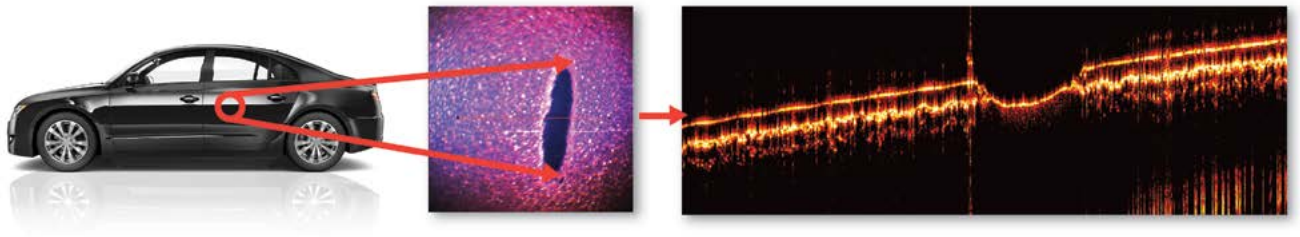
Wasatch Photonics

DISCOVER OCT

The enlightened alternative to ultrasonic inspection

OCT uses infrared light to provide surface profiles and information about subsurface structure and uniformity, delivering **higher resolution** and **faster images** than ultrasound. This novel technology requires no contact or coupling medium, yet delivers accurate information in real time to enable in-situ process feedback and high-throughput quality control on finished parts.



OCT provides high resolution images to assess defects and uniformity of finely structured materials, as can be seen in this cross-section of paint layer thickness through a scratched region.

ADVANTAGES OF OCT

- High resolution: 2.6-10.0 µm options
- Video-rate acquisition: 30 images/sec
- Images depths up to 5.8 mm
- Non-contact, non-invasive
- No coupling medium required
- 3D imaging & dimensional analysis

APPLICATIONS

- Layer profiling of paints, coatings & foils
- Defect and uniformity assessment
- Characterization of machined parts & features
- Flatness & clarity of displays & solar cells
- Pores and gaps in membranes & seals
- In-situ process monitoring & final QA

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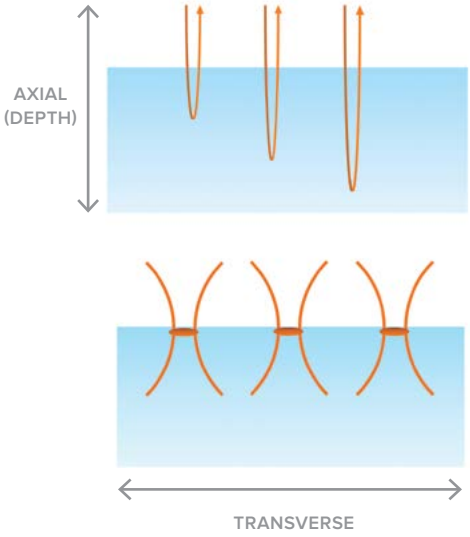
WHAT IS OCT?

Optical Coherence Tomography (OCT) is a 3D noninvasive imaging technique already widely deployed in ophthalmology for retinal scanning. It is an optical analog of ultrasound that uses infrared light to probe the sample and rapidly create a 3D image from a series of cross-sections.



Low-coherence interferometry of infrared light is used to estimate time of flight, quantifying depth and providing micron-level resolution.

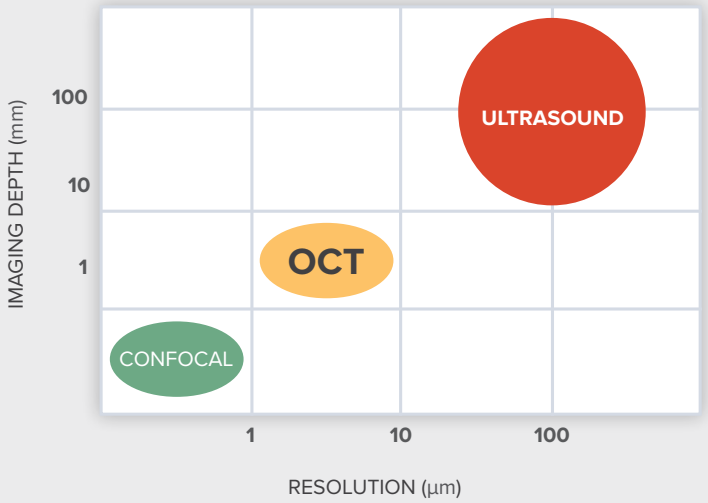
Focusing of the infrared light beam provides high transverse resolution, even at high image rates, providing a B-scan in just milliseconds.

Wasatch Photonics OCT systems use spectral domain OCT (SD-OCT), in which interference of many frequencies of light is recorded using a spectrometer and subjected to Fourier transform to generate a transverse image. Starting with our own ultra-sensitive, high wavelength resolution spectrometer design, we create OCT systems with industry-leading depth penetration and resolution. We also develop custom solutions for specific OEM and manufacturing applications.

COMPATIBLE MATERIALS

- All dielectric materials
- Paints, glasses, foils, coatings
- Polymers, silicone, rubber
- Plastics (to less depth, ~2 mm)
- Metals (surface features only)

WHY CHOOSE OCT?



