optovue®

Your OCT specialist

Visualize. Analyze. Personalize.

OCT + OCTA

AngioVue™

IMAGING SYSTEM

Optovue is solely dedicated to advancing optical coherence tomography (OCT) for the early detection and diagnosis of sight-threatening diseases.

Over the past decade, and in collaboration with industry-leading ophthalmic specialists, Optovue has pursued a single-minded vision to improve the eye health of patients around the world.

From the first Spectral-Domain OCT to today's OCT angiography (OCTA) platform, Optovue has remained focused on furthering OCT image quality, efficiency and clinical applications that enable you to elevate your level of care.

Come and join us in our shared purpose.

The AngioVue™ Imaging System is pending 510(k) clearance in the U.S.

AngioAnalytics™ is not cleared by the FDA for sale in the U.S.

Introducing the AngioVue Imaging System

The **AngioVue™ Imaging System**, installed in more than 450 ophthalmic practices worldwide, is a dual-modality system capable of imaging both structure and function of the ocular microvasculature.

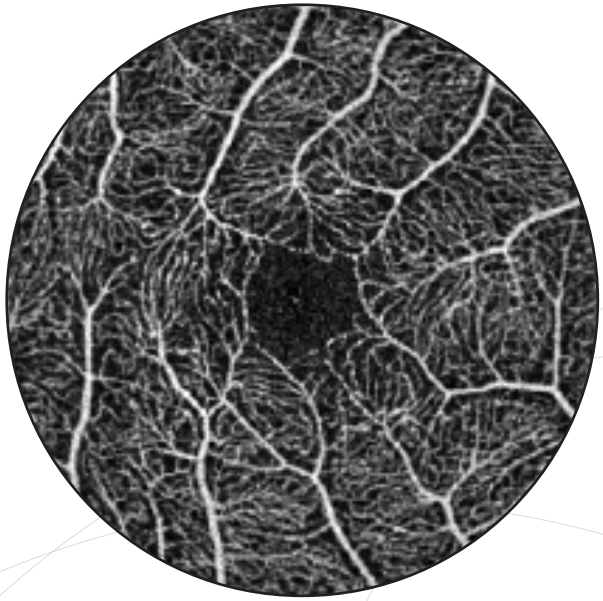
AngioVue provides detailed visualization of the **individual layers of retinal vasculature** to enable personalized management of disease progression non-invasively, without the use of dye, and with image acquisition in under three seconds.

AngioAnalytics™, the world's only OCT angiography-based quantification of ocular blood flow, tracks disease by providing objective measures of areas of flow, non-flow and flow density.

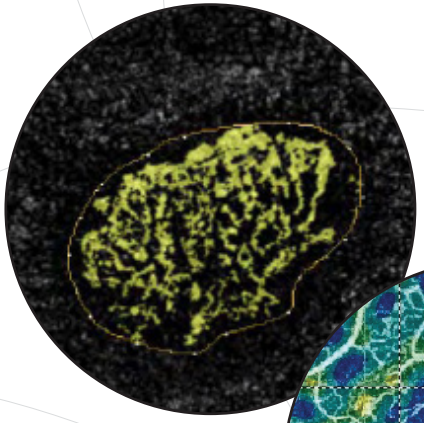
AngioMontage™ provides the first widefield view of retinal microvasculature to enable earlier detection and management of disease.

Visualize. Analyze. Personalize.

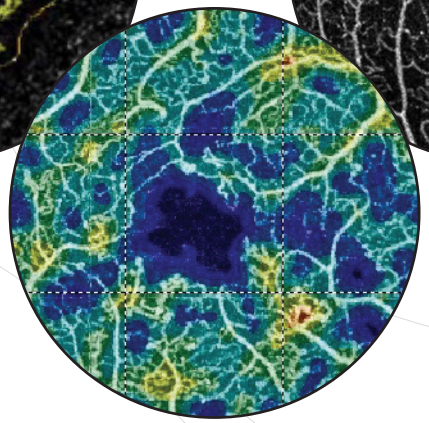
Visualize microvascular blood flow non-invasively in less than three seconds.



