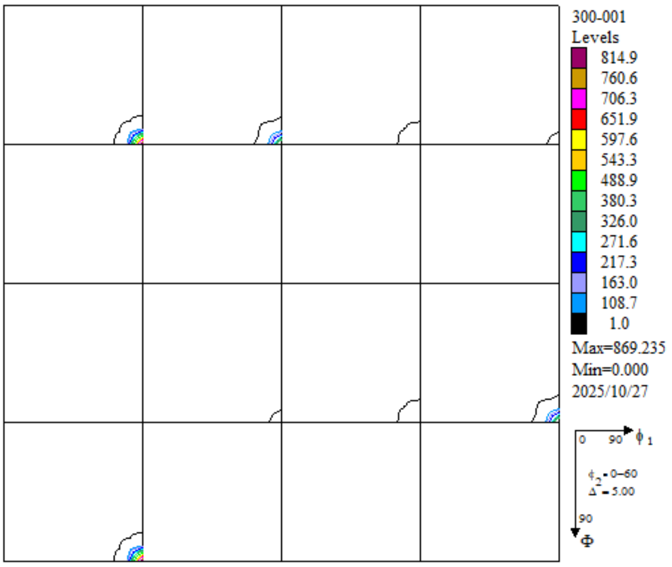
Ｂ－ＰＰＬとＢ－ＰＰＳの関係は

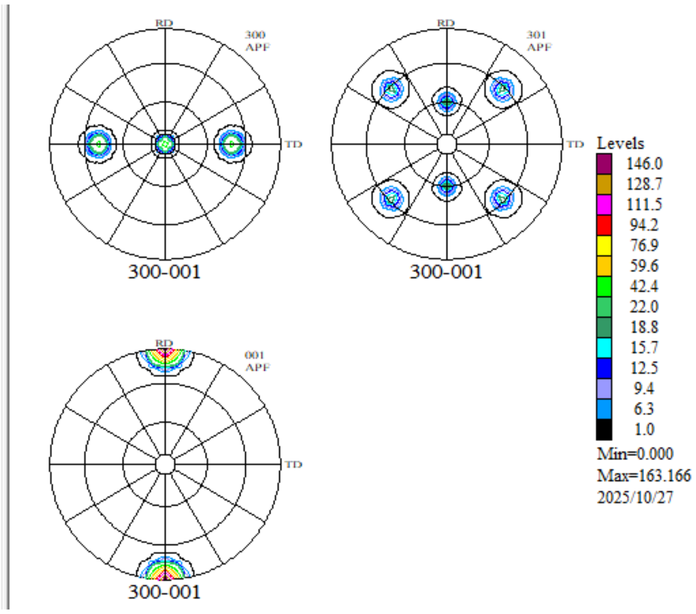


Ｂ－ＰＰＬ　　　　　　　Ｂ－ＰＰＳ
（３００）　　　　　　　（１１０）
（３０１）　　　　　　　（１１１）
の２θ角度が一致している。

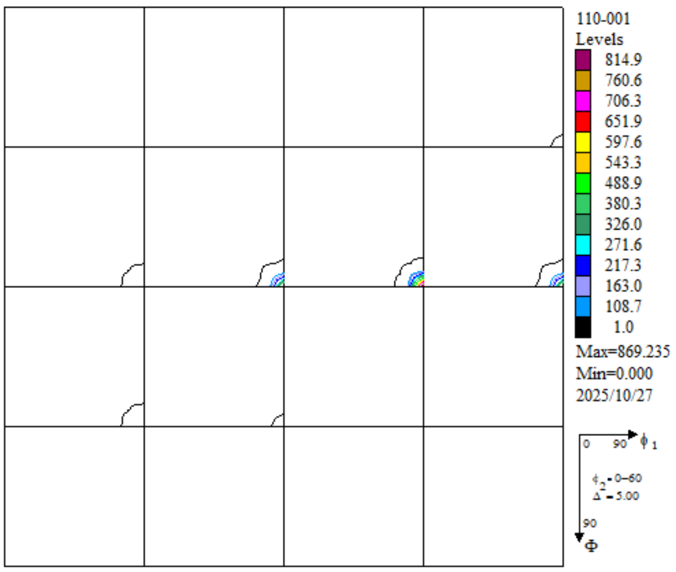
