Aeron Tynes Hammack

Physicist · Quantum specialist · Optical and electrical engineer · Phage expert · Computer scientist · Entrepreneurial executive

citations: 1855 ⊂ h-index: 21 ⊃ i10-index: 23

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education

Lawrence Berkeley National Labs Molecular Foundry — *Berkeley, CA*
Postdoctoral Fellowship in Electron and X-Ray Spectroscopy — *2012*

University of California at San Diego — *La Jolla, CA*
Ph.D. in Physics — *2010*
Dissertation – Studies of transport and thermalization of excitons and the development of techniques for in-situ manipulation of excitons in coupled quantum wells

University of California at San Diego — *La Jolla, CA*
M.S. in Physics — *2004*

University of California at Berkeley — *Berkeley, CA*
B.S. in Electrical Engineering and Computer Science — *2001*

entrepreneurial experience

Locus Biosciences — *Research Triangle Park, NC*
Principal Scientist — *2018.08 – Present*
Principal scientist and management team member following acquisition of EpiBiome by Locus Biosciences. Responsible for machine learning and artificial intelligence efforts, laboratory information management systems, data science, advanced liquid handling technology development, as well as continued assistance in fundraising and business development.

LCFTA — *Austin, TX*
Managing Partner, Physicist — *2018.08 – Present*
Managing Partner for LCFTA, a science, engineering, and executive consulting firm advising small companies focused on translational research and development activities in the biotechnology, quantum computing, materials, optical physics, and information science disciplines.

Laminera — *Berkeley, CA*
Co-developer, Advisor — *2017.03 – Present*
Co-developer of synthetic metal deposition technologies for Laminera, an early-phase startup admitted into cohort three of Cyclotron Road, the LBNL energy science accelerator program.

Dimensional Industries — *Austin, TX*
Co-founder, Board member, Chief Financial Officer — *2018.06 – PRESENT*
Board member and Chief Financial Officer in charge of brokering a licensing or acquisition deal for a rapid-device-prototyping, biosensing, and real-time artificial intelligence IP portfolio.

EpiBiome — *Union City, CA / Austin, TX*
Co-founder, Chief Executive Officer, Board Member — *2018.01 – 2018.12*
Co-founder of EpiBiome, a 25+ person venture-backed biotechnology company tackling the emerging threat of antibiotic-resistant bacterial strains using next-generation sequencing technologies and bacteriophage-based antimicrobials. Principal investigator for bioinformatics, data science, and sequencing technology development. Presided over the negotiation and acquisition of EpiBiome by Locus Biosciences, along with the successful delivery of the EpiBiome phage discovery platform to Locus.

EpiBiome — *South San Francisco, CA / Austin, TX*
Co-founder, Chief Operations Officer, Board Member — *2013.11 – 2017.12*
Prior to taking on CEO role, was Chief Operations Officer and the principal investigator for bioinformatics, data science, and sequencing technology development.

Dimensional Industries *Oakland, CA*

Co-founder, Board member *2012.06 – 2014.04*

Co-founder for rapid device prototyping, biosensing, and real-time artificial intelligence product design company.

Halide Design *San Diego, CA / Oakland, CA*

Co-founder, President, Treasurer, Lead Circuit Design Engineer *2007.07 – 2012.07*

Co-founder of Halide Design, a boutique high-end audio design firm and audio equipment manufacturer that won numerous accolades in audio industry magazines such as Stereophile, AudioStream, and The Audio Beat.

research experience

Plasmonics Group, HGST (now Western Digital) *San Jose, CA*

Research Staff Member *2012.06 – 2014.12*

Research scientist in charge of near-field characterization of heat assisted magnetic recording (HAMR) write heads for magnetic disk based storage devices. My research enabled scan-probe, optical, and electron microscopy and spectroscopy based characterization of the correspondence between device geometry, material composition, near-field performance, and write head efficacy and reliability.

