
Dr. Euan McLeod

Postdoctoral Scholar
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EMPLOYMENT & EDUCATION

- Postdoctoral:** **University of California, Los Angeles (2011—Present)**
Departments: Electrical Engineering and Bioengineering
Advisor: Professor Aydogan Ozcan
Research Focus: Liquid nanolens self-assembly for detection of nanoparticles and viruses using wide-field lensfree holographic microscopy.
- California Institute of Technology (2009-2011)**
Department: Applied Physics
Advisor: Professor Sandra M. Troian
Research Focus: Identifying the fundamental mechanism behind a novel polymer nanofilm instability and harnessing it for lithography.
- Graduate:** **Princeton University: PhD (2009), MA (2006)**
Department: Mechanical & Aerospace Engineering
Advisor: Professor Craig B. Arnold
Concentration Areas: Optics, Lasers, and Materials Science
Thesis Title: *Bessel Beams in Tunable Acoustic Gradient Index Lenses and Optical Trap Assisted Nanolithography*
- Undergraduate:** **California Institute of Technology: BS with honor (2004)**
Department: Mechanical Engineering
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AWARDS

- Awards for tunable acoustic gradient index lens technology stemming from my doctoral research (not awarded to me personally):
 - R&D Magazine: R&D 100 Award (2013)
 - International Society for Optics and Photonics (SPIE) & Photonics Media: Prism Award (2013)
 - Laser Focus World and Optical Society of America: Innovation Award Honorable Mention (2013)
- Nominee for the UCLA Chancellor's Award for Postdoctoral Research (2013)
- Newport Award of Excellence in Photonics (2009)
- Incubic/Milton Chang Travel Award for the Conference on Lasers and Electro-Optics (2009)
- Finalist for the Optical Society of America Theodore Maiman Outstanding Student Paper (2009)
- Lawrence Fellowship Finalist at Lawrence Livermore National Laboratories (2009)
- Princeton Graduate Honorary Fellowship for final year of study (Charlotte Elizabeth Procter Fellowship) (2008)
- Best Student Oral Presentation, 9th International Conference on Laser Ablation, Tenerife, Spain (2007)
- Best oral presentation, Princeton University Mechanical & Aerospace Engineering Research Day (2006)
- Daniel & Florence Guggenheim 2nd Year Fellowship for excellence in the first year of graduate study (2005)
- National Science Foundation Graduate Research Fellowship Honorable Mention (2005)

- Hertz Foundation Fellowship Finalist (2005)
- Francis Upton Fellowship, Princeton University (2004-2008)
- 1st Place, Caltech ME72 Engineering Design Contest (2002)

