

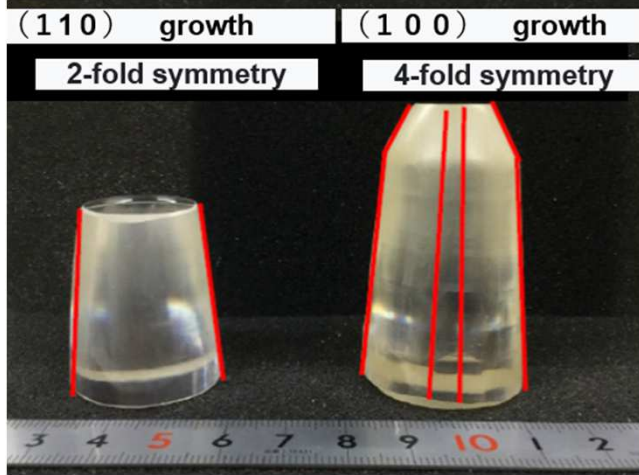


# SrTiO<sub>3</sub>, TiO<sub>2</sub>(Rutile) Single Crystal

## Application Examples

### SrTiO<sub>3</sub> Single Crystal

SrTiO<sub>3</sub>(110) directional grown ingot, soon to be commercialized



## Benefits for Customers

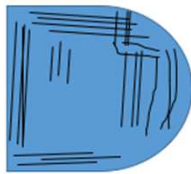
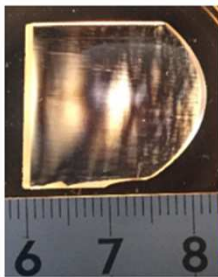
- (110)High orientation during epitaxial deposition

## Features of SrTiO<sub>3</sub> (110)

(110) wafer cut diagonally from STO (100) ingot

Cross-Nicol Observation Photograph

Image illustration of distortion

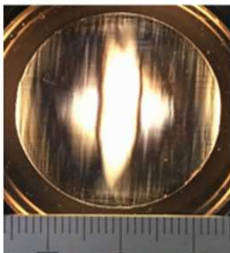


**Non-uniform !**

(110) wafer sliced in a circle from STO(110) ingot

Cross-Nicol Observation Photograph

Image illustration of distortion



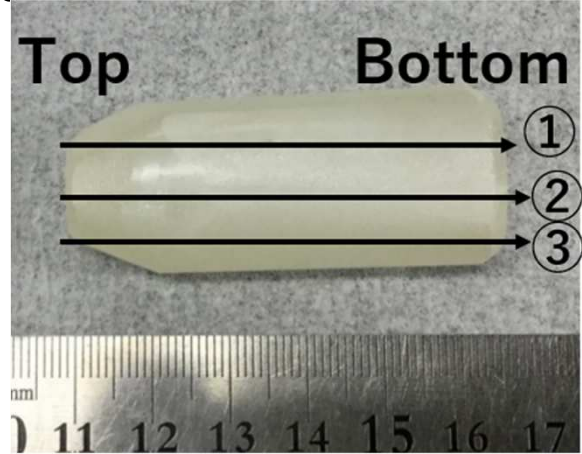
**Uniform !**

The crossed-Nicol observation shows that we could get the (110)wafers with better uniform properties in the radial direction with the (110)growth.

## Application Examples

### TiO<sub>2</sub>(Rutile) Single Crystal

Grows TiO<sub>2</sub> (Rutile) with high uniformity of transmittance at any location inside the ingot.



## Benefits for Customers

- Suitable for optical components for high quality optical communication due to uniformity of transmittance.

## Features of TiO<sub>2</sub>

Ingot	Length	Tr-①	Tr-②	Tr-③
T21-1	44 mm	64.5 %	64.5%	64.2 %
T21-2	41 mm	66.5 %	66.4 %	66.1 %
T21-3	41 mm	67.4 %	67.2 %	67.0 %

We have studied the radial direction uniformity of optical properties using the 3 different ingots by measuring the ingot transmission @ 1068 nm of the 3 different positions shown below. We selected the 3 ingots with the different transmission, such as 64.n%, 66.n% and 67.n%