Molecular Foundry, Lawrence Berkeley Labs *Berkeley, CA*

Postdoctoral Fellow *2010.05 – 2012.06*

Postdoctoral researcher on a multidisciplinary project to develop first principles models for the optical and electronic structure of nanocrystals (NCs) as mediated by size and chemical environment. Experiments focused on spectroscopic characterization of the NCs by core-level x-ray and auger electron spectroscopy. I was responsible for commissioning a new multi-modal UHV surface characterization tool capable of nanometer spatial resolution Auger spectroscopy, XPS, SEM, and STM/STS.

Butov Lab, UC San Diego *La Jolla, CA*

Graduate Student Researcher *2003.08 – 2010.04*

Conducted original research into design and implementation of experiments investigating the low temperature quantum degenerate dynamics of indirect excitons in GaAs coupled quantum well (CQW) structures. Specific studies focused on the transport characteristics of excitons within the CQW structure, coherence in the exciton system at ultra-low temperatures, and novel methods for exciton confinement and manipulation by electrostatic fields from micro/nano-meter scale contacts and patterned laser excitation. In the course of my work, I designed and implemented an optical system in the heart of our dilution refrigerator capable of one micron resolution while operating at millikelvin temperatures in magnetic fields up to 16T.

Crommie Lab, UC Berkeley *Berkeley, CA*

Research Assistant *2002.01 – 2003.07*

Performed experiments examining the surface structure of crystalline silicon and ad-atoms on the silicon surface using an ultrahigh vacuum variable temperature scanning tunneling microscope (STM) capable of atomic resolution. Assisted in the design of a new ultrahigh vacuum sample preparation chamber and STM system to investigate tunneling spectroscopy signatures of molecular switches.

BaBar Project, Lawrence Berkeley Labs *Berkeley, CA*

Research Assistant *1998.09 – 1999.10*

Worked on jet finding and particle identification algorithms for the BaBar project, an experiment studying the violation of charge and parity (CP) symmetry in the decay of B mesons created in the Stanford Linear Accelerator B-Factory.

academic appointments

UC Berkeley *Berkeley, CA*

Lecturer, Physics 7B *Summer 2010 & Summer 2011*

Lecturer for the UC Berkeley course Physics for Scientists and Engineers, Introduction to Thermodynamics, Electricity, and Magnetism.

UC San Diego *La Jolla, CA*

Laboratory Instructor, Physics 173 *Spring 2005*

Taught a graduate level laboratory section focusing on modern physics experiments in biological and solid state physics. Students replicated seminal modern physics experiments including the observation of the magnetic resonance in water that enables MRI, in vivo measurements of electrical potentials in leech neurons, and optical tweezer trapping of micron sized polystyrene beads.

UC San Diego *La Jolla, CA*

Laboratory Instructor, Physics 1A *Fall 2003.09*

Taught an introductory laboratory session on Newtonian mechanics for students on a scientific track outside of physics or engineering.

programming experience

Serafini Lab, The Gallo Institute *Emeryville, CA*

Lead Java Developer *2000.02 – 2000.07*

Collaborated with a database engineer, laboratory information management specialist, and genetics researchers on the design and implementation of a Java graphical client for an Oracle database. The database and graphical client application enabled efficient collection of laboratory procedural data during genomic activation correlation experiments performed using DNA microarrays.

Motorola *Austin, TX*

Java Developer *1999.05 – 1999.08*

Designed and implemented a highly configurable Java based specification entry system for processor core design at the M*Core low-power chip design facility.