REFEREED JOURNAL ARTICLES

1. **Euan McLeod** and Aydogan Ozcan, "Nano-imaging enabled via self-assembly," *Nano Today*, accepted, in press.
2. **Euan McLeod**, Chau Nguyen, Patrick Huang, Wei Luo, Muhammed Veli, and Aydogan Ozcan, "Tunable vapor-condensed nanolenses," *ACS Nano*, **8** (7), 7340-7349 (2014).
3. Yves Hennequin, Cédric P. Allier, **Euan McLeod**, Onur Mudanyali, Daniel Migliozi, Aydogan Ozcan, and Jean-Marc Dinten, "Optical detection and sizing of single nano-particles using continuous wetting films," *ACS Nano*, **7** (9), 7601-7609 (2013).
4. Qingshan Wei, **Euan McLeod**, Hangfei Qi, Zhe Wan, Ren Sun, and Aydogan Ozcan, "On-chip cytometry using plasmonic nanoparticle enhanced lensfree holography," *Scientific Reports*, **3**, 1699 (2013).
5. Ting-Wei Su, Inkyum Choi, Jiawen Feng, Calvin Huang, **Euan McLeod**, and Aydogan Ozcan, "Sperm Trajectories Form Chiral Ribbons," *Scientific Reports*, **3**, 1664 (2013).
6. **Euan McLeod***, Wei Luo*, Onur Mudanyali*, Alon Greenbaum*, and Aydogan 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*, **13**, 2028-2035 (2013). **Featured on the back cover. *These authors contributed equally to this work.**
7. Onur Mudanyali*, **Euan McLeod***, Wei Luo, Alon Greenbaum, Ahmet F. Coskun, Yves Hennequin, Cédric P. Allier, and Aydogan Ozcan, "Wide-field optical detection of nano-particles using on-chip microscopy and self-assembled nano-lenses," *Nature Photonics*, **7**, 247-254 (2013). ***These authors contributed equally to this work.**
8. **Euan McLeod** and Aydogan Ozcan, "Nanofabrication using near-field optical probes," *Journal of Laboratory Automation*, **17** (4), 248-254 (2012).
9. **Euan McLeod**, Yu Liu, and Sandra M. Troian, "Experimental verification of the formation mechanism for pillar arrays in nanofilms subject to large thermal gradients," *Physical Review Letters*, **106**, 175501 (2011). **Featured on the cover.**
10. Romain Fardel, **Euan McLeod**, Yu-Cheng Tsai, and Craig B. Arnold, "Nanoscale ablation through optically trapped microspheres," *Applied Physics A*, **101** (1), 41-46 (2010).
11. **Euan McLeod** and Craig B. Arnold, "Array-based optical nanolithography using optically trapped microlenses," *Optics Express*, **17** (5), 3640-3650 (2009). **Featured in Nature Photonics**, **3**, 261 (2009).
12. Alexandre Mermillod-Blondin, **Euan McLeod**, and Craig B. Arnold, "Dynamic pulsed-beam shaping using a TAG lens in the near UV," *Applied Physics A* **93** (1), 231-234 (2008).
13. Alexandre Mermillod-Blondin, **Euan McLeod**, and Craig B. Arnold, "High-speed varifocal imaging with a tunable acoustic gradient index of refraction lens," *Optics Letters*, **33** (18) 2146-2148 (2008).
14. **Euan McLeod** and Craig B. Arnold, "Subwavelength direct-write nanopatterning using optically trapped microspheres," *Nature Nanotechnology* **3**, 413-417 (2008).
15. **Euan McLeod** and Craig B. Arnold, "Optical analysis of time-averaged multiscale Bessel beams generated by a tunable acoustic gradient index of refraction lens," *Applied Optics* **47** (20), 3609-3618 (2008).
16. **Euan McLeod** and Craig B. Arnold, "Mechanics and refractive power optimization of tunable acoustic gradient lenses," *Journal of Applied Physics* **102**, 033104 (2007).

17. **Euan McLeod**, Adam B. Hopkins, and Craig B. Arnold, "Multiscale Bessel beams generated by a tunable acoustic gradient index of refraction lens," *Optics Letters* **31** (21), 3155-3157 (2006).

BOOK CHAPTERS

1. **Euan McLeod** and Aydogan Ozcan, "Wide-field nano-scale imaging on a chip," in *Applications of Nanoscience in Photomedicine*, eds. Michael R. Hamblin, Pinar Avci, and Shanmugamurthy Lakshmanan, in press.

PATENTS

1. Aydogan Ozcan and **Euan McLeod**, "Device and method for tunable vapor condensed nanolenses," Provisional Patent Application, University of California Case # 2014-784-1 (2014).
2. Craig B. Arnold, **Euan McLeod**, and Alexandre Mermillod-Blondin, "Tunable acoustic gradient index of refraction lens and system," US Patent #8,576,478, awarded November 5, 2013.
3. Aydogan Ozcan, Onur Mudanyali, and **Euan McLeod**, "Wide-field optical imaging of single nano-particles and viruses using computational on-chip microscopy and self-assembled liquid nano-lenses," Provisional Patent Application, University of California Case # 2012-815-1, (2012).
4. Craig B. Arnold, **Euan McLeod**, and Alexandre Mermillod-Blondin, "Tunable acoustic gradient index of refraction lens and system," US Patent #8,194,307, awarded June 5, 2012.
5. **Euan McLeod** and Craig B. Arnold, "Optical-trap-assisted near-field nanopatterning," Provisional Patent Application, Princeton Docket # 07-2370 (2007).