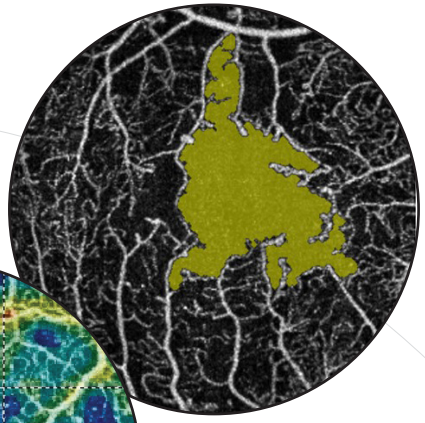
Analyze areas of flow, non-flow, and flow density quantitatively to track disease



Flow Area

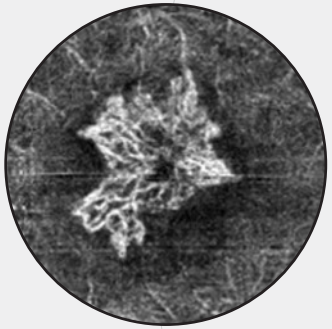


Flow Density



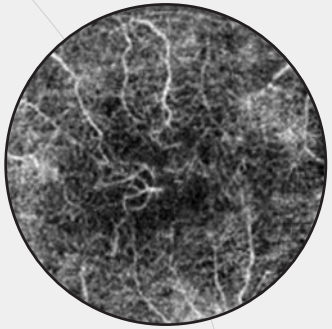
Non-Flow Area

Personalize patient care with novel real-time information that aids in treatment decisions

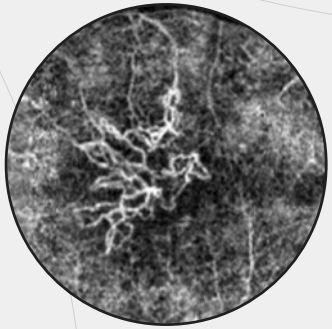


Baseline

24 hours post-injection



7 days post-injection



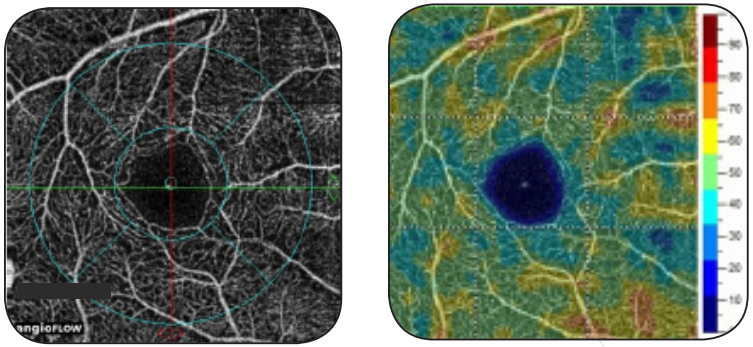
30 days post-injection

Structure and Function

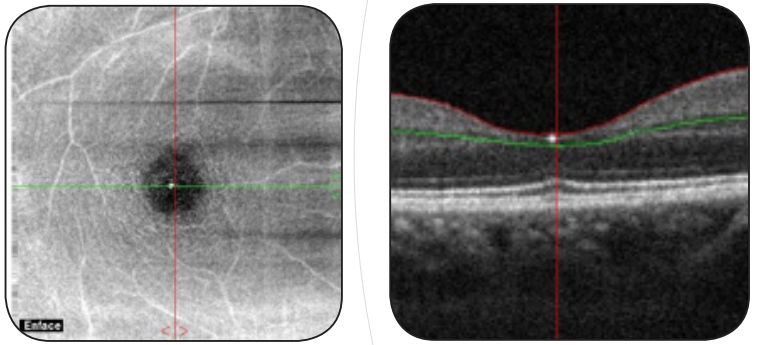
Visualization and Quantification

AngioVue combines structural OCT data with new vascular imaging and quantification information to provide a comprehensive presentation of retinal health with a single imaging platform.

