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[The use of forward scatter to improve retinal vascular imaging with an adaptive optics scanning laser ophthalmoscope](#)

The development of techniques to image and examine the retinal microvasculature has important implications for better understanding vessel structure and blood flow in normal eyes and the pathological changes that occur during ocular disease.... In this paper, Chui et al. cleverly applied a previously described technique used to enhance the detection of multiply scattered light in the retina to better elucidate retinal microvasculature in living eyes. [Read](#) a summary of this paper.

Spectral domain optical coherence tomography of multi-MHz A-scan rates at 1310 nm range and real-time 4D-display up to 41 volumes/second

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Biomedical Optics Express, Vol. 3 Issue 12, pp.3067-3086 (2012)
Choi, Dong-hak; Hiro-Oka, Hideaki; Shimizu, Kimiya; Ohbayashi, Kohji

An ultrafast frequency domain optical coherence tomography system was developed at A-scan rates between 2.5 and 10 MHz, a B-scan rate of 4 or 8 kHz, and volume-rates between 12 and 41 volumes/second. In the case of the worst duty ratio of 10%, the averaged A-scan rate was 1 MHz. Two optical...

An all-fiber-optic endoscopy platform for simultaneous OCT and fluorescence imaging

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Biomedical Optics Express, Vol. 3 Issue 11, pp.2851-2859 (2012)
Mavadia, Jessica; Xi, Jiefeng; Chen, Yongping; Li, Xingde

We present an all-fiber-optically based endoscope platform for simultaneous optical coherence tomography (OCT) and fluorescence imaging. This design entails the use of double-clad fiber (DCF) in the endoscope for delivery of OCT source and fluorescence excitation light while collecting the...

In situ structural and microangiographic assessment of human skin lesions with high-speed OCT

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Biomedical Optics Express, Vol. 3 Issue 10, pp.2636-2646 (2012)
Blatter, Cedric; Weingast, Jessika; Alex, Aneesh; Grajciar, Branislav; Wieser, Wolfgang; Drexler, Wolfgang; Huber, Robert; Leitgeb, Rainer A

We demonstrate noninvasive structural and microvascular contrast imaging of different human skin diseases in vivo using an intensity difference analysis of OCT tomograms. The high-speed swept source OCT system operates at 1310 nm with 220 kHz A-scan rate. It provides an extended...

Mesh-based Monte Carlo method using fast ray-tracing in Plücker coordinates

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Biomedical Optics Express, Vol. 1 Issue 1, pp.165-175 (2010)
Fang, Qianqian

We describe a fast mesh-based Monte Carlo (MC) photon migration algorithm for static and time-resolved imaging in 3D complex media. Compared with previous works using voxel-based media discretization, a mesh-based approach can be more accurate in modeling targets with curved boundaries or locally...

Motion-compensated hand-held common-path Fourier-domain optical coherence tomography probe for image-guided intervention

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Biomedical Optics Express, Vol. 3 Issue 12, pp.3105-3118 (2012)
Huang, Yong; Liu, Xuan; Song, Cheol; Kang, Jin U

A motion-compensated, hand-held, common-path, Fourier-domain optical coherence tomography imaging probe has been developed for image-guided intervention during microsurgery. A hand-held prototype instrument was achieved by integrating an imaging fiber probe inside a stainless steel needle and...

4D shear stress maps of the developing heart using Doppler optical coherence tomography

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Biomedical Optics Express, Vol. 3 Issue 11, pp.3022-3032 (2012)
Peterson, Lindsay M; Jenkins, Michael W; Gu, Shi; Barwick, Lee; Watanabe, Michiko; Rollins, Andrew M

Accurate imaging and measurement of hemodynamic forces is vital for investigating how physical forces acting on the embryonic heart are transduced and influence developmental pathways. Of particular importance is blood flow-induced shear stress, which influences gene expression by endothelial...

Retinal, anterior segment and full eye imaging using ultrahigh speed swept source OCT with vertical-cavity surface emitting lasers

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Biomedical Optics Express, Vol. 3 Issue 11, pp.2733-2751 (2012)
Grulkowski, Ireneusz; Liu, Jonathan J; Potsaid, Benjamin; Jayaraman, Vijaysekhar; Lu, Chen D; Jiang, James; Cable, Alex E; Duker, Jay S; Fujimoto, James G

We demonstrate swept source OCT utilizing vertical-cavity surface emitting laser (VCSEL) technology for in vivo high speed retinal, anterior segment and full eye imaging. The MEMS tunable VCSEL enables long coherence length, adjustable spectral sweep range and adjustable high sweeping rate...

Quantitative OCT angiography of optic nerve head blood flow

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Biomedical Optics Express, Vol. 3 Issue 12, pp.3127-3137 (2012)
Jia, Yali; Morrison, John C; Tokayer, Jason; Tan, Ou; Lombardi, Lorinna; Baumann, Bernhard; Lu, Chen D; Choi, WooJhon; Fujimoto, James G; Huang, David

Optic nerve head (ONH) blood flow may be associated with glaucoma development. A reliable method to quantify ONH blood flow could provide insight into the vascular component of glaucoma pathophysiology. Using ultrahigh-speed optical coherence tomography (OCT), we developed a new 3D angiography...

A 3D glass optrode array for optical neural stimulation

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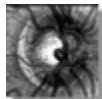


Biomedical Optics Express, Vol. 3 Issue 12, pp.3087-3104 (2012)
Abaya, T V F; Blair, S; Tathireddy, P; Rieth, L; Solzbacher, F

This paper presents optical characterization of a first-generation SiO₂ optrode array as a set of penetrating waveguides for both optogenetic and infrared (IR) neural stimulation. Fused silica and quartz discs of 3-mm thickness and 50-mm diameter were micromachined to yield 10 x...

Real-time eye motion compensation for OCT imaging with tracking SLO

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Biomedical Optics Express, Vol. 3 Issue 11, pp.2950-2963 (2012)
Vienola, Kari V; Braaf, Boy; Sheehy, Christy K; Yang, Qiang; Tiruveedhula, Pavan; Arathorn, David W; de Boer, Johannes F; Roorda, Austin

Fixational eye movements remain a major cause of artifacts in optical coherence tomography (OCT) images despite the increases in acquisition speeds. One approach to eliminate the eye motion is to stabilize the ophthalmic imaging system in real-time. This paper describes and quantifies...

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