

Small crystal, huge impact:

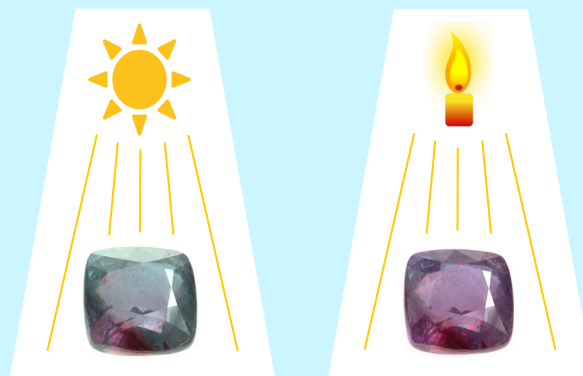
Alexandrite laser crystals

The Tsar's gemstone



Tsar Alexander II
(by Nikolay Lavrov,
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In 1830, the Finnish mineralogist Nils Gustaf Nordenskjöld discovered the first natural Alexandrite in the southern Urals, and named it after the future Tsar Alexander II.



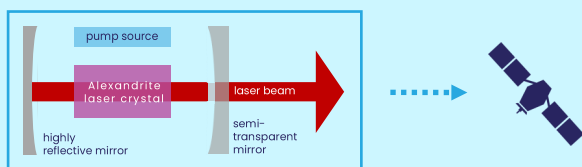
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The Alexandrite effect

The Alexandrite is known as the emerald by day and ruby by night because of its color change: it looks **bluish-green** in daylight, and **purple to raspberry** in candlelight.

This so-called "Alexandrite Effect" is caused by the chrome contained in the crystal, which acts as a color filter.

Laser systems for satellites

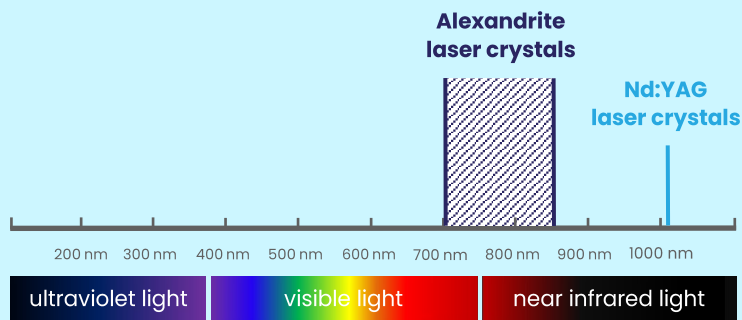


Simplified set-up of a solid-state laser with a crystal as laser medium. GALACTIC develops a European supply chain for space-qualified Alexandrite crystals.

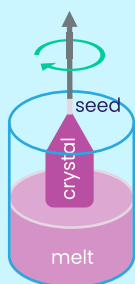
Tunable by nature

Many lasers in Earth observation satellites use neodymium-doped yttrium aluminum garnet (Nd:YAG) crystals. Their wavelength is fixed to 1064 nm.

Alexandrite laser crystals, however, are tunable from ~700 to 858 nm, and have a higher thermal conductivity and breaking strength.



Creating synthetic Alexandrites



Natural Alexandrites are rare. GALACTIC uses the Czochralski method to pull synthetic Alexandrite crystals. Among other things, special optical coatings shall make them suitable for space applications.

Impact for Europe

Earth observation is essential for collecting the data to better understand our planet. Using the special properties of Alexandrite, novel lasers for satellites and aircrafts shall enable new ways of monitoring the atmosphere and the surface of the Earth.



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