Function



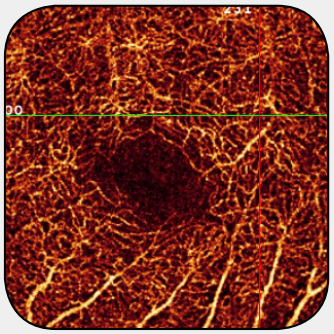
Structure



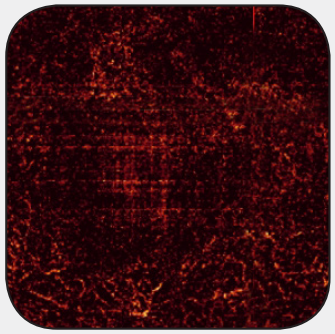
Automatic Segmentation of Retinal Layers

AngioVue images are 3-dimensional and depth-resolved, so for the first time, physicians can isolate layers of interest for detailed visualization and analysis of retinal pathology.

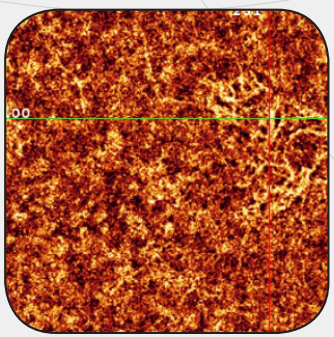
Superficial Capillary Plexus



Deep Capillary Plexus



Outer Retina



Choriocapillaris

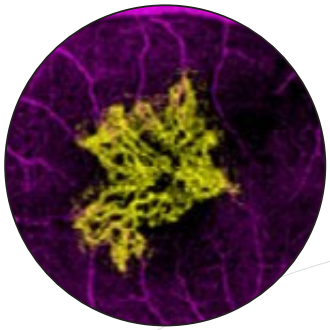
AngioAnalytics™

The world's first OCTA quantification enables the measurement of flow, non-flow and flow density to objectively track disease.

AGE-RELATED MACULAR DEGENERATION

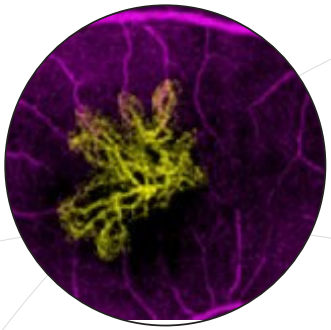
Objectively measure response to injected therapy:

Baseline



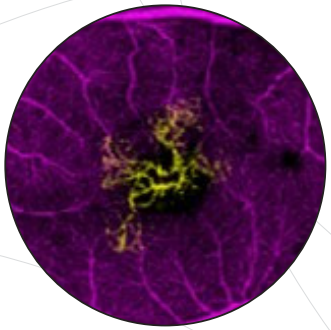
Flow Area: 1.30mm^2

24hrs post-injection



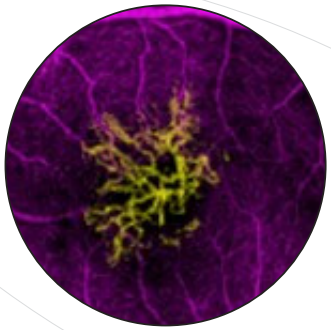
Flow Area: 1.04mm^2

7 days post-injection



Flow Area: 0.45mm^2

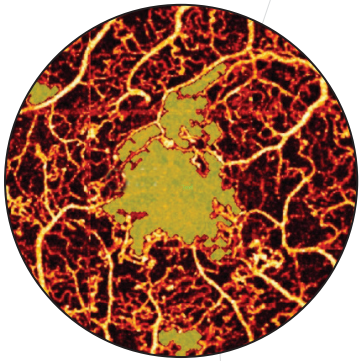
30 days post-injection



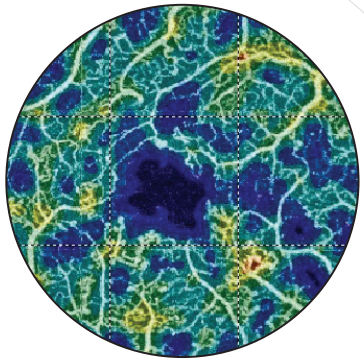
Flow Area: 0.80mm^2

DIABETIC RETINOPATHY

Quantitatively track disease progression:



Non-Flow Area: 0.816mm^2



Flow Density Map

OCT Thickness ILM-IPL

Section	Thickness (µm)
ParaFovea	159
- Superior-Hemi	158
- Inferior-Hemi	160

OCT Thickness ILM-RPE & Flow Density

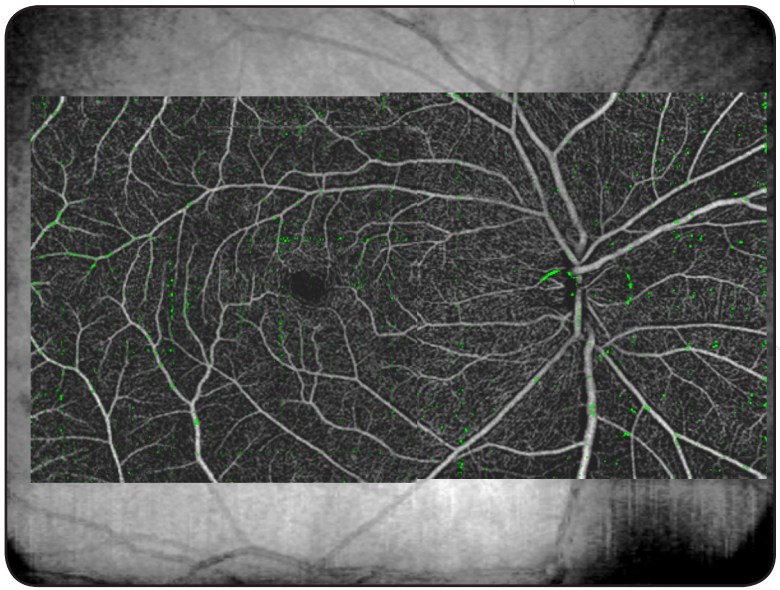
Section	Thickness (µm)	Density (%)
Whole en face	N/A	40.05
Fovea	365	25.02
ParaFovea	427	41.02
- Tempo	441	40.72
- Superior	426	40.21
- Nasal	405	38.99
- Inferior	437	44.15

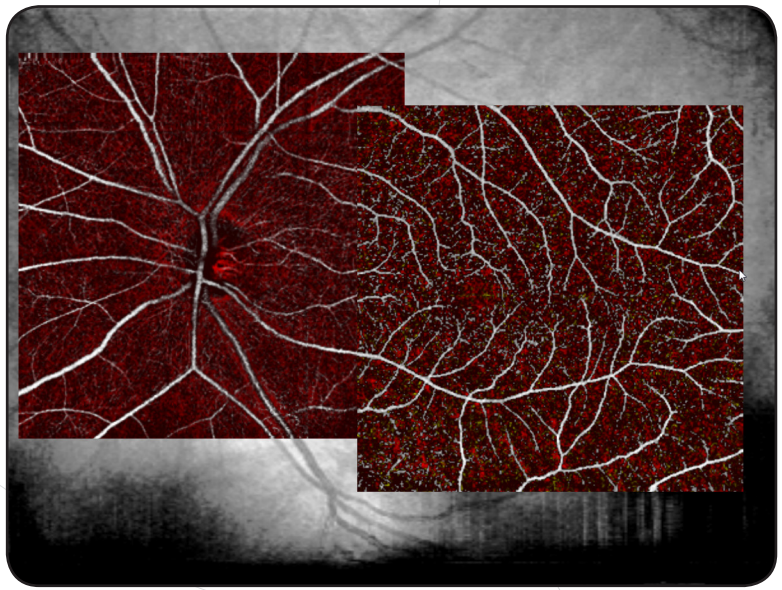
Flow Density Quantification

Images courtesy of Bruno Lumbroso, MD, Rome, Italy. Colorization per Organ Health Science University

