



CRYTUR Ltd.

2nd Czech Israel Technology Days 2009



Crystal growth in Czech Rep.

- Czechoslovak Association for Crystal Growth
- Crystal growth of semiconductors
Arsil Crystal a.s., ON Semiconductor Ltd., Polovodiče a.s.
- Crystal growth of sapphire using of Verneuil method
Spolchemie a.s.
- Optical crystals and their applications
Crytur Ltd.



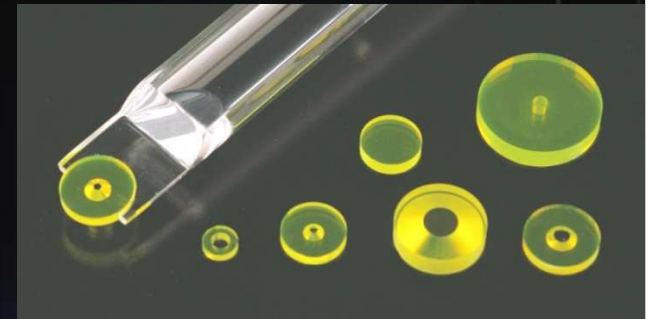
Tradition of single crystals in Turnov since 1943



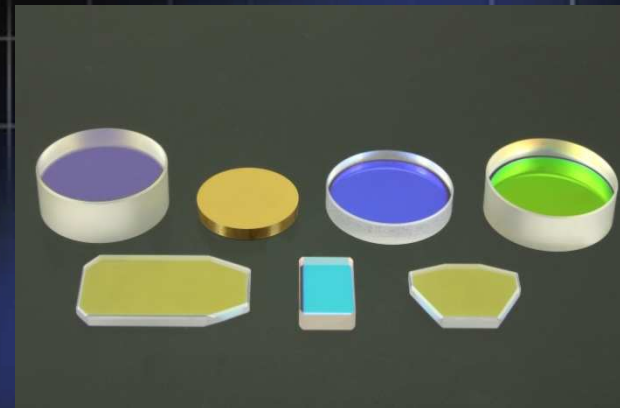


Crytur production directions

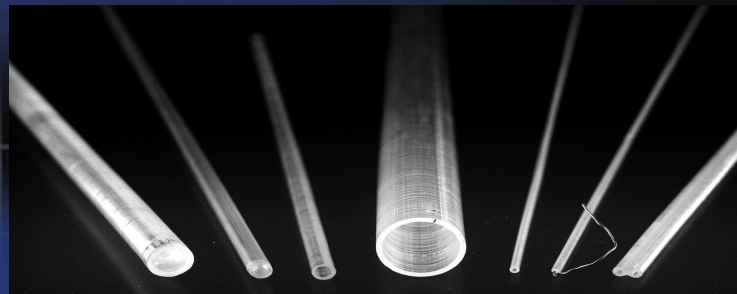
- scintillation materials and detectors
detection units for electron microscopy



- laser rods, mirrors and other laser components



- sapphire profiles.