Fujitsu *San Jose, CA*

Java Developer *1998.06 – 1998.09*

Worked as an intern developer for Netprism, a Java based SNMP network management suite. Converted deprecated AWT components to JDK, tracked down and eliminated bugs in the client side code, and maintained a website used for collaboration by the developers.

program committees

2019	**Session Chair**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2018	**Reviewer**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2017	**Reviewer**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2016	**Reviewer**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2015	**Reviewer**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2014	**Session Chair**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*
2013	**Reviewer**, Molecular Foundry Imaging Facility Review Panel	*Berkeley, CA*

honors & awards

2016	**Winner**, Stanford StartX Accelerator	*$500k*
2015	**Winner**, Johnson & Johnson JLABS Quickfire Challenge	*1 year lab space*
2014	**Winner**, Illumina Accelerator	*$100k & lab space*
2014	**Semi-Finalist**, OneStart Americas	*Honorary mention*

grants, proposals, fund raises, & large deals

2019	**Partnership Deal**, Johnson & Johnson ∩ Locus Biosciences	*$818M*
2018	**Acquisition**, Locus Biosciences ⊃ EpiBiome	*Private*
2017	**5132**, Molecular Foundry Proposal	*User facility access*
2017	**W81XWH-17-1-0161**, DoD SBIR Award	*$200k*
2015	**EpiBiome Series B Bridge**, Private Investors	*$5M*
2016	**4670**, Molecular Foundry Proposal	*User facility access*
2016	**4555**, Molecular Foundry Proposal	*User facility access*
2016	**BMGF:01836000915**, Bill & Melinda Gates Foundation	*$100k*
2016	**4243**, Molecular Foundry Proposal	*User facility access*
2016	**EpiBiome Venture Debt**, Silicon Valley Bank	*$1M*
2015	**3996**, Molecular Foundry Proposal	*User facility access*
2015	**3908**, Molecular Foundry Proposal	*User facility access*
2015	**EpiBiome Series A**, Private Investors	*$6.125M*
2015	**3711**, Molecular Foundry Proposal	*User facility access*
2014	**3140**, Molecular Foundry Proposal	*User facility access*
2012	**1531**, Molecular Foundry Proposal	*User facility access*
2011	**SSRL**, Stanford Synchrotron Radiation Lab Proposal	*Beamline access*
2011	**SSRL**, Stanford Synchrotron Radiation Lab Proposal	*Beamline access*
2010	**ALS**, Advanced Light Source Proposal	*Beamline access*
2010	**ALS**, Advanced Light Source Proposal	*Beamline access*

journal articles

1. **A.T. Hammack**, D. Nowak, L.M. Otto, Sung Park, and B. C. Stipe. Simultaneous multimodal scan probe imaging of heat assisted magnetic records heads by magnetic force, scanning scattering optical near-field, and photo-induced force microscopy. *Manuscript in preparation.*

2. L.M. Otto, D.F. Ogletree, S. Aloni, M. Staffaroni, B. C. Stipe, and **A.T. Hammack**. Visualizing the bidirectional optical transfer function for near-field enhancement in waveguide coupled plasmonic transducers. Nature Scientific Reports 8, 5761 (2018).
doi:10.1038/s41598-018-24061-3

3. L.M. Otto, S.P. Burgos, M. Staffaroni, Shen Ren, Ö. Süzer, B. C. Stipe, and **A.T. Hammack**. Predicting scattering near-field optical microscopy of mass-produced plasmonic devices. Journal of Applied Physics 123, 183104 (2018).
doi:10.1063/1.5032222

4. J.R. Leonard, A.A. High, **A.T. Hammack**, M.M Fogler, L.V. Butov, A.V. Kavokin, K.L. Campman, and A.C. Gossard. Pancharatnam-Berry phase in condensate of indirect excitons. Nature Communications, 2158 (2018).
doi:10.1038/s41467-018-04667-x

5. E.L. Rosen, K. Gilmore, A. Sawvel, **A.T. Hammack**, S. Doris, S. Aloni, V. Altoe, D. Nordlund, T.-C. Weng, D. Sokaras, B.E. Cohen, J.J. Urban, D.F. Ogletree, D. Milliron, D. Prendergast, and B.A. Helms. Chemically directing d-block heterometallics to nanocrystal surfaces as molecular beacons of surface structure. Chemical Science 6(11), 6295-6304 (2015).
doi:10.1039/C5SC01474C