AngioMontage

AngioMontage combines two 6x6mm scan images to create a **wider field of view** that improves visualization of abnormalities in the retinal vasculature. This unprecedented display of microvasculature enables assessment of the **essential part of the retina** to aid in the early diagnosis and management of sight-threatening diseases.

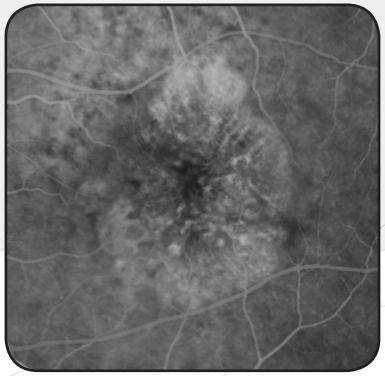
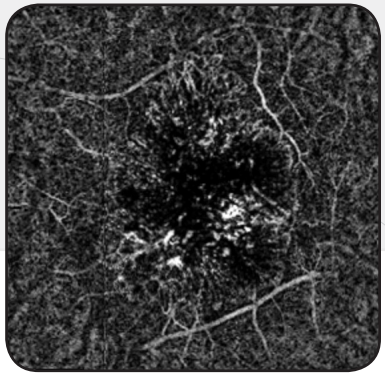
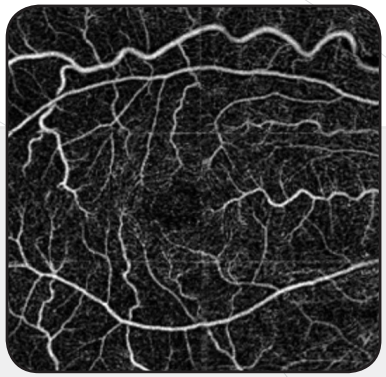
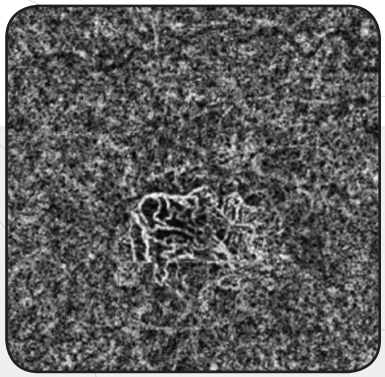




Montage review screen showing angioretina and angiodisc overlayed on a widefield en face OCT scan. AngioMontage images may be viewed in black and white or layer-based color.

AngioVue Clinical Applications

Choroidal Neovascularization

	Fluorescein Angiography	AngioVue	
		Superficial Capillary Plexus	Choriocapillaris
Case 1			
Case 2			

The FA image shows retinal vascular structure and hyperfluorescence pattern typical of CNV.

The OCTA en face image of the superficial plexus shows the retinal vascular structure while the OCTA en face image of the choroid shows the CNV vessel network surrounded by choriocapillaris.

