Exponent®
Engineering & Scientific Consulting

Jonathan Kirschman, Ph.D.

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Professional Profile

Dr. Kirschman's expertise focuses on the design of optical imaging systems to solve complex problems of biological and mechanical significance. He has extensive knowledge in both theoretical and practical aspects of optical measurement, with applications in the design of x-ray focusing systems and novel biological sensors. In his work, Dr. Kirschman has utilized computational modeling and quantitative image analysis in order to extrapolate data from combined data acquisition modalities including positron emission tomography, X-ray computed tomography, electrophysiology, and fluorescence microscopy. He also has over 5 years of experience working on the development of defense technologies for the protection of soldiers both on and off the battlefield.

Prior to joining Exponent, as a graduate student in the Wallace H. Coulter Joint Department of Biomedical Engineering at Georgia Tech and Emory University, Dr. Kirschman worked on the design and delivery of novel therapeutics to treat traumatic brain injury and lung disease. This work included the use of microsprayers, aerosolizers and ultrasound cavitation to effectively deliver molecules to target tissues in pre-clinical animal models. He has related knowledge of commercialization strategies and regulatory pathways.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Georgia Tech, Emory University, 2017

B.S., Electrical Engineering and Computer Science, University of California, Berkeley, 2006

J Norman and Rosalyn Wells Fellowship (Neuroengineering Research), 2015

Georgia Tech & Peking University Fellowship Program, 2011-2013

Licenses and Certifications

NAUI Scuba Diver

Prior Experience

Assistant Language Teacher, Japan Exchange and Teaching Program, Akita, Japan, 2008-2011

Research Associate, Lawrence Berkeley National Laboratory, Berkeley, CA, 2006-2008

Professional Affiliations

Georgia Bio - Emerging Leaders Network, 2014-Present

Languages

Japanese

Publications

Vanover D, Smith DV, Blanchard EL, Alonas E, Kirschman JL, Lifland AW, Zurla C, Santangelo PJ. Respiratory syncytial virus glycoprotein and genomic RNA dynamics reveal filament assembly prior to the plasma membrane. Nature Communications 2017. doi:10.1038/s41467-017-00732-z.

Kirschman JL, Bhosle S, Loomis KH, Zurla C, Vanover D, Murray K, Lam B, Blanchard E, Santangelo PJ. Characterizing Therapeutic mRNA at the level of single cells and single molecules. Nucleic Acids Res. 2017; 45(12):e113.

Groves B., Chen YJ, Zurla C, Pochekailov S, Kirschman JL, Santangelo PJ, Seelig G. Computing in mammalian cells with nucleic acid strand exchange. Nature Nanotech 2016; 11:287-294.

Alonas E, Lifland AW, Gudheti M, Vanover D, Jung J, Zurla C, Kirschman J, Fiore VF, Douglas A, Barker TH, Yi H, Wright ER, Crowe JE, Santangelo PJ. Combining single RNA sensitive probes with subdiffraction-limited and live-cell imaging enables the characterization of virus dynamics in cells. ACS Nano 2014; 8 (1), 302-315.

Yashchuk V, Barber S, Domning EE, Kirschman JL, Morrison GY, Smith BV, Siewert F, Zeschke T, Geckeler R, Just A. Sub-microradian surface slope metrology with the ALS Developmental Long Trace Profiler. International Workshop on X-ray Mirror Design, Fabrication, and Metrology (Osaka University, Suita, Osaka, Japan, September 22 - 24, 2009) - Nucl. Instr. and Meth. A 2009; doi:10.1016/j.nima.2009.10.175.

Yuan S, Church M, Yashchuk VV, Goldberg KA, Celestre R, McKinney WR, Kirschman JL, Morrison G, Null T, Warwick T, Padmore HA. Elliptically bent X-ray mirrors with active temperature stabilization. Special Issue on X-ray Focusing: Techniques and Applications of X-Ray Optics and Instrumentation 2010; doi:10.1155/2010/784732.

McKinney WR, Kirschman JL, MacDowell AA, Warwick T, Yashchuk VV. Optimal tuning and calibration of bendable mirrors with slope measuring profilers. Optical Engineering 2009; doi:10.1117/1.3204235.

Kunz M, Tamura N, Chen K, MacDowell AA, Celestre RS, Church M, Fakra S, Domning EE, Glossinger JM, Kirschman JL, Morrison GY, Plate DW, Smith BV, Warwick T, Yashchuk VV, Padmore HA, Ustundag E. A dedicated superbend x-ray microdiffraction beamline for materials-, geo- and environmental sciences at the Advanced Light Source. Rev. Sci. Instrum 2009; 80(8), 035108/1-10.

Presentations

Kirschman JL, Domning EE, McKinney WR, Morrison GY, Smith BV, Yashchuk VV. Performance of the upgraded LTP-II at the ALS Optical Metrology Laboratory. Presentation, SPIE Optics and Photonics, San Diego, CA, 2008.

Kirschman JL, Domning EE, Morrison GY, Smith BV, Yashchuk VV. Precision tiltmeter as a reference for slope measuring instruments. Presentation, SPIE Optics and Photonics, San Diego, CA, 2007.

Kirschman JL, Smith BV, Domning EE, Irick SC, MacDowell AA, McKinney WR, Morrison GY, Warwick T,

Yashchuk VV. Flat-Field calibration of CCD detector for long trace profilers. Presentation, SPIE Optics and Photonics, San Diego, CA, 2007.