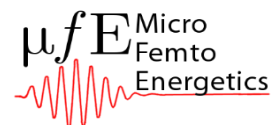


## Matthew Werden Graham

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**SHORT BIO:** Dr. Matt Graham is an Associate Professor of Physics at Oregon State University. His undergraduate degree is from the University of Toronto, and Ph.D. from the University of California, Berkeley. Dr. Graham was then a Kavli Postdoctoral Fellow at Cornell University before starting the Micro-Femto Energetics Laboratory at Oregon State University in 2014. His lab applies new methods to study the transport and spectroscopic properties of emerging condensed-phase materials. His lab advances unconventional ultrafast microscopy methods, such as ultrafast-resolved photocurrent microscopy, to optimize energy efficiency in emerging solar materials and to discover new quantum materials. Dr. Graham also represents the Optical Society (OSA/Optica) as one of their [OSA Ambassadors](#). OSA members elected Dr. Graham as the Chair of the [Ultrafast Optical Phenomena Technical Group](#) (2023-26).

### A. Appointments

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<sup>2</sup> **Associate Professor, Physics**, Oregon State University (2014– present)

<sup>1</sup> **Kavli Postdoctoral Fellow**, Department of Physics, Cornell University (2010-2013)

-Sponsoring mentors: Paul L. McEuen and Jiwoong Park

### B. Education

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**University of California, Berkeley (Ph.D., 2005 - 2011), CA, USA**

- **Ph.D. Dissertation:** *Ultrafast Nonlinear Spectroscopy of Semiconducting Carbon Nanotubes*, [www.ocf.berkeley.edu/~mwg/thesis.pdf](http://www.ocf.berkeley.edu/~mwg/thesis.pdf), Advisor: Graham R. Fleming

**University of Toronto, (Hon.B.Sc. 2001- 2005), Toronto, Ontario, Canada**

### C. Honors and Elected Positions

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- 2022-pr **SAMSUNG GRO Award**, Global Research Outreach Award
- 2022-26 **Chair of the Ultrafast Optical Phenomena Technical Group** (OSA elected position)
- 2019-20 **OSA Ambassador Award**, 1 of 10 global Ambassadors for the Optical Society
- 2017 **SPIE Rising Researcher Award**, SPIE DCS top-10 under-40 optics/photonics award
- 2015-16 **SSP National Starter Award**, Spectroscopy Society of Pittsburgh
- 2010-13 **Kavli Postdoctoral Fellowship**, Kavli Institute at Cornell University
- 2005-11 **NSERC (CDN gov) Postgraduate Masters, Doctoral and Postdoctoral Fellowships**
- 2005 **CSC Silver Medal & SCI Merit Awards**, highest rank in major at U. of Toronto

### E. 5 Most Recent PI-lab Publications <http://physics.oregonstate.edu/energetics/pub.html>

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<sup>5</sup> A. N. Bradley\*, S. G. Thorp\*, G. Mayonado, S. A. Coporan, E. Elliott, [M. W. Graham](#) (2023), [Photoreduced Graphene Oxide Recovers Graphene Hot Electron Cooling Dynamics](#), *Physical Review B*, 107, 224309, 1-12

<sup>4</sup> G. W. Mattson, K.T. Vogt, J. F. Wager, [M. W. Graham](#), (2023) [Illuminating trap density trends in amorphous oxide semiconductors with ultrabroadband photoconduction](#), *Advanced Functional Materials*, 8, 2300742-52

- <sup>3</sup>. G. Mayonado, K. V. Vogt, J. Van Schenck, L. Zhu, J. Anthony, O. Ostroverkhova, M. W. Graham, (2022) [High symmetry anthradithiophene molecular packing motifs promote thermally-activated singlet fission](#), *J Phys Chem C (invited issue)*, 126, 9
- <sup>2</sup>. G. W. Mattson, K.T. Vogt, J. F. Wager, M. W. Graham, [Hydrogen incorporation into amorphous InGaZnOx thin-film transistors](#) (2022), *Journal of Applied Physics*, Defects in Semiconductors Special Issue, 131, 105701
- <sup>1</sup>. J. Van Schenck, G. Mayonado, J. Anthony, M. W. Graham, O. Ostroverkhova, (2021) [Molecular packing-dependent exciton dynamics in functionalized anthradithiophene derivatives: from solutions to crystals](#), *Journal of Chemical Physics*, 153, 164715