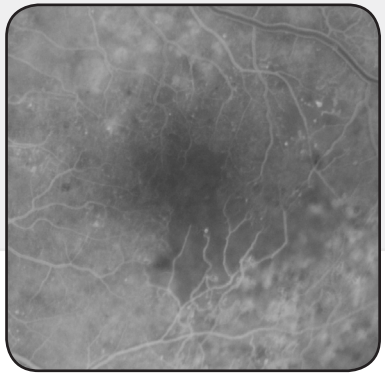
AngioVue Clinical Applications

Diabetic Retinopathy

Fluorescein Angiography

AngioVue

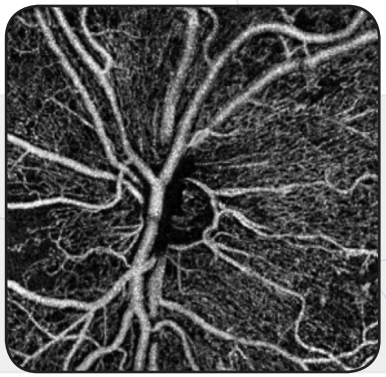
Superficial Capillary Plexus



Vascular structure and regions of perfusion are visualized in both the FA and OCTA images. Microaneurysms are visible in both images.

Macula

Radial peripapillary capillaries are visualized in all regions of the OCTA en face image and are difficult to see in the FA image.



Optic Disc

AngioVue Technology

AngioVue incorporates four essential technologies to create stunningly detailed images with minimal acquisition and processing time, making it ideal for busy clinical practices

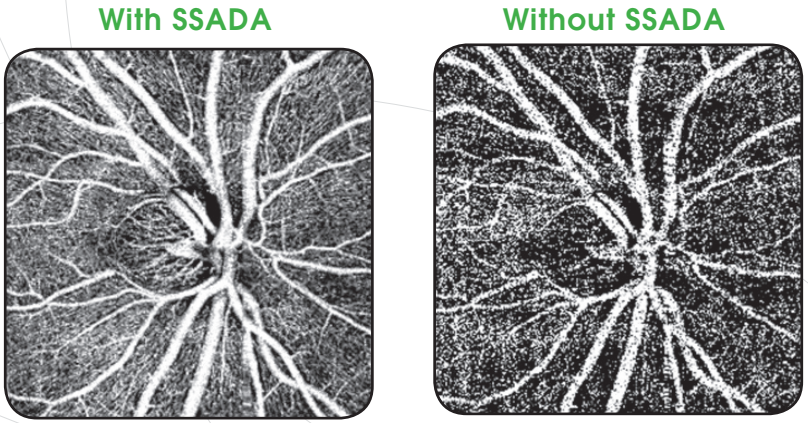
SSADA: Split-Spectrum Amplitude Decorrelation Angiograph

SSADA was developed by David Huang at Oregon Health Sciences

SSADA is a proprietary algorithm used to detect motion in the vessels.

It acquires sequential OCT b-scans at a single cross-section of the retina and compares the scans against one another. The differences between scans indicate the presence of flow.

This unique technology elevates image quality by optimizing signal-to-noise ratio while minimizing scan acquisition time.

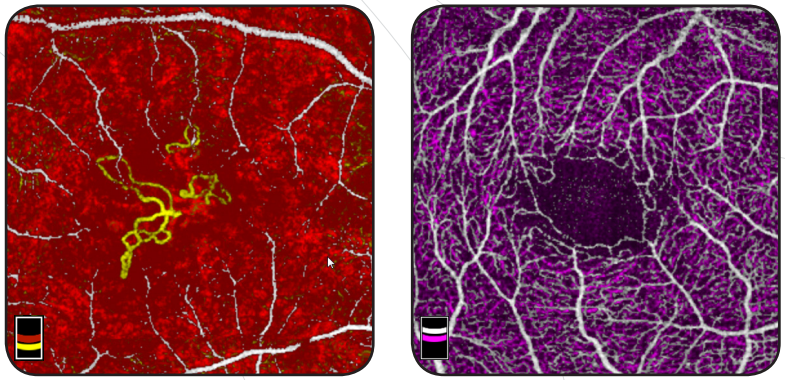


SSADA images display less noise and a more continuous microvascular network

En Face Visualization

AngioVue images are three-dimensional and depth-resolved to enable assessment of individual layers of retinal vasculature.

En face colorization uses a standard color scheme to allow the clinician to identify different retinal layers of interest. The en face layer indicator provides a reference to the retinal layers displayed.



