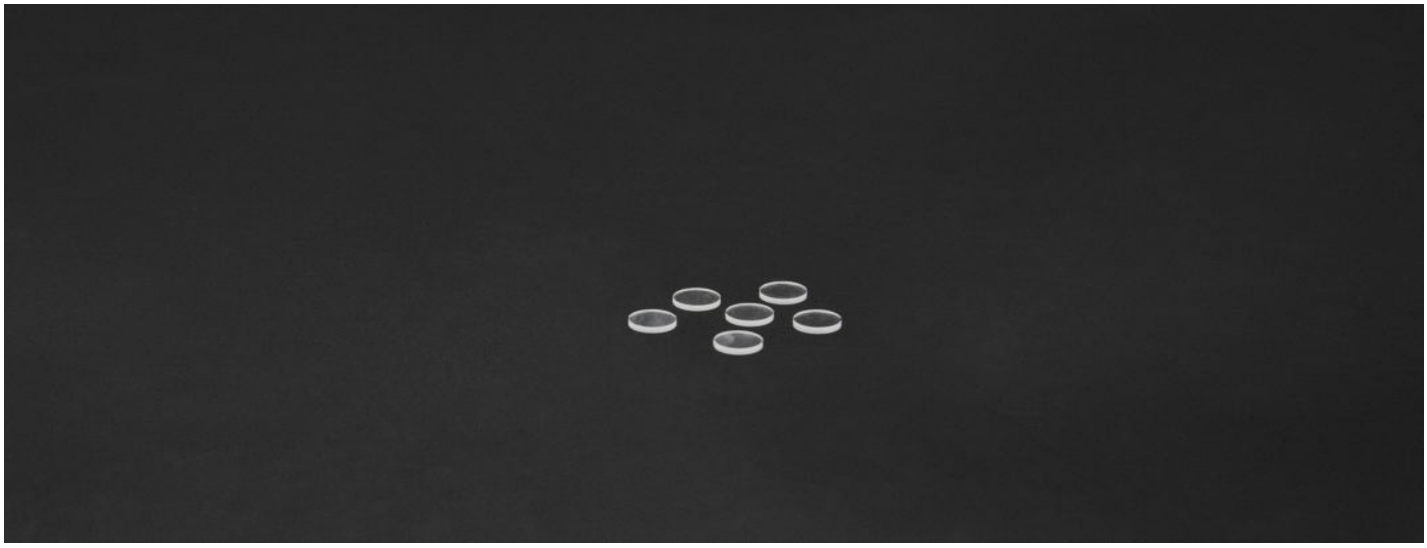
$SrTiO_3$

Strontium Titanate ($SrTiO_3$) Crystal Substrate



DESCRIPTION

Strontium titanate $SrTiO_3$ has a typical perovskite structure and it is widely used as a substrate for ferroelectric and superconductor thin films. $SrTiO_3$ is the first choice for high-temperature superconducting junction technology single crystal material, because the lattice constant of $SrTiO_3$ is similar to Y-Ba-Cu-O system (a=3.89Å). In applied research, it is placed in important part for Josephson element and SQUID.

FEATURE

- A Perovskite crystal structure
- Trontium Titanate (SrTiO3) and Y-Ba-Cu-O system (a = 3.89 A) have similar values in the lattice constant
- No twin structure

APPLICATION

- As special optical windows and as high quality sputtering target
- As substrate material for the epitaxial film of HTS and many oxides

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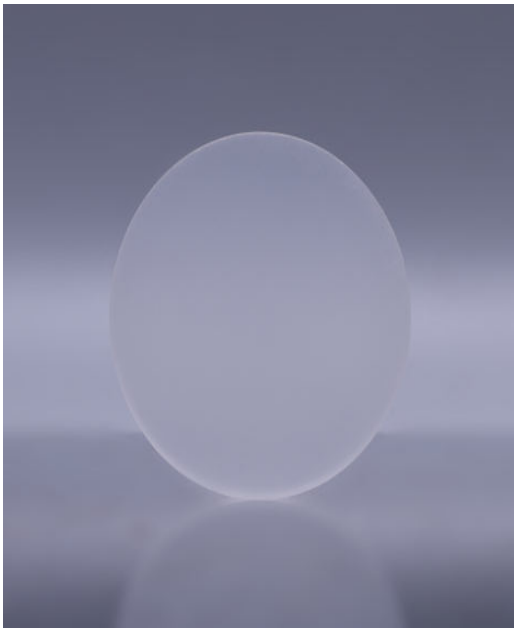
$SrTiO_3$

PARAMETER

Physical Properties

Composition	$SrTiO_3$
Crystal system	Cubic
Space group	Pm3m (Perovskite)
Lattice constant	a=0.3905nm
Melting point	2080°C
Growth method	Verneuil method
Density	5.122g/cm^3 (20°C)
Dielectric constant	310 (27°C,1 MHz)
Thermal expansion coefficient	11.1×10^{-6}/°C (r.t.~1000°C)
Phase transition	110K (tetragonal⇔cubic)
Refractive index	2.407 (at 589nm)
Dielectric constant	~300
Chemical stability	Insoluble in water
Loss tangent	~ 5 x 10^{-4}(300k) , ~ 3 x 10^{-4}(77k)



Main Specification

Product Name	$SrTiO_3$ substrate
Orientation	<100> ±0.5° <110> ±0.5° <111> ±0.5° Or other off-angle
Standard Size	10x10mm 10x5mm 5x5mm 3x3mm 20x20mm φ1" x 0.5mm Or others
Thickness	0.1mm 0.2mm 0.5mm 1.0mm 2.0mm Or others
Polishing	Fine ground Single side polished Double side polished Roughness: Ra<5A(0.5nm)