## **F. Other Selected PI-Authored Publications (past 10 years)**

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- <sup>7</sup>. K. T. Vogt, C. Malmberg, J. Buchanan, G. Mattson, M. Brandt, D. Fast, P. H.-Y. Cheong, J. F. Wager, M. W. Graham, (2020) [Ultrabroadband Density of States of Amorphous In-Ga-Zn-O](#), *Physical Review Research*, 2, 033358
- <sup>6</sup>. K. T. Vogt, S.-F. Shi, F. Wang, M. W. Graham, (2020) [Ultrafast photocurrent and absorption microscopy of few-layer TMD devices isolate rate-limiting dynamics driving fast and efficient photoresponse](#), *J Phys Chem C (invited issue)*, 124, 28, 15195–15204
- <sup>5</sup>. H. Patel, C.J. Kim, J. Park, and M. W. Graham (2019), “[Stacking Angle-Tunable Photoluminescence from Interlayer Exciton States in Twisted Bilayer Graphene](#),” *Nature Communications*, 10, 1445
- <sup>4</sup>. H. Patel, R. Havener, L. Brown, Y. Liang, L. Yang, J. Park and M.W. Graham (2015) “[Tunable optical excitations in twisted bilayer graphene form strongly bound excitons](#)” *Nano Letters*, 15, 5032
- <sup>3</sup>. M. W. Graham, S. Shi, Z. Wang, J. Park, D. Ralph, and P.L. McEuen (2013) [Transient absorption and photocurrent microscopy show hot electron supercollisions describe the rate-limiting relaxation step in graphene](#), *Nano Letters*, 13, 5949-5952
- <sup>2</sup>. M. W. Graham, S. Shi, D. Ralph, J. Park and P. L. McEuen, (2013) [Photocurrent measurements of supercollision cooling in graphene](#), *Nature Physics*, 9, 103-9
- <sup>1</sup>. M.W. Graham, T.R. Calhoun, A. Green, M. C. Hersam, G. R. Fleming, (2012) [Two-dimensional electronic spectroscopy reveals the dynamics of phonon mediated excitation pathways in semiconducting single-walled carbon nanotubes](#), *Nano Letters*, 12, 813-819

## **G. Synergistic Activities**

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### **→ Invited Talks by PI**

**2022** (3): ECS Meeting (Vancouver BC), ASMET Meeting (Delhi IN), Ultrafast Bandgap Photonics (Georgetown)

**2021**(4): MRS Fall, ACS Spring, ECS Spring, Ultrafast Bandgap Photonics & Metastability, NanoED Symposium

**2020** (4): SPIE Photonics West (2 talks), ECS Meeting, Ultrafast Bandgap Photonics

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→ **International Conference Organization (recent):**

1. [APS Laser Science Program Chair](#) (FiO/LS3 Chair), 2024 Denver CO
2. UDM Workshop: Advisory and Program Committee, [Ultrafast Dynamics and Metastability and Bandgap Photonics Workshop](#), 2024 Tucson AZ
3. APS Laser Science Program Chair (FiO/LS3 Chair), Tacoma WA
4. APS Laser Science Program Chair (FiO/LS4 Chair), 2020 Washington DC
5. [OSA Ultrafast Science Technical Group](#), co-organizer, [Virtual Summer Workshop](#), 2020
6. Ultrafast Bandgap Photonics, 2019, Washington, DC (*program chair*)
7. SPIE DCS, Ultrafast Bandgap Photonics IV, Orlando, FL (*organizing committee*)
8. Ultrafast Optical Phenomena. OSA Technical Group, Events Lead, 2020-22

→ **Leadership Roles (current):**

1. Chair, [Ultrafast Optical Phenomena Technical Group](#) (2023-26).
2. [Optica Ambassador](#) (elected 2019-present)

→ **Editorial roles (current):**

1. *Scientific Reports*, Springer Nature, Associate Editor (manuscript handler, 2023-pr)
2. Collection Guest Editor: *Scientific Reports* on [Design and Synthesis of New Quantum Materials](#) (2024-25)

→ **Synergies with industry**

- <sup>1</sup>. Oregon State University, *the College of Science Industry Partnership Award*, 2022
2. ThermaWatts LLC, [Technical Advisor](#) title to Small semiconductor startup
- <sup>2</sup>. Multiple industry-partnered grants, including NSF SEED SBIR, Voxel SBIR Phase II, Hewlett-Packard and SAMSUNG

→ **Examples of Active Grants:**

1. **DoD Tri-Agency:** Emergent Magneto-Optoelectronics in 2D, 1D and 0D Twisted Layer Graphene Systems [FA9550-22-1-0276], 2022-2025
2. **NSF-MRI**, NSF-DMR, Ultrafast Thin Film Optomagnetics Lab, 2019-2023
3. **Samsung GRO Award** ([SAMSUNG Global Research Outreach Award](#)), Resolving Tail-to-Tail Trap Density in Semiconductor Oxide Devices, 2022-25

→ **Recent course instruction at Oregon State:**

Solid State Physics (PH 575), AMO Physics (PH 585), Statistical Mechanics (PH 641), Electronics (PH 411), Experimental Physics (PH 317), Optical and Electronic Processes in Condensed Matter Physics (PH 682)

**Memberships:** Optica/OSA lifetime member, APS, MRS, ECS, ACS

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