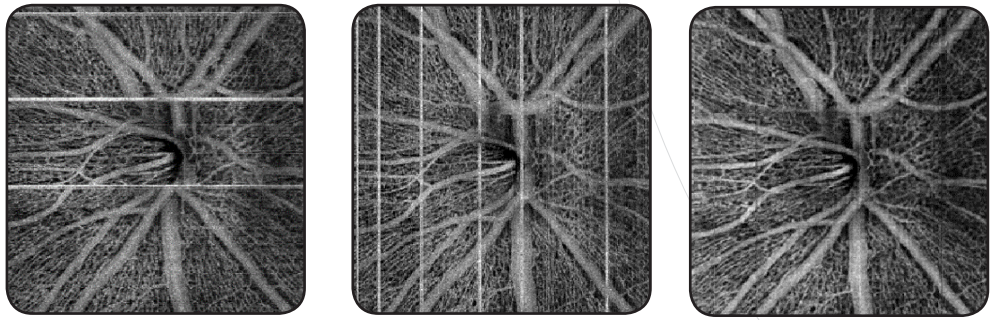
Red: Choriocapillaris **White:** Superficial Capillary Plexus
Yellow: Outer Retina **Purple:** Deep Capillary Plexus

AngioVue Technology

MCT™: Motion Correction Technology

Developed by MIT and the University of Erlangen

Fast X Scan **Fast Y Scan** **MCT Scan**

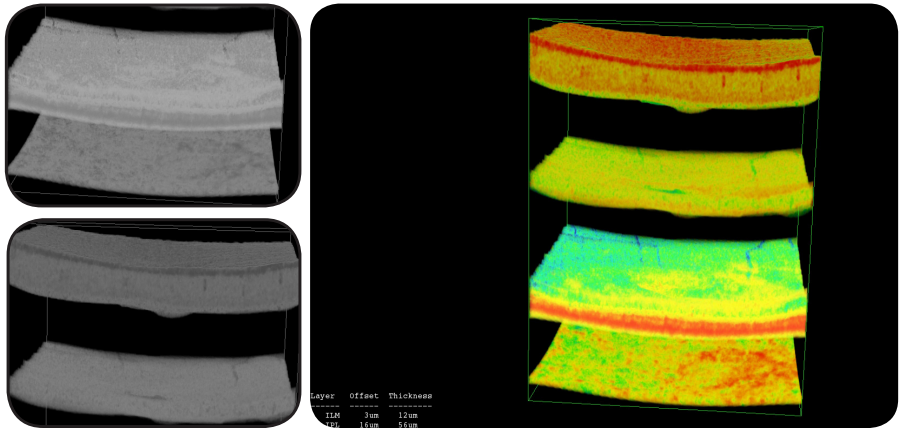


The MCT employs two 3D raster scans: one horizontal and one vertical. The two scans are then merged to remove motion caused by artifacts.

MCT corrects residual eye motion artifacts and increases the image intensity. Unlike other motion-correcting technologies, MCT is done as part of the post-scan processing and eliminates the need to re-scan the patient when motion is present.

CUDA Parallel Computing Platform

Dramatically Reduced Processing Time



CUDA dramatically reduces the computation time needed to process images and correct motion artifacts after scan acquisition, making it easy to integrate OCTA imaging into the practice workflow. With CUDA, images load in seconds, not minutes.

Technical Specifications

OCT scanning speed	70,000 A-scans per second
Optical axial resolution	~5 microns (digital pixel sampling = 3 µm)
Optical transverse resolution	~15 microns
OCT axial imaging depth	2 to 3 mm (dependent on scan protocol)
AngioVue imaging volume	304 x 304 A-lines (2 repeats / B-scan)
Total A-scans per volume	~209,000 A-lines (including flyback)
Acquisition time per imaging volume	(209K / 70K) ~3 seconds
AngioVue imaging size (retina)	3x3, 6x6
AngioVue imaging size (optic disc)	3x3, 4.5x4.5 mm

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