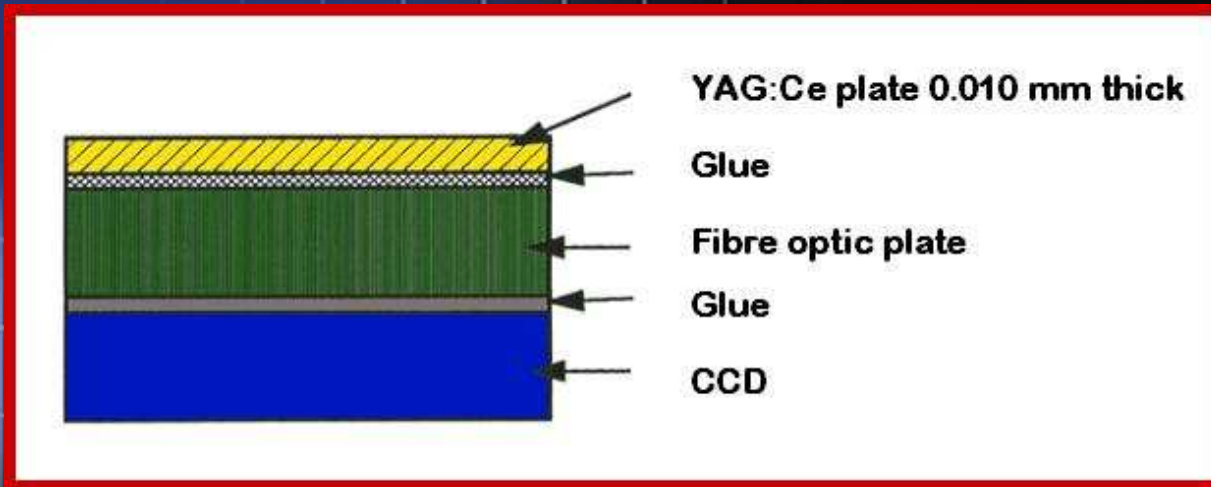


Company profile

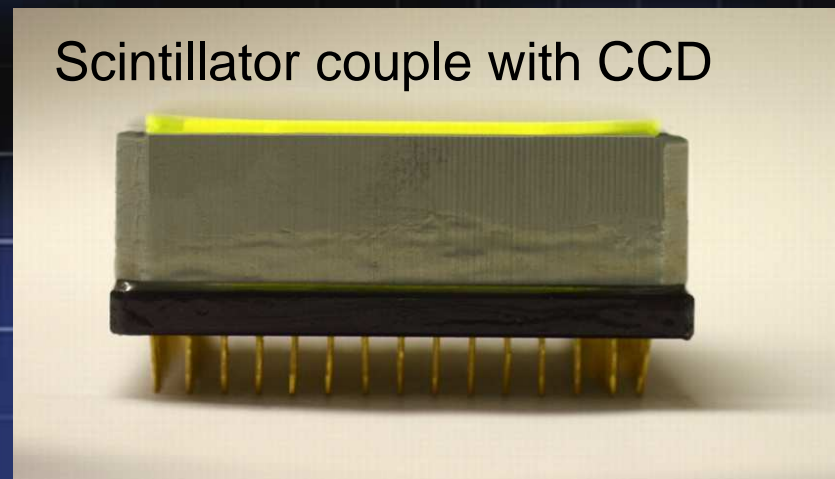
- 55 employees
- Turnover 2,5 mil. EUR/year
- Average turnover growth 15% yearly in the last 10 years
- Production 20% in CZK, 55% in EUR, 25% in USD
- Niche applications requiring strong research.
- Research expenses ca 25% of the turnover.
- Value added about 70%.



