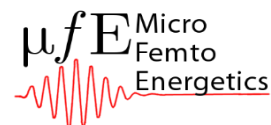


Matthew Werden Graham

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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. The lab advances unconventional ultrafast microscopy methods such as ultrafast-resolved photocurrent microscopy toward optimizing energy efficiency in emerging solar materials and discovering 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 [Ultrafast Optical Phenomena Technical Group](#) (2023-27).

A. Appointments

². **Associate Professor, Physics**, Oregon State University (2014– present) [tenured Fall 2019]

¹. **Kavli Postdoctoral Fellow**, Department of Physics, Cornell University (2010-2013)

-Sponsoring mentors: Paul L. McEuen and Jiwoong Park

B. Education

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, Advisor: Graham R. Fleming

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

C. Honors and Elected Positions

- | | |
|---------|---|
| 2022 | 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>

⁵. A. N. Bradley, S. G. Thorp, G. Mayonado, E. Elliott, M. W. Graham, [Graphene Oxide Photoreduction Recovers Graphene Hot Electron Cooling Dynamics](#), arxiv.org/abs/2301.13176

⁴. G. W. Mattson, K.T. Vogt, J. F. Wager, M. W. Graham, [Illuminating trap density trends in amorphous oxide semiconductors with ultrabroadband photoconduction](#), arxiv.org/abs/2301.08196

³. 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

². 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

¹. 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](#), *J Chem Phys*, 153, 164715

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

⁷. 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

⁶. 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

⁵. 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

⁴. 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

³. 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

². 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

¹. 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. Example Service and Synergistic Activities

→ Invited Talks by PI

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

2021(5): MRS Fall, ACS Spring, ECS Spring, Ultrafast Bandgap Photonics & Metastability

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

→ International Conference Organization (recent):

1. FiO/LS, APS Laser Science Program Chair (LS4 Chair), 2020 Washington DC

2. [OSA Ultrafast Science Technical Group](#), co-organizer, [Virtual Summer Workshop](#), 2020

3. Ultrafast Bandgap Photonics, 2019, Washington, DC (*program chair*)

4. SPIE DCS, Ultrafast Bandgap Photonics IV, Orlando, FL (*organizing committee*)
5. Ultrafast Optical Phenomena. OSA Technical Group, Events Lead, 2020-22

→ **Review and popular press articles written:**

- ¹. [M. W. Graham](#), “Carbon nanotubes; captured on Camera” *Nature Nano*, 8, 894, 2014
- ². [M. W. Graham](#), [Exploring Industry: doing basic optical research with big business](#), *Discover Optical Society of America, OSA, Fall 2019*.

→ **Synergies with industry**

- ¹. Oregon State University, *the College of Science Industry Partnership Award*, 2022
- ². Multiple industry partnered grants including, NSF SEED SBIR, Voxel SBIR Phase II, Hewlett-Packard, and SAMSUNG

→ **Examples of Active Grants:**

- 1. DoD Tri-Agency DEPSCoR:** Emergent Magneto-Optoelectronics in 2D, 1D and 0D Twisted Layer Graphene Systems"[FA9550-22-1-0276] \$597K, 2022-2025
- 2. NSF-MRI, NSF-DMR,** Ultrafast Thin Film Optomagnonics Lab, \$1.3M, 2019-2023
- 3. Samsung GRO Award** (SAMSUNG Global Research Outreach Award), Resolving Tail-to-Tail Trap Density in Semiconductor Oxide Devices, \$150K per year, 2023-2026

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

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

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