Ｂ－ＰＰＬ（３００）［００１］とＢ－ＰＰＳ（１１０）［００１］の関係を調べる。

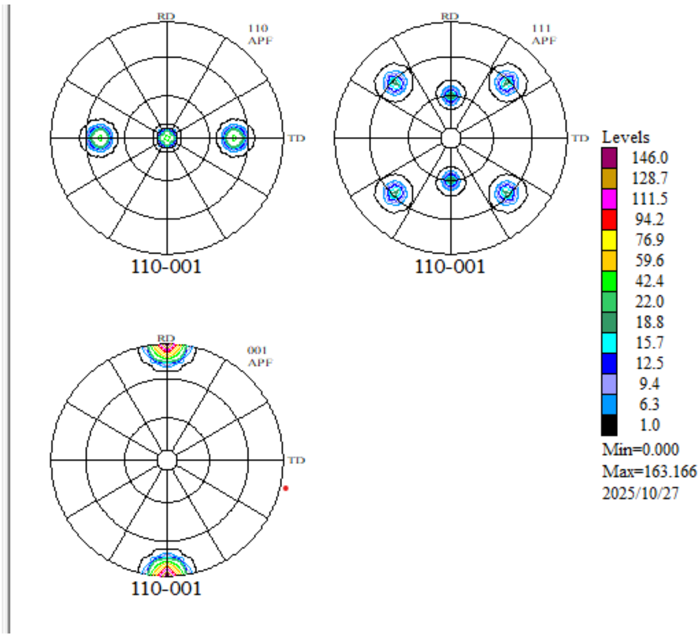
Ｂ－ＰＰＬ　（３００），（３０１），（００１）





Ｂ－ＰＰＳ　（１１０），（１１１），（００１）





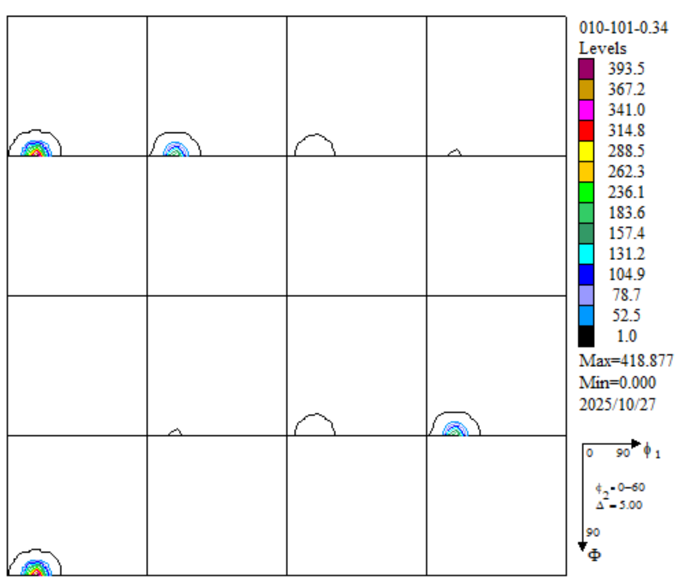
Ｂ－ＰＰＬのＯＤＦ（９０，９０，０）

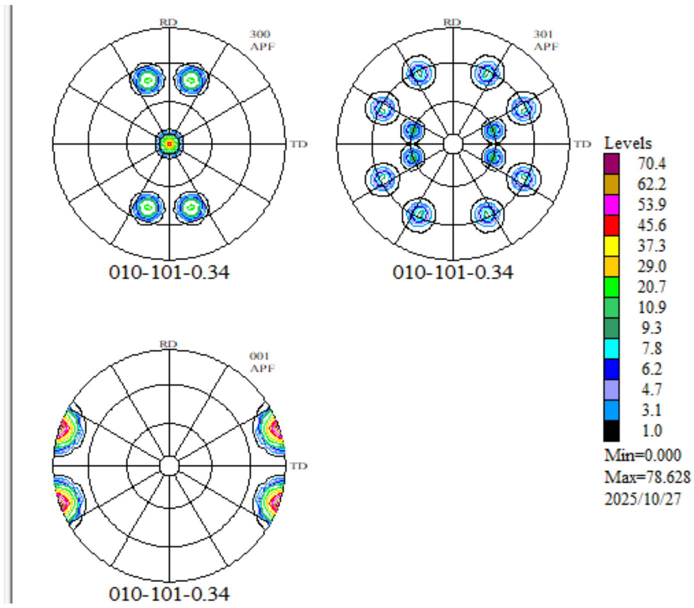