Imaging systems and screens



Screens 5 μm thick



Free-standing screens 30 μm thick

Tapers





Detection units

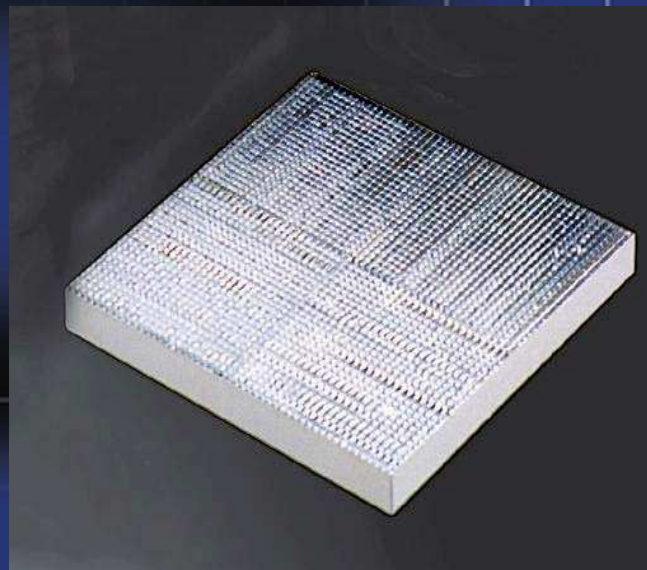
Electron microscopy



Gamma ray
detection units

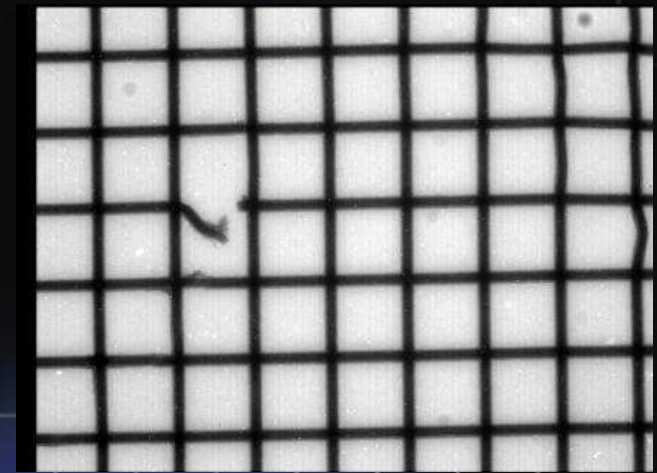


PET crystal matrices

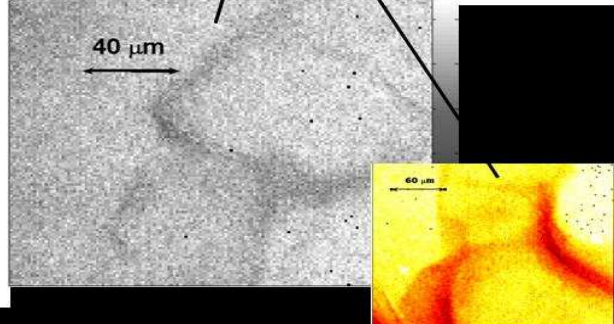
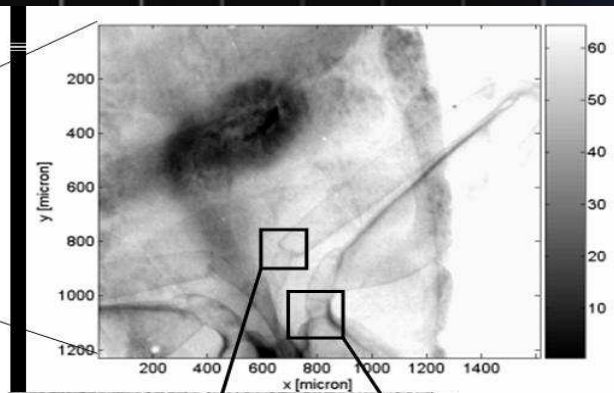
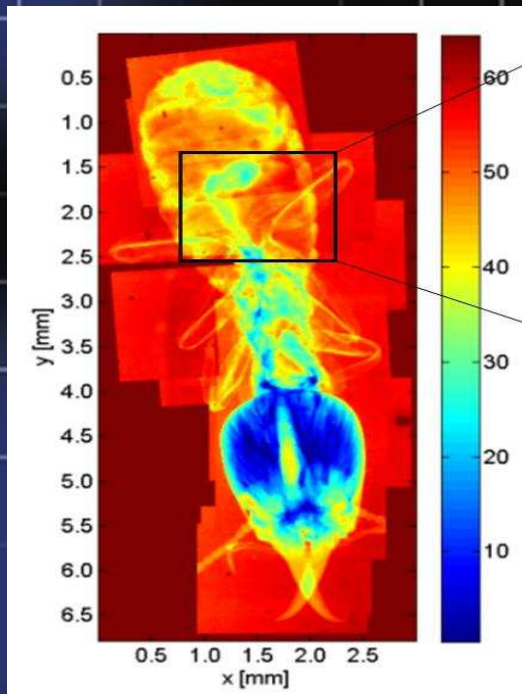




