

L. Jay Guo

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Affl: Mechanical Engineering, Macromolecular Science & Engineering, and Applied Physics
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Research Interests and Experience:

Nanophotonics and plasmonics including structural colors, organic and hybrid photovoltaics and photodetectors, polymer waveguide and resonators with applications in ultrasound detectors, metal based transparent conductors, nanomanufacturing technologies (e.g. roll to roll nanoimprint lithography), silicon nanoelectronics, nanofluidic devices and transport.

Professional Experience:

2011- Professor, Department of Electrical Engineering and Computer Science, Applied Physics, Macromolecular Science & Engineering, Mechanical Engineering, University of Michigan

2005-2011 Department of Electrical Engineering and Computer Science, University of Michigan, Associate Professor of Electrical Engineering & Computer Science, Applied Physics Macromolecular Science and Engineering

1999-2005 Department of Electrical Engineering and Computer Science, Univ. of Michigan, Ann Arbor Assistant Professor of Electrical Engineering & Computer Science, Applied Physics (2001-2005)
Macromolecular Science and Engineering (2000-2005)

1997-99 Research Associate, Department of Electrical Engineering, Princeton University, NJ

Educational Background:

1997 Ph.D. in Electrical Engineering, University of Minnesota, MN

1995 M.S. in Electrical Engineering (with additional studies in Physics), Univ. of Minnesota, MN

1990 B.S. in Physics (Biophysics minor) (highest honor), Nankai University, PRC.

Recent Professional Activities, Awards

- *Editorial Board*, Opto-Electronics Science, 2021-present
- *Editorial Advisory Board*, Advanced Optical Materials, 2019-present
- *Associate Editor*, Optica, 2018-2021.
- *Associate Editor*, IEEE. J. Photovoltaics, 2011-present.
- *Editorial Board Member*, Nature Scientific Reports, 2013-present
- *Wise-Najafi Prize for Engineering Excellence in the Miniature World*, University of Michigan, 2023.
- *William Mong Distinguished Lecturer*, Hong Kong University, 2017
- *Monroe-Brown Research Excellence Award*, College of Engineering, University of Michigan, 2015.
- *Outstanding Achievement Award*, EECS department, University of Michigan, 2009
- *Program Chair*, 19th International Conference on Nanoimprint and Nanoprint Technology, 2019, Boston.
- *Program or Steering Committee Member*, the 5th, 7th, 8th, 10th, 12th, 13th, 15th International Conference on Nanoimprint and Nanoprint Technology, 2009-2013.
- *Program Committee Member* (Photonics West 2005-2013), SPIE conference on Nanotechnology.
- *Program Committee Member* (Photonics East 2006, 2007, 2008), SPIE conf. on Optoelectronic devices.
- *Symposium Chair* (MRS Fall 2005 and Spring 2007): Flexible and Printed Electronics, Photonics, and Biomaterials.

Selected publications (out of > 275 refereed journal publications, H-index 85 according to Google Scholar):

