Wei Luo

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Education

- Ph.D Candidate: Electronic Engineering, **University of California, Los Angeles**, USA, 2011-**present**
- Master of Science: Electronic Engineering, **Tsinghua University**, China 2007
- Bachelor of Science: Electronic Engineering, **Tsinghua University**, China 2005

Research Topics

- **Ultrahigh-throughput computational on-chip microscopy**
  Development of a lensfree computational microscopy that features: high spatial resolution (deep sub-micron); orders of magnitude larger field-of-view over conventional optical microscopes; and extreme compactness, cost-effectiveness and robustness. Its applications include handheld device for telemedicine & environment monitoring, high-throughput analysis of sample including pathology slides.
- **Ultrahigh-throughput 3D tracking, imaging and analysis**
  Take advantage of the highly scalable computing power of parallel/distributed platforms (cluster or cloud computing services) to perform large-scale object reconstruction, dynamic tracking. Its applications include: high-speed 3D tracking of thousands of micro-swimmers (e.g. spermatozoon) over a large field-of-view at a sub-micrometer localization accuracy for fertility and dynamics study.
- **Swept-Source Optical Coherence Tomography**
  Development of a fiber-optic SS-OCT system using a discrete wavelength tunable laser as the light source.

Professional Employment

- Research Engineer, Advanced Material Laboratories, **Sony Corporation, Japan** 2007-2011
  - **Organic Photosensor**: Development of solid-state, flexible organic photosensors, which are capable for active gain control and suitable for large-area applications. Prototyping of 3D interactive devices using large-area photosensor array. As first inventor, awarded the Top Three Innovative Invention of Sony Corporation in 2010 and 2011.
  - **Bio Battery**: Development of Sony's Bio Battery Platform, an eco-friendly fuel cell which uses enzymes as catalysts and consumes biofuels such as glucose.

Patents

- ***W. Luo***, Y. Tokita, Y. Goto, S. Yamada, and S. Nakamaru, Three-dimensional interactive display. U.S. Patent 20120313867 A1, Dec 13, 2012.
- ***W. Luo***, Y. Tokita, Y. Goto, S. Yamada, and S. Nakamaru, Photoelectric conversion element, production method for a photoelectric conversion element, solid-state image sensor, production method for a solid-state image sensor, electronic apparatus, photoconductor, production method for a photoconductor and multilayer transparent photoelectric conversion element. U.S. Patent 20120228587 A1, Sep 13, 2012.
- ***W. Luo***, Y. Goto, S. Yamada, and Y. Tokita, Multilayer transparent light-receiving device and electronic device. U.S. Patent 20120141831 A1, Jun 7, 2012.
- ***W. Luo***, S. Yamada, Y. Goto, and Y. Tokita, Non-wetted all solid protein photoelectric conversion device, method of manufacturing the same, and electronic device. U.S. Patent 20120138770 A1, Jun 7, 2012.
- S. Yamada, Y. Tokita, Y. Goto, ***W. Luo***, and S. Nakamaru, Protein photoelectric conversion device, photoelectric conversion system, protein photoelectric conversion device manufacturing method, photoelectric conversion system manufacturing method and protein-immobilized electrode. U.S. Patent 8748874 B2, Jun 10, 2014.
- Y. Tokita, Y. Goto, ***W. Luo***, S. Nakamaru, and S. Yamada, Method of manufacturing protein semiconductor, protein semiconductor, method of manufacturing pn junction, pn junction, method of manufacturing semiconductor apparatus, semiconductor apparatus, electronic apparatus, and method of controlling conductivity type of protein semiconductor. U.S. Patent 20140183487 A1, Jul 3, 2014.
- S. Yamada, ***W. Luo***, Y. Goto, and Y. Tokita, PROTEIN PHOTOELECTRIC TRANSDUCER AND TIN-SUBSTITUTED CYTOCHROME c. U.S. Patent 20120277414 A1, Nov 1, 2012.
- Y. Tokita, Y. Goto, J. Shimura, S. Yamada, ***W. Luo***, D. Yamaguchi, and D. Ito, Molecular device, imaging device, photosensor, and electronic apparatus, U.S. Patent 8178872 B2, May 15, 2012.
- S. Yamada, Y. Tokita, Y. Goto, ***W. Luo***, D. Yamaguchi, D. Ito, and J. Shimura, Color imaging element and method of manufacturing the same, photosensor and method of manufacturing the same, photoelectric transducer and method of manufacturing the same, and electronic device. U.S. Patent 20120012823 A1, Jan 19, 2012..