Ｂ－ＰＰＳのＯＤＦ（９０，９０，３０）

極点図は同一

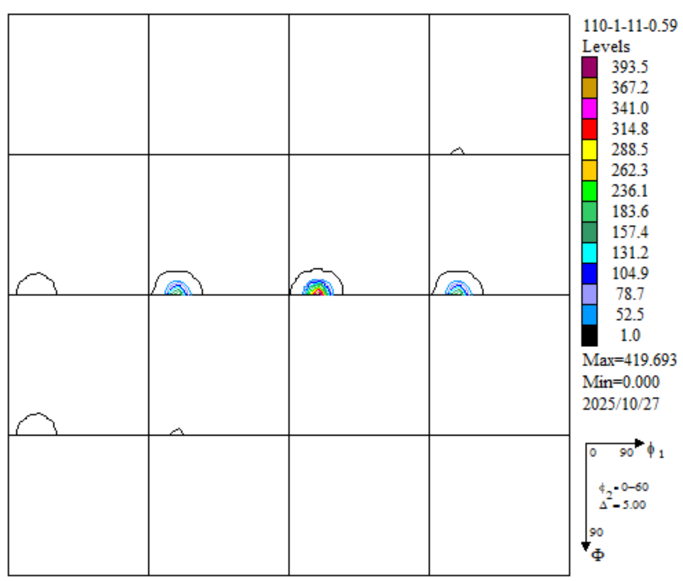
Ｂ－ＰＰＬ（０１０）［１０１］とＢ－ＰＰＳ（１１０）［１－１１］の関係を調べる。

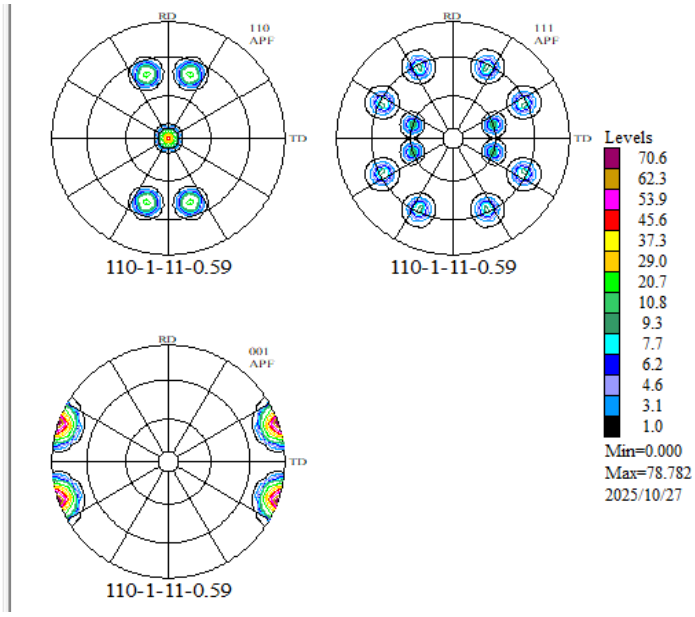
Ｂ－ＰＰＬ　　　　　　　　　　　　　　　　　　　　（３００），（３０１），（００１）