6. Nan Zhou, Xianfan Xu, **A.T. Hammack**, B.C. Stipe, K. Gao, W. Scholz, and E.C. Gage. Plasmonic near-field transducer for heat-assisted magnetic recording. Nanophotonics 3(3), 141-155 (2014).
doi:10.1515/nanoph-2014-0001

7. M. Remeika, **A.T. Hammack**, S.V. Poltavtsev, L.V. Butov, J. Wilkes, A.L. Ivanov, K.L. Campman, M. Hanson, and A.C. Gossard. Pattern formation in the exciton inner ring. Phys. Rev. B 88(12), 125307 (2013).
doi:10.1103/PhysRevB.88.125307

8. A.A. High, **A.T. Hammack**, J.R. Leonard, Sen Yang, L.V. Butov, T. Ostatnicky, M Vladimirova, A.V. Kavokin, T.C.H. Liew, K.L. Campman, and A.C. Gossard. Spin Currents in a Coherent Exciton Gas. Phys. Rev. Lett. 110, 246403 (2013).
doi:10.1103/PhysRevLett.110.246403

9. A.A. High, J.R. Leonard, **A.T. Hammack**, M.M Fogler, L.V. Butov, A.V. Kavokin, K.L. Campman, and A.C. Gossard. Spontaneous Coherence in a Cold Exciton Gas. Nature 483, 584 (2012).
doi:10.1038/nature10903

10. A. Llordes, **A.T. Hammack**, R. Buonsanti, R. Tangirala, S. Aloni, B.A. Helms, and D.J. Milliron. Polyoxometalates and colloidal nanocrystals as building blocks for metal oxide nanocomposite films. J. Mat. Chem. 21, 11631 (2011).
doi:10.1039/C1JM10514K

11. V.S.D. Voet, T.E. Pick, S.M. Park, M. Moritz, **A.T. Hammack**, J.J. Urban, D.F. Ogletree, D.L. Olynick, and B.A. Helms. Interface segregating flouralkyl-modified polymers for high-fidelity block copolymer nanoimprint lithography. JACS 133, 2812-2815 (2011).
10.1021/ja1094292

12. A.G. Winbow, J.R. Leonard, M. Remeika, A.A. High, **A.T. Hammack**, L.V. Butov, J. Wilkes, A.A. Guenther, A.L. Ivanov, M. Hanson, and A.C. Gossard. Electrostatic conveyer for excitons. Phys. Rev. Lett. 106, 196806 (2011).
doi:10.1103/PhysRevLett.106.196806

13. Y.Y. Kuznetsova, M. Remeika, A.A. High, **A.T. Hammack**, L.V. Butov, M. Hanson, and A.C. Gossard. All-optical excitonic transistor. Appl. Phys. Lett. 97, 201106 (2010).
doi:10.1063/1.4722938

14. **A.T. Hammack**, L.V. Butov, J. Wilkes, L. Mouchliadis, E.A. Muljarov, A.L. Ivanov, and A.C. Gossard. Kinetics of the inner ring in the exciton emission pattern in GaAs coupled quantum wells. Phys. Rev. B 80, 155331 (2009).
doi:10.1103/PhysRevB.80.155331

15. G. Grosso, J. Graves, **A.T. Hammack**, A.A. High, L.V. Butov, M. Hanson, and A.C. Gossard. *Excitonic switches operating at around 100 K*. Nature Photonics 3, 577-580 (2009).
doi:10.1038/nphoton.2009.166

16. A.A. High, A.K. Thomas, G. Grosso, M. Remeika, **A.T. Hammack**, A.D. Meyertholen, M.M Fogler, L.V. Butov, M. Hanson, and A.C. Gossard. Trapping indirect excitons in a GaAs quantum-well structure with a diamond-shaped electrostatic trap. Phys. Rev. Lett. 103, 087403 (2009).
doi:10.1103/PhysRevLett.103.087403