- C.-Y. Jeong, Y.-B. Park, L. J. Guo, “Tackling light trapping in organic light-emitting diodes by complete elimination of waveguide modes,” *Sci. Adv.* 7(26), eabg03552021, 2021 (reported by *Science Daily*, *Phys.Org*, [Opt. & Photon. News](#), *NewsBreak*, *Nanowerk*, *EINnews*, etc)
- C.-G. Ji, D. Liu, C. Zhang, L. J. Guo, “Ultrathin-metal-film-based transparent electrodes with relative transmittance surpassing 100%”, *Nat. Comm.* 2020, reported by *Science Daily*, *New Atlas*, *Interesting Engineering*, *Tech Explorist*, *AZO Materials*, *Futurity*, *Phys.Org* etc.
- H. Wang, Y. Zhang, C. Ji, C. Zhang, Y. Zhang, D. Liu, Z. Zhang, Z. Lu, J. Tan, L. J. Guo, “Transparent Perfect Microwave Absorber Employing Asymmetric Resonance Cavity,” *Adv. Sci.* 6, 1901320, 2019.
- C. Zhang, *et. al.*, “High-performance Doped Silver Films: Overcoming Fundamental Material Limits for Nanophotonic Applications,” *Adv. Mater.* 29, 1605177, 2017. (reported by *Science Daily*, *Popular Science*, *Phys.Org*, *Eurekalert*, etc)
- S. L. Chen, Y.-C. Chang, C. Zhang, J. G. Ok, T. Ling, M. T. Mihnev, T. B. Norris, L. J. Guo, “Efficient real-time detection of terahertz pulse radiation based on photoacoustic conversion by carbon nanotube nanocomposite,” *Nat. Photon.* 8(7), 537-542, 2014, doi:10.1038/nphoton.2014.96. (reported by *EE Times*, *IEEE Spectrum*, etc)
- J. Y. Lee, K. T. Lee, S.Y. Seo, L. J. Guo, “Decorative power generating panels creating angle insensitive transmissive colors,” *Sci. Rep.* 4, 4192, 2014. DOI: 10.1038/srep04192. (reported by *Science Daily*, *Popular Science*, *PhysOrg*, *Reddit*, *Computer Magazine*, *Gizmodo*, etc).
- H. W. Baac, T. -H. Lee, L. J. Guo, “Micro-ultrasonic cleaving of cell clusters by laser-generated focused ultrasound and its mechanisms,” *Biomed. Opt. Exp.* 8, 1442-1450 (2013); doi: 10.1364/BOE.4.001442 (reported by *Nature Photonics*: doi:10.1038/nphoton.2013.259)
- Y.-K. Wu, A. E. Hollowell, C. Zhang, L. J. Guo, “Angle-Insensitive Structural Colours based on Metallic Nanocavities and Coloured Pixels beyond the Diffraction Limit,” *Scientific Reports*, 3, 1194; DOI:10.1038/srep01194 (2013) (reported by *Engadget*, *EE Times*, *New Scientist*, *Optics & Photon. News*)
- H. W. Baac, *et al.*, “Carbon-Nanotube Optoacoustic Lens for Focused Ultrasound Generation and High-Precision Targeted Therapy,” *Scientific Reports*, 2, 989, 2012, DOI: 10.1038/srep00989. (reported by *Science Daily*, *R&D Magazine*, *Science Newslines*, *Business Standard*, etc)
- H. J. Park, T. Xu, J. Y. Lee, A. Ledbetter, and L. J. Guo, “Photonic Color Filters Integrated with Organic Solar Cells for Energy Harvesting,” *ACS Nano*, 9, 7055–7060, 2011. (reported by *Technology Review*, *Laser Focused World*, etc)
- H.-F. Shi, J. G. Ok, H. W. Baac, L. J. Guo, “Low density carbon nanotube forest as an index-matched and near perfect absorption coating,” *Appl. Phys. Lett.* 99, 211103, 2011. (reported by *Science*, *Technology Review*, *BBC News*, *Popular Science*, *NY Times Syndicates*, etc)
- T. Xu, Y.-K. Wu, and L. J. Guo, “Plasmonic nano-resonators for color filtering and spectral imaging,” *Nat. Comm.* 2010. doi: 10.1038 / ncomms1058 (Reported by *Technology Review*, *R&D Magazine*, *Popular Science*, *Photonics Spectra*, etc)
- H. J. Park, M. G. Kang, S.-H. Ahn and L. J. Guo, “Facile route to polymer solar cells with optimum morphology applicable to roll-to-roll process,” *Adv Mater*, 22, E247, 2010. (Reported by *Technology Review*).
- L. J. Cheng, and L. J. Guo, “Nanofluidic diodes,” *Chem. Soc. Rev.* 39, 923 – 938, 2010.
- S.-H. Ahn and L. J. Guo, “Dynamic Nanoinscribing for Continuous and Seamless Metal and Polymer Nanogratings,” *Nano Lett.* 4392-4397, 2009 (Highlighted by *Nature Photonics*).
- S. H. Ahn, and L. J. Guo, “Large-area Roll-to-Roll and Roll-to-Plate Nanoimprint Lithography and analytical models for predicting residual layer thickness,” *ACS Nano* 3, 2304–2310, 2009. (reported by *Technology Review* and *ACS Podcast*)
- B. D. Lucas, J. Kim, C. Chin and L. J. Guo, “Nanoimprint Lithography Based Approach for the Fabrication of Large-Area, Uniformly-Oriented Plasmonic Arrays”, *Adv. Mater.* 20, 1129–1134, 2008. (Reported by *Mater. Today*, and *Mater. View*)
- M.-G. Kang, and L. J. Guo, “Nanoimprinted Semi-Transparent Metal Electrode and its Application in OLED,” *Adv. Mater.* 19, 1391-1396, 2007. (Reported by *MIT Technol. Review*, and *Laser Focus World*)
- L. J. Guo, “Nanoimprint Lithography: Methods and Material Requirement,” *Adv. Mater.* 19, 495, 2007.