Submicron X-ray camera



5 micrometer wire





Laser optics: gain crystals

Nd:YAG, Nd:YAP

Er:YAG, Er:YAP

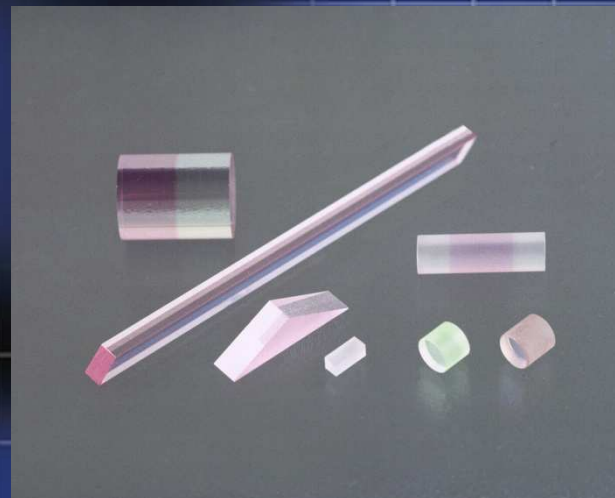
Tm:YAG, Tm:YAP

Yb:YAG, Pr:YAP



Laser rods and slabs

Diffusion bonded rods





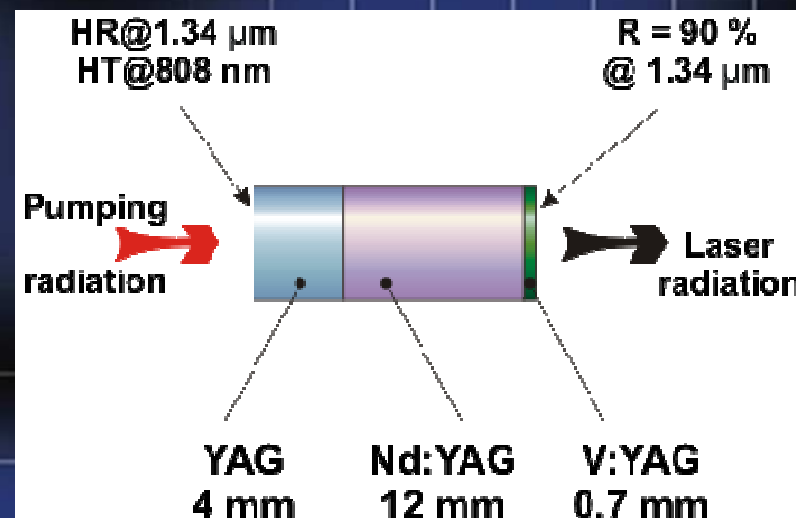
Laser optics: Q-switches

V:YAG, V:LuAG

Cr:YAG



Diffusion bonded
microchip lasers





Laser optics: coatings

High reflectivity mirrors, anti-reflection coatings, partial reflectivity mirrors, dichroic mirrors, beam splitters, graded reflectivity laser mirrors, optical filters, coated infrared optics, etc.





Sapphire products

Sapphire is single crystal corundum modification of aluminium oxide.

- No shape change below melting point at 2053 °C
- Extreme resistance to any chemical attack
- Hardness just below diamond – Mohs 9
- Perfectly homogeneous
- Min. 99,999 % Al_2O_3
- 100% gas tight





Sapphire products

The same place, the same time...



Thermocouple protection

High pressure applications (NMR, reactors...)

Semiconductor industry (>5N purity)

Vacuum high temperature component (up to 1950 °C)

Optical component (flash lamp, lightguide, etc.)





Participation on research projects

Actual

- Nanocomposite ceramic and thin scintillators
- Detection and imaging systems based on scintillation materials

Finished

- Imaging systems of ionized radiation
- Single crystal materials for lasers and scintillators
- INTAS
- NATO – SfP 973510
- PbWO₄ – CERN . Crystal Clear Collaboration



Possible cooperation areas

- Development of new single crystals and their applications.
- High-resolution imaging (X-ray, electrons, neutrons, etc.).
- Complete detection units, imaging systems, cameras
- 3D tomography with up-to micron resolution
- Specialised laser materials



Possible cooperation areas

- Precise dielectric layers, laser mirrors, etc.
- Precise 3D machining of hard materials (single crystals, ceramics).
- Research on new, non-single crystal scintillation materials (transparent nanoceramics, thin layers).
- High pressure, high corrosion, or optical applications of sapphire.
- Investing into new productions using environment of the „new EU country“, i.e. subsidy available.



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