17. A.A. High, **A.T. Hammack**, L.V. Butov, L. Mouchliadis, A.L. Ivanov, M. Hanson, and A.C. Gossard. Indirect excitons in elevated traps Nano Lett. 9, 2094-2098 (2009).
doi:10.1021/nl900605b

18. M. Remeika, J.C. Graves, **A.T. Hammack**, A.D. Meyertholen, M.M Fogler, L.V. Butov, M. Hanson, and A.C. Gossard. Localization-delocalization transition of indirect excitons in lateral electrostatic lattices. Phys. Rev. Lett. 102, 186803 (2009).
dio:10.1103/PhysRevLett.102.186803

19. M.M. Fogler, Sen Yang, **A.T. Hammack**, L.V. Butov, and A.C. Gossard. Effect of spatial resolution on the estimates of the coherence length of excitons in quantum wells. Phys. Rev. B 78, 035411 (2008).
doi:10.1103/PhysRevB.78.035411

20. **A.T. Hammack**, L.V. Butov, L. Mouchliadis, A.L. Ivanov, and A.C. Gossard. Kinetics of indirect excitons in an optically-induced trap in GaAs quantum wells. Phys. Rev. B 76, 193308 (2007).
doi:10.1103/PhysRevB.76.193308

21. A.A. High, **A.T. Hammack**, L.V. Butov, M. Hason, and A.C. Gossard. Exciton optoelectronic transistor. Optics Lett. 32, 2466-2468 (2007).
doi:10.1364/OL.32.002466

22. A.G. Winbow, **A.T. Hammack**, L.V. Butov, and A.C. Gossard. Photon storage with nanosecond switching in coupled quantum well nanostructures. Nano Lett. 7, 1349-1351 (2007).
doi:10.1021/nl070386c

23. Sen Yang, A.V. Mintsev, **A.T. Hammack**, L.V. Butov, and A.C. Gossard. Repulsive interaction in the macroscopically ordered exciton state in GaAs/AlxGa1-xAs coupled quantum well structures. Phys. Rev. B 75, 033311 (2007).
doi:10.1103/PhysRevB.75.033311

24. Sen Yang, **A.T. Hammack**, M.M. Fogler, L.V. Butov, and A.C. Gossard. Coherence length of cold exciton gases in coupled quantum wells. Phys. Rev. Lett. 97, 187402 (2006).
doi:10.1103/PhysRevLett.97.187402

25. **A.T. Hammack**, M. Griswold, L.V. Butov, L.E. Smallwood, A.L. Ivanov, and A.C. Gossard. Trapping of cold excitons in quantum well structures with laser light. Phys. Rev. Lett. 96, 227402 (2006).
doi:10.1103/PhysRevLett.96.227402

26. **A.T. Hammack**, N.A. Gippius, Sen Yang, G.O. Andreev, L.V. Butov, M. Hanson, and A.C. Gossard. Excitons in electrostatic traps. J. Appl. Phys. 99, 066104 (2006).
doi:10.1063/1.2181276

27. A.L. Ivanov, L.E. Smallwood, **A.T. Hammack**, Sen Yang, L.V. Butov, and A.C. Gossard. Origin of the inner ring in photoluminescence patterns of quantum well excitons. Europhys. Lett. 73, 920-926 (2006).
doi:10.1209/epl/i2006-10002-4

28. K. Nagaoka, M.J. Comstock, **A. Hammack**, and M.F. Crommie. Observation of spatially inhomogeneous electronic structure of Si(100) using scanning tunneling spectroscopy. Phys. Rev. B 71, 121304 (2005).
doi:10.1103/PhysRevB.71.121304

patents

29. **A.T. Hammack**, B. Marchon, A.A. Kinkhabwala, and P.C. Tsai. Nanochannel devices and methods for the analysis of molecules. WO 2017/087908 A1.
wipo:WO2017087908

