LLC «GRAVITON»
Tver state University
Tver, RUSSIA

Creation of first-rate manufacturing department for production of paratellurite (α-TeO_2) crystals and acoustooptic elements on this basis

market

producers of acoustooptic, optical and laser instruments on the base of paratellurite According to experts the "Laser Association": World market of optical components and systems is 21000-42000 million $ The main producers – the United Kingdom, Ukraine, China Growth dynamics is in the region of 20%

At the moment the market is not saturated!

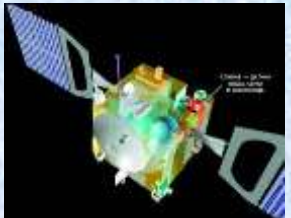
State university of Tver has developed a unique technology for growing paratellurite large single crystals implemented on the LLC"Graviton" .The technology allows to obtain crystals large with a diameter up to 85 mm and a height of 90 mm. The advantages of our crystals is important for those devices in which in addition to the high optical quality of the material fundamentally required large size of produced can be light sound conductors or optical elements

LLC «GRAVITON»

- Preparation and shipping to the customers of paratellurite elements for a number of acoustooptic devices including those for unique domestic and international projects GLONASS, Mars-Express and Venus-Express.





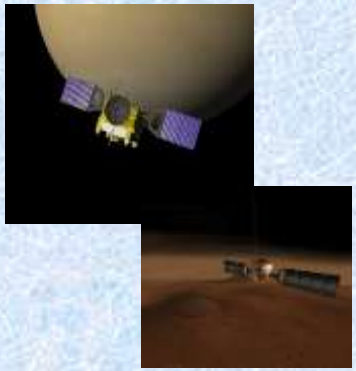
Innovation

We grow the largest crystals in the world

COMPETITIVE ADVANTAGES

- Size in the [001] crystallographic direction: 85 mm;
- Color loss: not more than 2*10-3 cm-1;
- Number of pull directions: 3 ([110], [101], [113]);
- Precision of the orientation with respect to crystallographic axes: ±1 ang.min.;
- Plane of the optical facet: at least λ/20

We have developed a new method of growing paratellurite crystals based on selection of the optimal period of rotation of the crystal during its growth.
The patented and proven technology allows us to grow very large paratellurite crystals with high acoustic and optic quality



Our technology is protected by patents, know-how certificates for computer programs and is developing on the basis of Tver state University

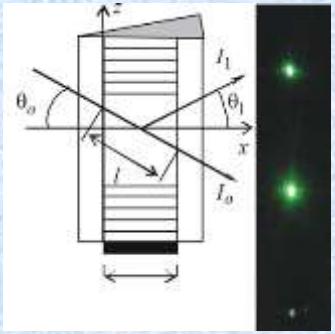
The Ttechnology is awarded with gold medal Leonardo da Vinche of the European salon in France

Our products

The enterprise is aimed at the production of paratellurite single crystals by the method of Czochralsky and fabrication of acoustooptic components from the obtained crystals.

The production includes: growth of crystal boules; X-ray orientation of the boules; cutting and preparation of optical element workpieces; optical polishing and preparation of optical elements.

The production of paratellurite single crystals can be converted and complemented by the production of other technically important crystals such as lithium niobate, calcium molybdate, lead tungstate, etc. , which are also based on the Czochralsky method of growth.

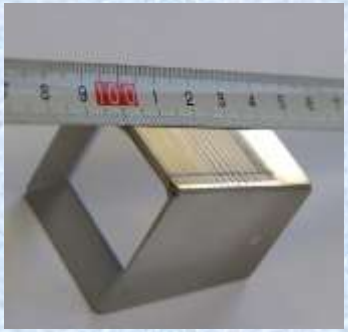


Working principle of acoustooptic devices

Technology of paratellurite crystal growth

Uniquely large perfect paratellurite crystals

Technology of paratellurite processing (orientation→ cutting→ grinding → polishing



Elements (light-sound waveguides) of paratellurite for all types of acoustooptic devices

The Size has a great significance

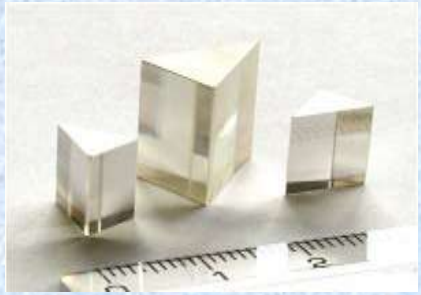
economic aspect

We grow the largest macrocrystal paratellurite, in three directions of extension that increases the amount produced of them optical elements

functional aspect

The possibility of obtaining very large gustosamente gives you the opportunity to obtain a large aperture. So in nuclear reactions to increase the power of radiation

Crystals paratellurite unique sizes



Acousto-optic elements of paratellurite

The large crystals **allow to create a modern heavy-duty lasers**

Record small light loss significantly increase **the efficiency of the devices**

Low dislocation density guarantees **high quality image Low extinction (weakening) of light allows to increase the brightness of the obtained images**

Decreases the energy cost of operation of the optical device

offer

Realization of acousto-optic elements paratellurite.

- Price for 1 cm^3 of raw paratellurite crystal before processing – $40-60
  Price for 1 cm^3 of acousto-optic elements paratellurite - $60

Realization of license on technology.

The expansion of production.

Organization of joint venture.

Creation of first-rate manufacturing department for production of paratellurite (α-TeO2) crystals and acoustooptic elements on this basis. Required investment: 2000000$ to expand production.

Planned parameters:

- Cost recovery - 4-5 years
- Price for 1 cm^3 of raw paratellurite crystal before processing – $40-60
- Profitability – 35-50%
- Annual production – 40-50 kg

Thank you for your attention!

CONTACTS

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