Ｂ－ＰＰＳ　　　　　　　　　　　　　　　　　　　　（１１０），（１１１），（００１）





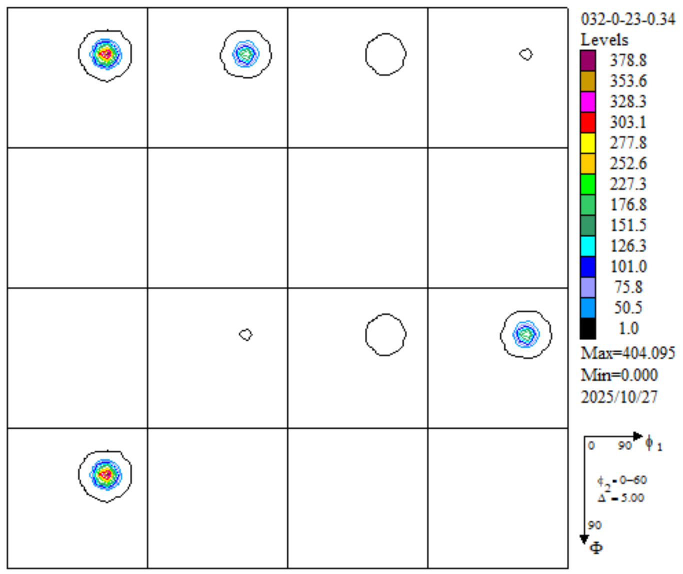
Ｂ－ＰＰＬのＯＤＦ　{ 0 1 0}< 1 0 1>　{ 18.78, 90.00, 0.00}

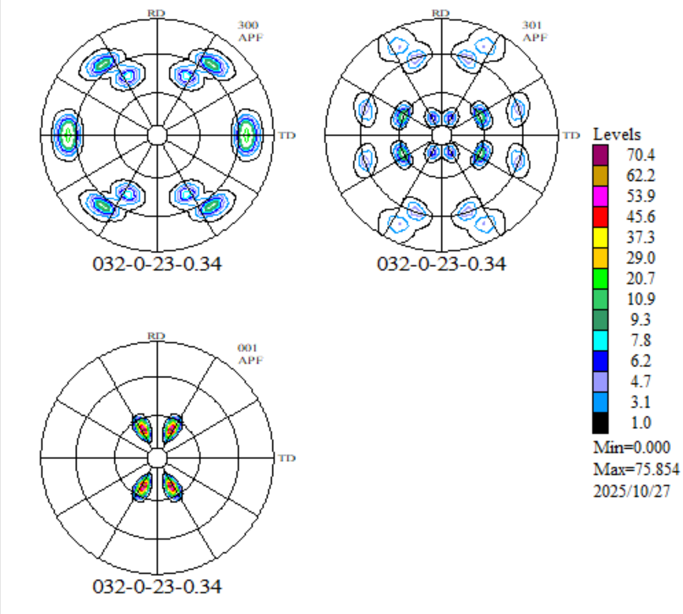
Ｂ－ＰＰＳのＯＤＦ　{ 1 1 0}< 1 -1 1>　{ 18.81, 90.00, 30.00}

極点図は同一

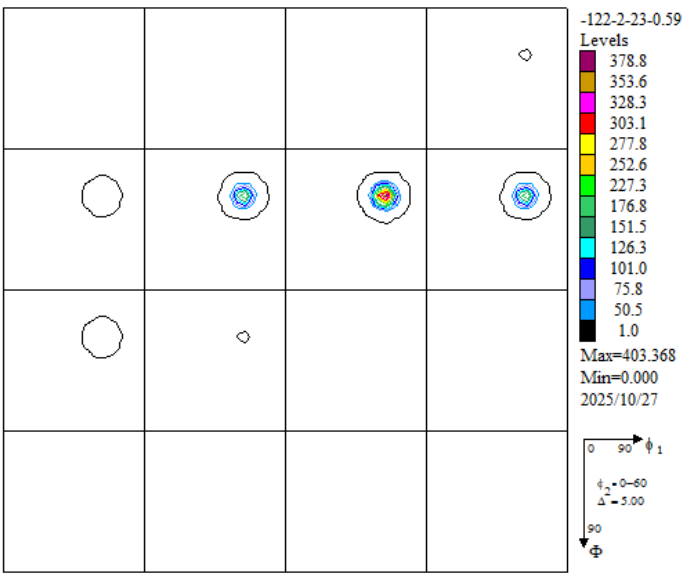
Ｂ－ＰＰＬ（０３２）［０－２３］とＢ－ＰＰＳ（－１２２）［２－２３］の関係を調べる。

