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Professor James. G. Fujimoto is a principal investigator in the Research Laboratory of Electronics (RLE) and Department of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology (MIT). He received his S.B., S.M., and Ph.D. in EECS from MIT in 1979, 1981, and 1984 respectively. He joined the MIT faculty in 1985 and is currently Elihu Thomson Professor of Electrical Engineering and Computer Science at MIT and Adjunct Professor of Ophthalmology at Tufts University School of Medicine.

Professor Fujimoto's research involves biomedical imaging, optical coherence tomography (OCT), advanced laser technologies and applications in diverse areas including ophthalmology, endoscopy, cancer detection, surgical guidance and developmental biology. The research team was responsible for the invention and development of optical coherence tomography (OCT). OCT is now considered a standard of care in ophthalmology with several 10s of million procedures performed per year internationally. The group is continuing research on advanced biomedical imaging and OCT technology, including high-speed and high-resolution imaging, functional Doppler flow and angiography as well as polarization sensitive methods. The group investigates OCT applications in multiple areas including: clinical ophthalmology, endoscopy, small animal imaging, pathology laboratory

Group Websites

Biomedical Optical Imaging and Biophotonics Group

imaging, developmental biology, neurosciences and genetics. In addition, the group has extensive experience in femtosecond laser technology and ultrafast measurement.

Professor Fujimoto has published over 400 journal articles, is editor or author of 9 books, and holds numerous U.S. patents for his discoveries. He is a fellow of the National Academy of Engineering, National Academy of Science and American Association for the Advancement of Science. He received the 1999 Discover Magazine Award for Technological Innovation, is co-recipient of the 2001 Rank Prize in Optoelectronics, received the 2011 Zeiss Research Award and is co-recipient of the 2012 Champalimaud Vision Award.

Keywords

Biomedical imaging, optical coherence tomography (OCT), swept source OCT, spectral domain OCT, photonics, ophthalmic imaging, endoscopic imaging, multiphoton microscopy, optical biopsy, surgical guidance, cancer detection, femtosecond lasers

Selected Publications

12.23.2013
Handheld ultrahigh speed swept source optical coherence tomography instrument using a MEMS scanning mirror (OSA)

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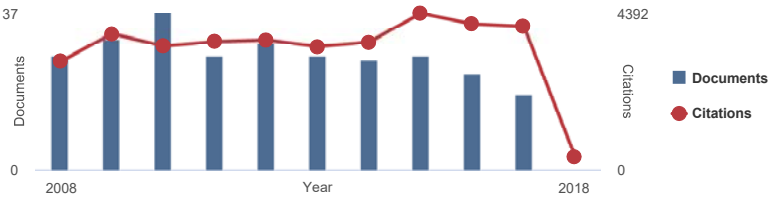

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Location of the Central Retinal Vessel Trunk in the Laminar and Prelaminar Tissue of Healthy and Glaucomatous Eyes Open Access	Wang, B., Lucy, K.A., Schuman, J.S., (...), Fujimoto, J.G., Wollstein, G.	2017	Scientific Reports 7(1),9930	
Polypoidal choroidal vasculopathy on swept-source optical coherence tomography angiography with variable interscan time analysis	Rebhun, C.B., Moult, E.M., Novais, E.A., (...), Waheed, N.K., Ferrara, D.	2017	Translational Vision Science and Technology 6(6)	
Photoreceptor layer thickness changes during dark adaptation observed with ultrahigh-resolution optical coherence tomography Open Access	Lu, C.D., Lee, B., Schottenhamml, J., (...), Pugh, E.N., Fujimoto, J.G.	2017	Investigative Ophthalmology and Visual Science 58(11), pp. 4632-4643	
Endoscopic optical coherence tomography angiography microvascular features associated with dysplasia in Barrett's esophagus (with video)	Lee, H.-C., Ahsen, O.O., Liang, K., (...), Mashimo, H., Fujimoto, J.G.	2017	Gastrointestinal Endoscopy 86(3), pp. 476-484.e3	
Endoscopic forward-viewing optical coherence tomography and angiography with MHz swept source	Liang, K., Ahsen, O.O., Wang, Z., (...), Li, X., Fujimoto, J.G.	2017	Optics Letters 42(16), pp. 3193-3196	

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