Refereed Journal Publications

- E. McLeod, C. Nguyen, P. Huang, ***W. Luo***, M. Veli, and A. Ozcan, "Tunable vapor-condensed nanolenses," ACS Nano

(2014)

- Q. Wei, H. Qi, ***W. Luo***, D. Tseng, S. Jung Ki, Z. Wan, Z. Göröcs, L.A. Bentolila, T. Wu, Ren Sun, and A. Ozcan, " Fluorescent Imaging of Single Nanoparticles and Viruses on a Smart-Phone," *ACS Nano* (2013)
- A. Greenbaum, N. Akbari, A. Feizi, ***W. Luo***, and A. Ozcan, "Field-Portable Pixel Super-Resolution Colour Microscope," *PLoS ONE* (2013)
- A. Greenbaum, ***W. Luo***, B. Khademhosseinieh, T-W. Su, A.F. Coskun, and A. Ozcan, "Increased space-bandwidth product in pixel super-resolved lensfree on-chip microscopy," *Scientific Reports (Nature Publishing Group)* (2013). **Joint First Author**
- E. McLeod, ***W. Luo***, O. Mudanyali, A. Greenbaum, and A. Ozcan, "Toward Giga-pixel Nanoscopy On a Chip: A computational wide-field look at the nano-scale without the use of lenses," *Lab on a Chip* (2013). **Joint First Author**
- O. Mudanyali, E. McLeod, ***W. Luo***, A. Greenbaum, A.F. Coskun, Y. Hennequin, C. Allier, and A. Ozcan, "Wide-field optical detection of nano-particles using on-chip microscopy and self-assembled nano-lenses," *Nature Photonics* (2013)
- A. Greenbaum, ***W. Luo***, T-W. Su, Z. Göröcs, L. Xue, S.O. Isikman, A.F. Coskun, O. Mudanyali, and A. Ozcan, "Imaging without lenses: achievements and remaining challenges of wide-field on-chip microscopy," *Nature Methods* (2012)
- S.O. Isikman, A. Greenbaum, ***W. Luo***, A.F. Coskun, and A. Ozcan, "Giga-Pixel Lensfree Holographic Microscopy and Tomography using Color Image Sensors," *PLoS ONE* (2012) **Joint First Author**
- Y. Tokita, S. Yamada, ***W. Luo***, Y. Goto, N. Bouley‐Ford, Hiroshi Nakajima, Yoshihito Watanabe, "Protein Photoconductors and Photodiodes", *Angewandte Chemie International Edition*, (2011).