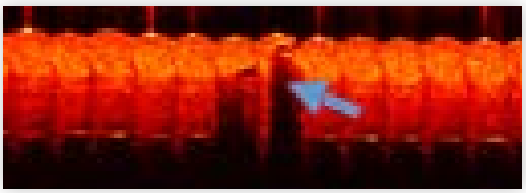
While ultrasonic inspection has become the standard in subsurface imaging, it is limited in its speed, resolution, and ability to probe small or irregular samples. Confocal imaging provides submicron resolution, but is very expensive, and limited to depths of less than 1 mm.

OCT is a novel yet well-established technology that provides intermediate imaging depth at both high resolution and speed. It retains ultrasound's flexibility in taking the probe to the sample, while eliminating the need for coupling media. It easily measures small or thin parts, delicate samples, and rough surfaces.

APPLICATIONS IN NDT

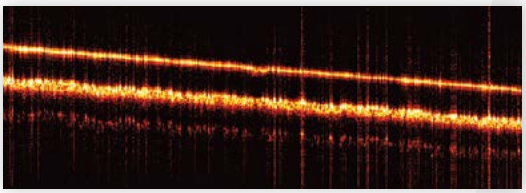
MANUFACTURING

OCT is an excellent tool for evaluation of shapes and dimensions of tools, molds, and final parts, as shown here for polymer-based 3D printing. It can also be used to provide real-time process feedback for control of ablation depth during laser machining, and for defect detection and dimensional analysis in additive manufacturing.



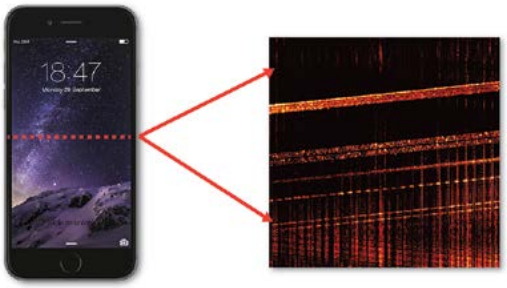
AVIATION AND AUTOMOTIVE

OCT can be used to evaluate application of critical coatings and paints in industries like aviation and automotive. High resolution layer imaging enables analysis of thickness uniformity and defects that can impact quality and safety, as shown in this detailed image of a multilayer paint coating.



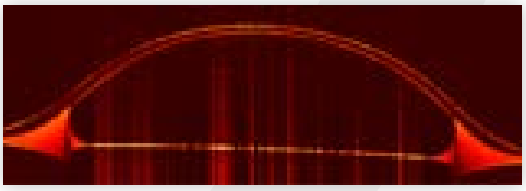
DISPLAYS AND PANELS

The excellent axial resolution of OCT is ideal for imaging the multilayered structures used in display panels. The 3D information acquired can be used to evaluate flatness uniformity and identify subsurface defects affecting display quality. Sublayers <10 µm in thickness can be clearly imaged, as shown here.



MEDICAL DEVICES

The medical industry has been quick to adopt OCT for the analysis of high precision medical devices due to its ability to generate non-contact images of very small, thin, and delicate structures such as this contact lens. It also provides information about pores, defects, and gaps in the production of critical membranes and seals.



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Take your QA and process monitoring to the next level

Wasatch Photonics OCT systems offer non-contact imaging of surface morphology and subsurface structure at micron-level resolution for accurate, quantitative analysis of structure in tissues or materials. Capture 3D images in under a minute or rapid cross-sections at video rates for real-time feedback during surgery or material processing. Contact us to discuss customization of parameters like speed, resolution, and imaging range to meet your needs!

	WP OCT 800 nm (Depth + Resolution)	**WP OCT 800 nm** (Best Resolution)	**WP OCT 1300 nm** (Greatest Depth)
Imaging Depth	3.0 mm	1.8 mm	5.0 mm
Axial Resolution	6.0 µm	3.0 µm	7.0 µm
Wavelength Range	780-900 nm	750-930 nm	1235-1385 nm
FWHM Bandwidth	>120 nm	>150 nm	>90 nm
Axial Scan Rate	Up to 250 kHz available		
Image Capture Rate	>20 Hz, >50 Hz, >200 Hz options available		
Image Size	1024 x 1024 x 1024 points, .tif output		
Transverse Resolution	6.0 µm	6.0 µm	10.0 µm
Transverse Imaging Area	>5 x 5 mm	>5 x 5 mm	>5 x 5 mm
Working Distance	25 mm	25 mm	25 mm
Color Camera Image	10 Mega Pixel RGB (640 x 480 real time mode)		
System/Computer Interface	Camera Link and SMB connections		
System/Scanner Interface	FC/APC fiber, 10-pin electrical connector, USB Cable		
Computer Provided	64-bit Windows 7 or higher. 16 GB RAM, Intel Processor, AMD graphics graphics card		
Display Provided	22 inch HD 1080p monitor		
Software Included	WP OCT image acquisition interface; SDKs available upon request		

Wasatch Photonics OCT system probes may be mounted on a stand or used handheld to bring the measurement to the sample. Image capture software includes dimensional analysis.

Contact us to discuss your application, custom system needs and testing

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