

# Lasers for Multi-wavelength Digital Holography

Compact Single-Frequency Lasers for easy OEM integration

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**TOPTICA introduces new wavelengths at 445 nm and 447 nm in its TopMode single-frequency diode laser series, pushing the boundaries of high-resolution Raman spectroscopy, microlithography, multi-wavelength digital holography and interferometry.**



TOPTICA's TopMode lasers operate as easily as a HeNe, but also offer higher power and the choice of wavelength. The TopMode series sets records in terms of power, coherence and wavelength stability. The proprietary Coherence-Advanced Regulation Method (CHARM) provides

an active stabilization of the lasers' coherence and ensures continuous single-frequency operation. TopMode and CHARM means nothing less than reliable 24/7 operation.

The short wavelengths provided by our TopMode 405 lasers are particularly well-suited to Raman spectroscopy of inorganic materials, for which no fluorescence obscures the Raman signal. Raman intensity depends on the excitation wavelength by a factor  $1/\lambda^4$ . TopMode lasers at 405 nm allow strong Raman signals that remain detectable by Si-based detectors.

In digital holography, the topography of a surface is measured by recording an interference pattern using several, carefully selected wavelengths. The separation between laser wavelengths, e.g.  $\lambda_1$  and  $\lambda_2$ , provides a "Synthetic wavelength" defined by  $\Lambda = \lambda_1 \cdot \lambda_2 / |\lambda_1 - \lambda_2|$ , which determines the maximum height that can be measured. We can provide TopMode lasers with wavelengths customized to your application.

More info at [www.toptica.com/topmode](http://www.toptica.com/topmode)

## Key Features:

- TopSeller: 100 mW at 405 nm
- Customized wavelengths 375 nm - 515 nm
- Enables repeatable, high-resolution measurements
- Easy OEM integration

## Applications:

- High resolution Raman spectroscopy
- Digital holography
- Lithography
- Precision metrology
- Scatterometry
- Interferometry and holography
- Quantum cryptography

## About TOPTICA

TOPTICA has been developing, producing, and marketing high-end lasers and laser systems for science, research, and industry for 25 years. The portfolio includes diode lasers, ultrafast fiber lasers, terahertz systems, and optical frequency combs. Worldwide, TOPTICA has 490 employees in six business units with a consolidated group revenue of €130 million.

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