NON-REFEREED PUBLICATIONS

1. James Joy, **Euan McLeod**, and Craig B. Arnold, "Optical trap assisted nanoscale laser direct write patterning," 27th *International Congress on Applications of Lasers & Electro-Optics Proceedings*, paper N101 (2008).
2. Thomas Lipp, Alexandre Mermillod-Blondin, **Euan McLeod**, and Craig B. Arnold, "Rapid beam-shaping and focusing using tunable acoustic gradient index lenses," 21st *Solid State and Diode Laser Technology Review Proceedings* 7-11 (2008).
3. Craig B. Arnold and **Euan McLeod**, "A new approach to adaptive optics for materials processing," *Photonics Spectra* **41** (11), 78-84 (2007).
4. **Euan McLeod** and Craig B. Arnold, "Complex beam sculpting with tunable acoustic gradient index lenses," *Proceedings of SPIE* **6483**, Eds. David L. Andrews, Enrique J. Galvez, and Gerard Nienhuis (2007).
5. Tracy Tsai, **Euan McLeod**, and Craig B. Arnold, "Generating Bessel beams with a tunable acoustic gradient index of refraction lens," *Proceedings of SPIE* **6326**, 63261F, Eds. Kishan Dholakia and Gabriel C. Spalding (2006).

TALKS & CONFERENCE PRESENTATIONS

1. Euan McLeod, Chau Nguyen, Patrick Huang, Wei Luo, Muhammed Veli, and Aydogan Ozcan, "Self-assembled liquid nanolenses for wide-field nanoparticle and virus imaging," 15th UC Systemwide Bioengineering Symposium, June 2014.
2. Euan McLeod, Patrick Huang, Muhammed Veli, Shiv Acharya, Wei Luo, and Aydogan Ozcan, "Self-assembly via condensation of polymer liquid nanolenses for wide-field nanoparticle and virus imaging," Photonics West, SPIE, February 2014.

3. Qingshan Wei, Euan McLeod, Hangfei Qi, Zhe Wan, Ren Sun, and Aydogan Ozcan, "Plasmonic nanoparticle-enhanced lensfree holographic cytometry," Photonics West, SPIE, February 2014.
4. Euan McLeod and Aydogan Ozcan, "Computational microscopy, sensing, and diagnostics for telemedicine and global health applications," Federation of Analytical Chemistry and Spectroscopy Societies' SciX Conference, October 2013.
5. Euan McLeod, Wei Luo, Onur Mudanyali, Alon Greenbaum, and Aydogan Ozcan, "Giga-pixel nano-imaging using computational on-chip microscopy," IEEE Photonics Conference, September 2013.
6. Ting-Wei (Justin) Su, Inkyum Choi, Jiawen Feng, Calvin Huang, Euan McLeod, and Aydogan Ozcan, "Lensfree holographic imaging discovers chiral ribbon trajectories of sperms," IEEE Photonics Conference, September 2013.
7. Qingshan Wei, Euan McLeod, Hangfei Qi, Zhe Wan, Ren Sun, and Aydogan Ozcan, "Lensfree holographic cytometry using plasmonic nanoparticles," IEEE Photonics Conference, September 2013.
8. Euan McLeod*, Wei Luo*, Onur Mudanyali*, Alon Greenbaum*, and Aydogan Ozcan, "Giga-pixel lensfree computational microscopy of nano-objects on a chip," 14th Systemwide Bioengineering Symposium, June 2013. ***These authors contributed equally to this work.**
9. Qingshan Wei, Euan McLeod, Hangfei Qi, Zhe Wan, Ren Sun, and Aydogan Ozcan, "Lensfree Holographic Cytometry using Plasmonic Nanoparticles," 14th UC Systemwide Bioengineering Symposium, June 2013.
10. Euan McLeod, Onur Mudanyali, Wei Luo, Alon Greenbaum, Ahmet F. Coskun, Yves Hennequin, Cédric P. Allier, and Aydogan Ozcan, "Self-assembled nanolens formation for widefield computational imaging of nanoparticles on a chip," Conference on Lasers and Electro-Optics, June 2013.
11. Onur Mudanyali, Euan McLeod, Wei Luo, Alon Greenbaum, Ahmet F. Coskun, Yves Hennequin, Cédric P. Allier, and Aydogan Ozcan, "High-throughput imaging of single nano-particles and viruses using self-assembled liquid nano-lenses and on-chip holography," Conference on Lasers and Electro-Optics, June 2013.
12. Onur Mudanyali, Euan McLeod, Wei Luo, Alon Greenbaum, Ahmet F. Coskun, Jean-Marc Dinten, Yves Hennequin, Cédric P. Allier and Aydogan Ozcan, "Single nanoparticle and virus imaging using computational on-chip microscopy," Photonics West, SPIE, February 2013.
13. Euan McLeod and Aydogan Ozcan, "Near-field optical binding," Concepts in Electromagnetic Scattering, Memphis, Tennessee, May 2012.
14. Euan McLeod, "Novel surface patterning techniques and high-speed laser beam control," University of California, Los Angeles, September 2011, **invited talk**.
15. Euan McLeod, "Novel surface patterning techniques and high-speed laser beam control," Lawrence Berkeley National Laboratory, August 2011, **invited talk**.
16. Euan McLeod and Sandra M. Troian, "Thermal-gradient-induced instability in liquid nanofilms for lithographic applications," Caltech Ae150 Aerospace Engineering Seminar, May 2011, **invited talk**.
17. Euan McLeod and Sandra M. Troian, "One step non-contact fabrication of polymer microlens arrays by thermocapillary lithography," Conference on Lasers and Electro-Optics, May 2011.
18. Euan McLeod, Yu Liu, and Sandra M. Troian, "Experimental determination of driving mechanism for pillar formation in nanofilms exposed to a thermal gradient," Materials Research Society Fall Meeting, November 2010.
19. Euan McLeod, Yu Liu, and Sandra M. Troian, "Experimental confirmation of pillar array formation in polymer nanofilms by thermocapillary instability," American Physical Society Division of Fluid Dynamics Meeting, November 2010.

