

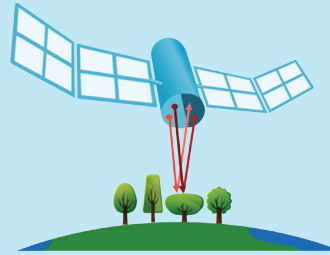
# GALACTIC:

## Space-qualified Alexandrite laser crystals from Europe



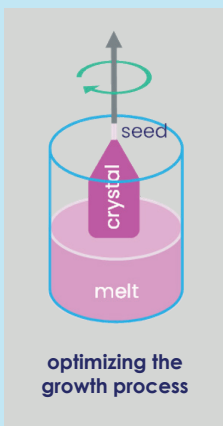
### The vision

High-quality European Alexandrite crystals for Earth observation space missions: Used in advanced laser systems for satellite-based LIDAR instruments, these crystals will help to make studies on vegetation's health and therefore climate change more precise.



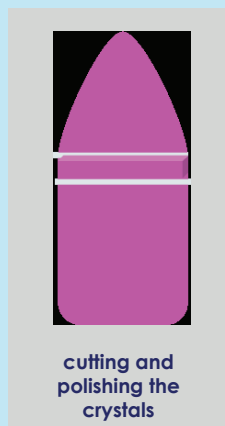
[www.h2020-galactic.eu](http://www.h2020-galactic.eu)

### The partners' approach to space qualified crystals:

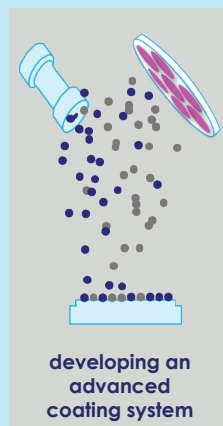


optimizing the growth process

Optomaterials S.r.l.

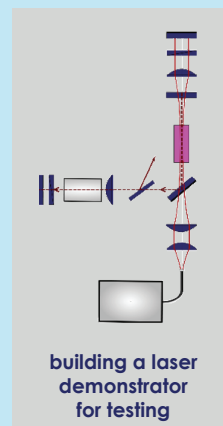


cutting and polishing the crystals



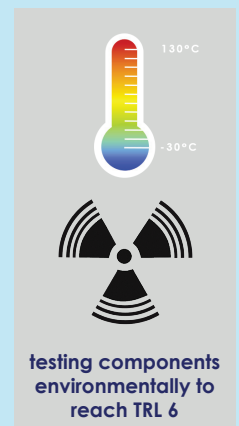
developing an advanced coating system

Altechna Coatings

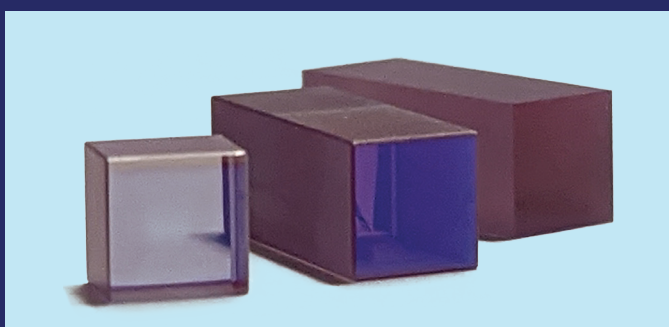


building a laser demonstrator for testing

Laser Zentrum Hannover e.V.

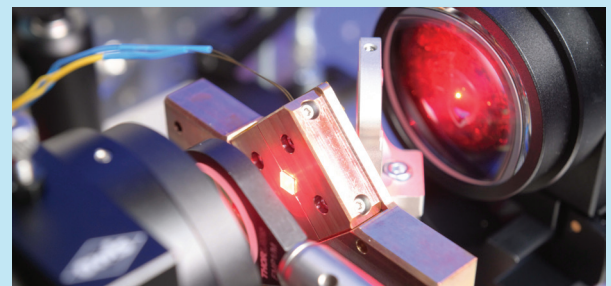


testing components environmentally to reach TRL 6



### Alexandrite specifications

- Chromium-doped Chrysoberyl ( $\text{BeAl}_2\text{O}_4:\text{Cr}^{3+}$ ), doping concentrations 0.13 at% to >0.22 at%
- Czochralski growth of crystal boules
- Geometry:
  - 4 x 4 x 10 mm<sup>3</sup> laser crystals
  - 4 x 4 x 3 mm<sup>3</sup> test samples
- Two optical interference coating systems with high LIDT (AR638nm+755nm, HR755nm/HT638nm)



### Laser demonstrator specifications

- Alexandrite-based DPSS laser system
- Longitudinally diode-pumped at 638 nm pump wavelength
- Cavity-dumped, Q-switched operation
- Output parameters:
  - Wavelength: typ. 755 nm (tunable)
  - Output power: >500 μJ @ 5 kHz (variable rep. rate)
  - Pulse duration: <3 ns

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