30. J.D. Driscoll, and **A.T. Hammack**. Flexible printed circuit board assembly for electronic devices. US 2016/0073539 A1.
goog:US20160073539A1

conference papers

31. J.R. Leonard, A.A. High, **A.T. Hammack**, M.M. Fogler, L.V. Butov, K.L. Campman, and A.C. Gossard. Pancharatnam-Berry phase in a condensate of indirect excitons.
doi:10.1364/CLEO_QELS.2018.FM3H.3

32. L.M. Otto, **A.T. Hammack**, S. Aloni, D.F. Ogletree, D.L. Olynick, S. Dhuey, B.J.H. Stadler, and A.M. Schwartzberg. Plasma-enhanced atomic layer deposition for plasmonic TiN. Proceedings Volume 9919, Nanophotonic Materials XIII, 99190N (2016).
doi:10.1117/12.2238340

33. L.M. Otto, E.A. Gaulding, C.T. Chen, T. Kuykenda, A. Zykov, **A.T. Hammack**, F.M. Toma, D.F. Ogletree, S. Aloni, B.J.H. Stadler, and A.M. Schwartzberg. Three-dimensional titanium nitride plasmonics with plasma-enhanced atomic layer deposition. The 8th International Conference on Surface Plasmon Photonics (SPP8) (2017).

34. M. Remeika, **A.T. Hammack**, S. Poltavtsev, J. Wilkes, A. Ivanov, M. Hanson, and A.C. Gossard. Pattern formation in the exciton inner ring. CLEO: 2013 OSA Technical Digest (online) (Optical Society of America, 2013), paper QM2D.6.
doi:10.1364/CLEO_QELS.2013.QM2D.6

35. M. Vladimirova, A.A. High, A.T. Hammack, J.R. Leonard, Sen Yang, L.V. Butov, T. Ostatnický, A. Kavokin, A.C. Gossard, T.C.H. Liew, and K.L. Campman. Spin currents in a coherent exciton gas. PLMCN 14 (2013).
hal-00835599

36. Y.Y. Kuznetsova, M. Remeika, A.A. High, A.T. Hammack, L.V. Butov, M. Hanson, and A.C. Gossard. All-optical excitonic switch. CLEO 2010 OSA Technical Digest (CD) (Optical Society of America, 2010), paper QFI1.
doi:10.1364/QELS.2010.QFI1

37. G. Grosso, J.C. Graves, **A.T. Hammack**, A.A. High, L.V. Butov, M. Hanson, and A.C. Gossard. Excitonic switches operating at around 100 K. CLEO 2010 OSA Technical Digest (CD) (Optical Society of America, 2010), paper QFI5.
doi:10.1364/QELS.2010.QFI5

38. **A.T. Hammack**, L.V. Butov, J. Wilkes, L. Mouchliadis, E.A. Muljarov, A.L. Ivanov, and A.C. Gossard. Spatially resolved kinetics and spatially separated pump-probe studies of transport and thermalization of indirect excitons. CLEO 2010 OSA Technical Digest (CD) (Optical Society of America, 2010), paper QFI7.
doi:10.1364/QELS.2010.QFI7

39. J. Wilkes, L. Mouchliadis, E.A. Muljarov, A.L. Ivanov, **A.T. Hammack**, L.V. Butov, and A.C. Gossard. Dynamics of the inner ring in photoluminescence of GaAs/AlGaAs indirect excitons. International Conference on Optics of Excitons in Confined Systems (OECS11), J. of Phys.: Conf. Series 210, 012050 (2010).
doi:10.1088/1742-6596/210/1/012050

40. **A.T. Hammack**, Sen Yang, L.V. Butov, and A.C. Gossard. Properties of the exciton inner ring at ultra-low temperatures and high magnetic fields, in CLEO/IQEC, OSA Technical Digest (CD) (Optical Society of America, 2009), paper ITuH4.
doi:10.1364/IQEC.2009.ITuH4

41. **A.T. Hammack**, L.V. Butov, L. Mouchliadis, L.E. Smallwood, A.L. Ivanov, and A.C. Gossard. Kinetics of excitons in an optically-induced exciton trap. CLEO/QELS Conference and Photonic Applications Systems Technologies, OSA Technical Digest (CD) (Optical Society of America, 2008), paper QThI2.

