

The CUNY Center for Advanced Technology In Photonics Applications (CUNY CAT)
 Designated by NYSTAR, the New York State Foundation for Science, Technology and Innovation

Femtosecond Cr:Forsterite Laser

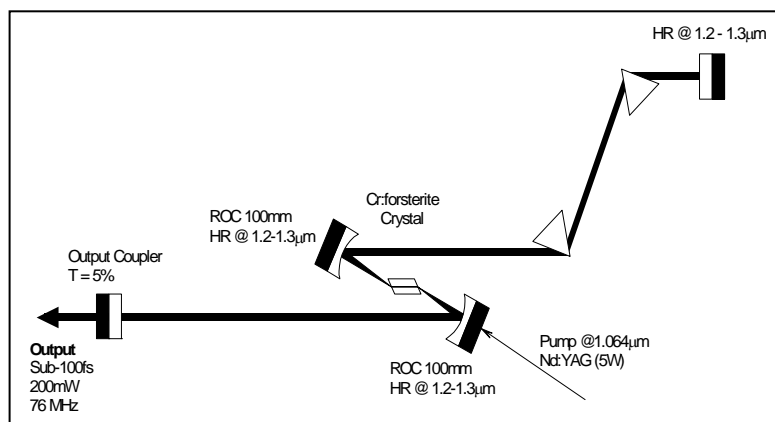
The vibronic laser material Cr:Forsterite fills the void in the near-infrared region (1.15-1.3 μm) not covered by any other solid-state laser. In this system, the large laser bandwidth has been utilized to generate sub-100 fs pulses by modelocking. Since the tuning range of Ti:Sapphire is limited to below 1 μm , the Cr:Forsterite system will be important for scientific and medical applications where a source further into the near-infrared is needed. The operating wavelength of this system coincides with a dip in the absorption of water and, in addition, a low scattering regime, making Cr:Forsterite an important source for imaging applications.

Applications:

- Imaging
- Optical coherence tomography
- Spectroscopy
- Ranging

Benefits

- Solid-state laser technology
- Ultrashort pulse generation
- Tuning in 1.15-1.3 μm spectral region
- Less than 10% RMS amplitude noise
- High data acquisition
- TEM₀₀ beam profile



Modelocked

The Technology:

Cr:Forsterite was first *lased* in the late 1980's, and has been shown to be an important source of near-infrared radiation. By accessing the inherent Kerr nonlinearity of the Cr:Forsterite laser crystal, it is possible to generate ultrashort pulses using a technique known as self-modelocking. In an optimized cavity configuration, sub-100 fs pulses are generated. In this laser, the use of a prism pair, to introduce negative dispersion, results in the production of pulses as short as 36 fs.

This technology opportunity sheet describes continuing efforts in this area. Several patents may have been issued or are pending and which may be available for licensing.

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