20. Yu Liu, [Euan McLeod](#), and Sandra M. Troian, "Experimental study of fluid structure formation from the linear to nonlinear regime in polymer nanofilms subject to Bénard-like instability," American Physical Society Division of Fluid Dynamics Meeting, November 2010.
21. [Euan McLeod](#) and Craig B. Arnold, "Parallel direct-write optical nanolithography using arrays of optically trapped microlenses," Conference on Lasers and Electro-Optics, June 2009.
22. [Euan McLeod](#) and Craig B. Arnold, "Bessel beams: From adaptive optics to nanolithography," Lawrence Livermore National Laboratories, February 2009, **invited talk**.
23. [Euan McLeod](#) and Craig B. Arnold, "Direct-write optical nanopatterning using arrays of optically trapped microspheres," 2nd European Topical Meeting on Nanophotonics and Metamaterials (Nanometa), January 2009.
24. [Euan McLeod](#) and Craig B. Arnold, "Direct write nanopatterning using near-field focusing by optically trapped microspheres," Princeton Research Symposium, November 2008, **invited talk**.
25. James Joy, Euan McLeod, and [Craig B. Arnold](#), "Optical trap assisted nanoscale laser direct-write patterning," 27th International Congress on Applications of Lasers & Electro-Optics, October 2008, **invited talk**.
26. [Euan McLeod](#) and Craig B. Arnold, "Laser direct write near-field nanopatterning using optically trapped microspheres," Conference on Lasers and Electro-Optics, May 2008.
27. Euan McLeod, Alexandre Mermillod-Blondin, and [Craig B. Arnold](#), "Rapid beam shaping using tunable acoustic gradient index of refraction lenses," Conference on Lasers and Electro-Optics, May 2008.
28. Euan McLeod and [Craig B. Arnold](#), "Sub-wavelength Laser Direct Write Patterning," 3rd Pacific International Conference on Applications of Lasers and Optics, April 2008, **invited talk**.
29. [Euan McLeod](#) and Craig B. Arnold, "Laser direct write near-field nanopatterning using optically trapped microspheres," Photonics West, SPIE, January 2008.
30. [Euan McLeod](#) and Craig B. Arnold, "Laser direct write near-field nanopatterning using optically trapped microspheres," 9th International Conference on Laser Ablation, September 2007.
31. [Euan McLeod](#) and Craig B. Arnold, "Multiscale Bessel beams from tunable acoustic gradient index of refraction lenses," Conference on Lasers and Electro-Optics, May 2007.
32. Euan McLeod and [Craig B. Arnold](#), "Tunable acoustic gradient index of refraction lenses for beam shaping applications," Laser Precision Microfabrication, April 2007.
33. [Euan McLeod](#) and Craig B. Arnold, "Complex beam sculpting with tunable acoustic gradient (TAG) index lenses," Photonics West, SPIE, January 2007.
34. Euan McLeod and [Craig B. Arnold](#), "Tunable Bessel beams for pulsed laser materials processing," Photonics West, SPIE, January 2007.
35. [Euan McLeod](#) and Craig B. Arnold, "Tunable acoustic gradient index of refraction (TAG) lenses for optical micromanipulation," Princeton University Mechanical & Aerospace Engineering Research Day, September 2006.
36. Tracy Tsai, Euan McLeod and [Craig B. Arnold](#), "Tunable acoustic gradient index of refraction lenses for generating rapidly changing Bessel beams," Optics & Photonics, SPIE, August 2006.
37. [Euan McLeod](#) and Craig B. Arnold, "Tunable acoustic gradient index of refraction (TAG) lenses for controllable nondiffracting beams," Photonics West, SPIE, January 2006.