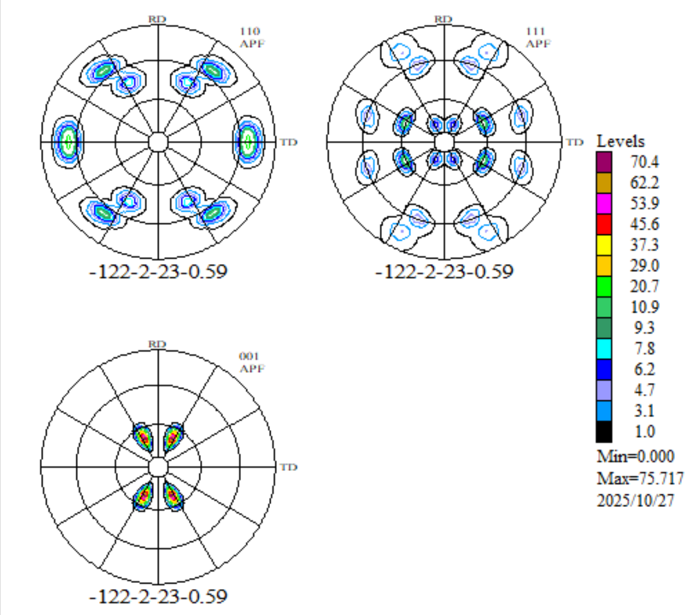
Ｂ－ＰＰＬ　（３００），（３０１），（００１）





Ｂ－ＰＰＳ　（１１０），（１１１），（００１）





Ｂ－ＰＰＬのＯＤＦ　{ 0 3 2}< 0 -2 3>　{ 63.55, 30.49, 0.00}

Ｂ－ＰＰＳのＯＤＦ　{-1 2 2}< 2 -2 3>　{ 63.56, 30.54, 330.00}

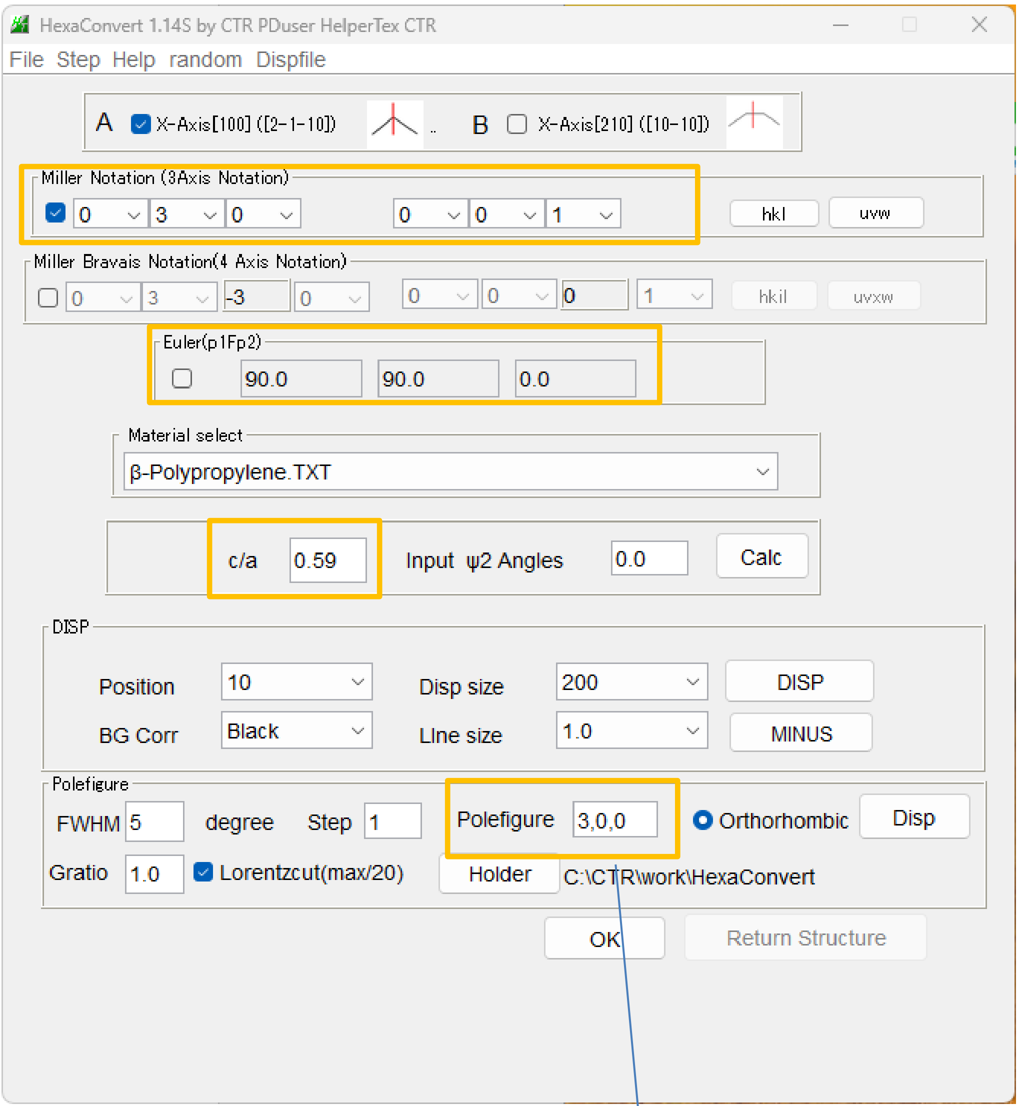
極点図は同一

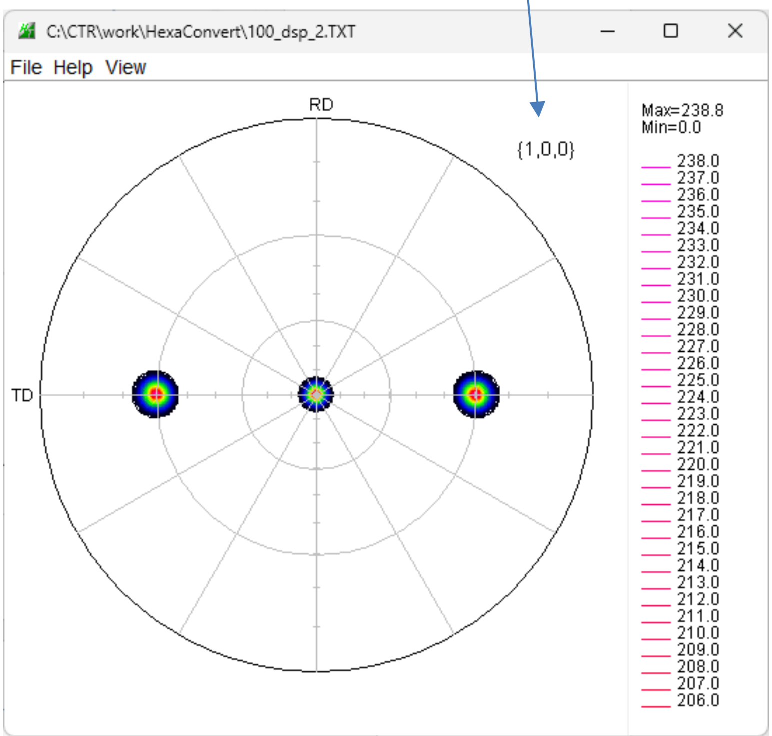
シュミレーション

今回のシュミレーションはＬａｂｏＴｅｘを使用しているが