Refereed Conference Publications

- ***W. Luo***, A. Greenbaum, S. O. Isikman, A. F. Coskun, and A. Ozcan, "Giga-pixel On-chip Microscopy and Tomography using Lensfree Holography with Color Image Sensors," *SPIE Photonics West*, Design and Quality for Biomedical Technologies VI: Biomedical Imaging Technologies II, February 2014, San Francisco, CA Paper #8936-32
- E. R. McLeod, P. Huang, M. Veli, S. Acharya, ***W. Luo***, and A. Ozcan, "Self-assembly via condensation of polymer liquid nanolenses for wide-field nanoparticle and virus imaging," *SPIE Photonics West*, MOEMS-MEMS Plenary Session: Lensarrays and Subwavelength Imaging, February 2014, San Francisco, CA Paper #8974-9
- ***W. Luo,*** C. Gong, F. Shabbir, C. Gulec, J. Pigeon, J. Shaw, A. Greenbaum, T. Su, A. F. Coskun, S. Tochitsky, C. Joshi, and A. Ozcan, "High-throughput Analysis of CR39 Detectors using Lensfree Holographic On-Chip Microscopy," *North American Particle Accelerator Conference (NA-PAC'13)*, September, 2013, Pasadena, CA USA, Paper ID# 2345
- ***W. Luo***, A. Greenbaum, B. Khademhosseinieh, T-W. Su, A.F. Coskun and A. Ozcan, "Enhanced Space-Bandwidth Product In Lensfree On-Chip Microscopy," *IEEE Photonics Conference 2013*, September, 2013, Seattle, WA, USA
- E. McLeod, ***W. Luo***, O. Mudanyali, A. Greenbaum, and A. Ozcan, "Giga-pixel nanoimaging using computational on-chip microscopy," *IEEE Photonics Conference*, September, 2013, Seattle, WA, USA
- O. Mudanyali, E. McLeod, ***W. Luo***, A. Greenbaum, A. F. Coskun, Y. Hennequin, C. Allier, and A. Ozcan, "High-throughput Imaging of Single Viruses using Self-assembled Nano-lenses and On-Chip Holography," OSA Conference on Lasers and Electro-optics (CLEO '13), June 9-14, 2013, San Jose, CA USA, Paper # AW1I.6
- E. McLeod, O. Mudanyali, ***W. Luo***, A. Greenbaum, A. F. Coskun, Y. Hennequin, C. Allier, and A. Ozcan, "Self-Assembled Nanolens Formation for Widefield Computational Imaging of Nanoparticles on a Chip," OSA Conference on Lasers and Electro-optics (CLEO '13), June 9-14, 2013, San Jose, CA USA, Paper # CTh3I.6
- ***W. Luo***, A. Greenbaum, A. F. Coskun, U. Sikora and A. Ozcan, "High Numerical Aperture (NA=0.9) and Wide-field On-Chip Microscopy," SPIE Photonics West, Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX, February 2013, San Francisco, CA, paper #8589-9
- Y. Goto, ***Wei Luo***, S. Yamada, Y. Tokita, J. Shimura, H. Nakajima, Y. Watanabe, "Mechanistic Insight of the Photo-induced Electron Transfer in Zinc-substituted Cytochrome *c* on Gold Electrode", *The 14th International Conference on Biological Inorganic Chemistry*, 2008, Nagoya, Japan
- S. Yamada, ***W. Luo***, Y. Goto, Y. Tokita, H. Nakajima, Y. Watanabe, "A Protein Based Photo-Switching Device: Zinc-substituted Cytochrome c552 on Gold Electrode", *The 14th International Conference on Biological Inorganic Chemistry*, 2008, Nagoya, Japan
- ***W. Luo***, X. Ma, H. Zhao, "A Fiber Based Interferometer with Discrete Tunable Laser for Fourier Domain Optical Coherence Tomography", *International Symposium on Biophotonics, Nanophotonics and metamaterials*, Nov. 2006, Hangzhou, China
- ***W. Luo***, X. Ma, H. Zhao, "Wavelength Monitoring Using Semiconductor Radiating Devices", *The 11th National Optoelectronic Engineering and System Conference*, Sep 2005, Beijing, China

Selected Awards and Honors

- SPIE Optics and Photonics Education Scholarship, 2013
- Fellowship: Chancellor's Award, UCLA, 2011-2013
- Top Three Innovative Invention Award of Sony Corporation, 2010 and 2011
- Outstanding Student Scholarship of Tsinghua University, 2006
- Outstanding Undergraduate Thesis of Tsinghua University, 2005
- First Prize, National High School Chemistry Competition, China, 2000.