ADVISING EXPERIENCE

1. Chau Nguyen Advised in 2013 Now: Undergraduate at U. California, Los Angeles

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| 2. Mark Swerdlow | Advised in 2013 | Now: Undergraduate at Stanford University. |
| 3. Muhammed Veli | Advised in 2012-2013 | Now: Undergraduate at Bilkent U., Turkey |
| 4. Patrick Huang | Advised in 2012-2013 | Now: Undergraduate at U. California, Los Angeles |
| 5. Yuning Jin | Advised in 2012-2013 | Now: Undergraduate at U. California, Los Angeles |
| 6. Shiv Acharya | Advised in 2013 | Now: Ph.D. Student at U. California, Los Angeles |
| 7. Gregory Hohensee | Advised in 2009 | Now: Ph.D. Student at U. Illinois at Urbana-Champaign |
| 8. Jimmy Joy | Advised in 2008 | Now: Ph.D. Student at Brown University |
| 9. Thomas Lipp | Advised in 2007-2008 | Now: Ph.D. Student at Stanford University |
| 10. David Longawa | Advised in 2007-2008 | Now: Graduate Student at Univ. Wisconsin-Madison |
| 11. Tracy Tsai | Advised in 2006 | Now: Ph.D. Graduate from Princeton University |

TEACHING EXPERIENCE

- Lectured in Introduction to Bioengineering at UCLA (2013)
- Assistant in Instruction for Automatic Control Systems at Princeton University (2007):
Supervised labs, wrote and graded homework, provided office hours
- Assistant in Instruction for Laboratory Techniques in Materials Science at Princeton University (2006):
Supervised labs, provided recitation sections, graded homework

GRANT-WRITING EXPERIENCE

In conjunction with my advisors, I have assisted in writing the following grants, which includes both those awarded and those not awarded.

1. Craig Arnold; "Self-positioning microspheres for direct-write nanolithography using Bessel beam optical traps;" Nanomanufacturing; Civil, Mechanical, and Manufacturing Innovation Division; National Science Foundation; Award# 0928803; Awarded 2009.
2. Aydogan Ozcan; "Near-field optical binding for the directed assembly of submicron particles;" Nanomanufacturing; Civil, Mechanical, and Manufacturing Innovation Division; National Science Foundation; Not awarded 2009.
3. Aydogan Ozcan; "Ultra-wide field imaging of single nano-particles, viruses and bacteria using field-portable computational on-chip microscopy and self-assembled liquid nano-lenses;" Life Sciences Division; Army Research Office; Award# ARO W911NF-13-1-0419; Awarded 2011.
4. Aydogan Ozcan; "Field-Portable Computational Imaging and Sensing Tools for Quantification of Waterborne and Airborne Nanoparticles in the Environment;" Environmental Health and Safety of Nanotechnology; Division of Chemical, Bioengineering, Environmental, and Transport Systems; National Science Foundation; Under review.

PROFESSIONAL ACTIVITIES AND SERVICE

I have refereed papers in:

- *Applied Physics Letters*
- *Optics Express*
- *Optics Letters*
- *Journal of the Optical Society of America B*
- *Journal of Quantitative Spectroscopy and Radiative Transfer*
- *Journal of Laser Micro / Nanoengineering*
- *Public Library of Science (PLOS) ONE*
- *IEEE Transactions on Biomedical Engineering*
- *ACS Applied Materials & Interfaces*
- *Sensors*

I am a member of the Optical Society of America (OSA) and the IEEE Photonics Society.

I have chaired the Optical Imaging and Cytometry session at the 2013 IEEE Photonics Conference in Bellevue, WA.