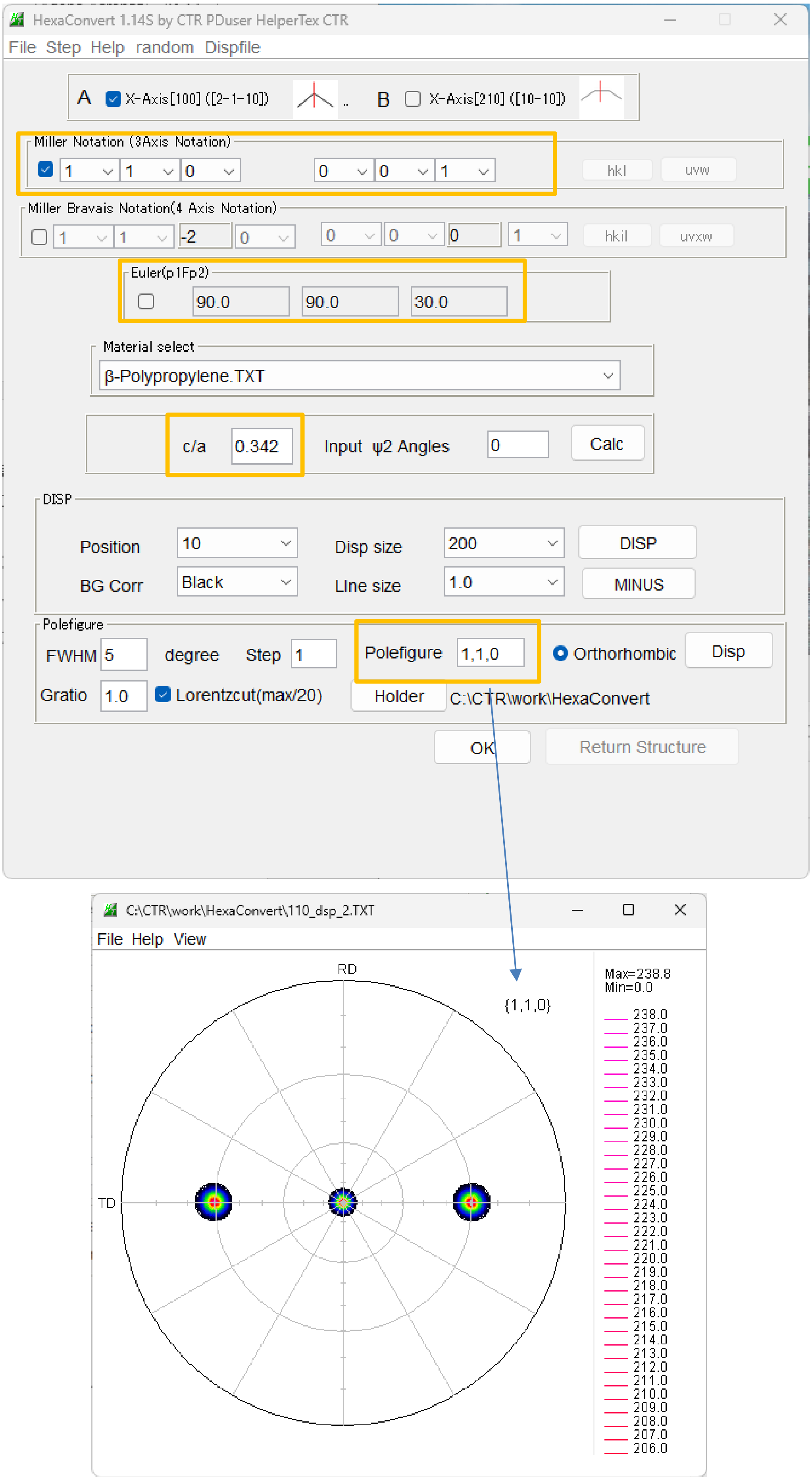
同一のシュミレーションをＨｅｘａＣｏｎｖｅｒｔやｓｔｅｒｅｏＧＰでも可能

Ｂ－ＰＰＬ





Ｂ－ＰＰＳ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B X-Axis[210] ([10-10])
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hkl uvw
Miller Bravais Notation(4 Axis Notation)
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hkil uvxw
Euler(p1Fp2)
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Material select
β-Polypropylene.TXT
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Calc
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Position 10
Disp size 200
DISP
BG Corr Black
Line size 1.0
MINUS
Polefigure
FWHM 5 degree
Step 1
Polefigure 1,1,0
Orthorhombic
Disp
Gratio 1.0
Lorentzcut(max/20)
Holder
C:\CTR\work\HexaConvert
OK
Return Structure
C:\CTR\work\HexaConvert\110_dsp_2.TXT
File Help View
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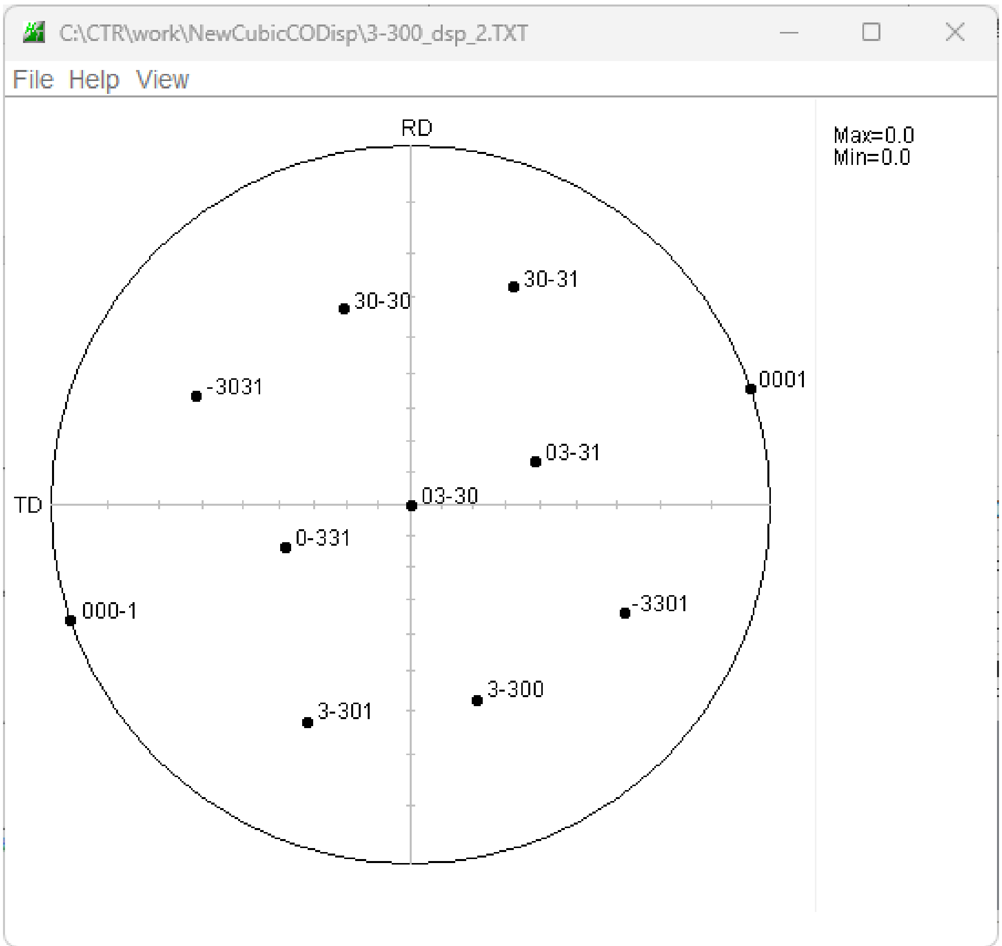
Ｂ－ＰＰＬ（０３０）［１０１］



Ｂ－ＰＰＳ（１１０）［１－１１］