42. A.A. High, A.K. Thomas, **A.T. Hammack**, L. Butov, M. Hanson, and A. Gossard. A diamond trap for indirect excitons in coupled quantum wells. CLEO/IQE Conference, OSA Technical Digest (CD) (Optical Society of America, 2009), paper IThE5.

43. A.A. High, **A.T. Hammack**, L. Butov, L. Mouchliadis, A. Ivanov, M. Hanson, and A.C. Gossard. Interaction and cooling of the indirect excitons in elevated traps. CLEO/QELS Conference and Photonic Applications Systems Technologies, OSA Technical Digest (CD) (Optical Society of America, 2008), paper QThE2.

44. Sen Yang, **A.T. Hammack**, A.V. Mintsev, M.M. Fogler, L.V. Butov, L.S. Levitov, B.D. Simmons, and A.C. Gossard. Spontaneous coherence, interaction and kinetics of macroscopically ordered exciton state. CLEO/QELS Conference and Photonic Applications Systems Technologies, OSA Technical Digest (CD) (Optical Society of America, 2008), paper QThI1.

selected talks

45. **A.T. Hammack**. High throughput discovery for bacteriophage based therapeutics. The 3rd Innovator's Forum on Human Microbiome (2018).

46. **A.T. Hammack**. The growing threat of antibiotics resistance, and the use of microbial surveillance and bacteriophage based therapeutics to combat the trend. Cyclotron Road Seminar Series (2018).

47. **A.T. Hammack**. The growing threat of antibiotics resistance, and the use of microbial surveillance and bacteriophage based therapeutics to combat the trend. Molecular Foundry Seminar Series (2017).

48. **A.T. Hammack**. Next-generation antibacterials: Combating infectious disease with phage technology. CUBE Tech Fair Berlin (2017).

49. **A.T. Hammack**. Coherence in exciton gases. Workshop on Quantum Coherence in Energy Conversion University of Freiburg (2011).

50. **A.T. Hammack**. Cold exciton gases in coupled quantum wells. Molecular Foundry Weekly Seminar Series (2009).

51. **A.T. Hammack**, L.V. Butov, L. Mouchliadis, L.E. Smallwood, A.L. Ivanov, and A.C. Gossard. Kinetics of cold excitons in the laser-induced exciton trap. Bulletin of The American Physical Society March Meeting 52 (2007).

52. **A.T. Hammack**, M. Griswold, L.V. Butov, L.E. Smallwood, A.L. Ivanov, and A.C. Gossard. Laser induced trapping of excitons in coupled quantum wells. Bulletin of The American Physical Society March Meeting 51 (2006).

53. **A.T. Hammack**, G.O. Andreev, Sen Yang, N.A. Gippius, and L.V. Butov. Exciton confinement in traps formed by a laterally modulated gate voltage. Bulletin of The American Physical Society March Meeting 50 (2005).

conference posters

54. L.M. Otto, S.P. Burgos, M. Staffaroni, Shen Ren, Ö. Süzer , B.C. Stipe, and **A.T. Hammack**. Scattering scanning near-field optical microscopy (sSNOM) for heat assisted magnetic recording (HAMR) characterization and development. NFO-14: The 14th International Conference of Near-Field Optics, Nanophotonics and Related Techniques (2016).

55. **A.T. Hammack**, A. Kinkhabwala, B.C. Stipe, Yan Li, Xianfan Xu, W. Morrison, D. Nowak, Sung Park, D.F. Ogletree, and S. Aloni. Characterization of near-field transducers used in heat assisted magnetic recording by cathodoluminescence electron microscopy (SEM-CL), sSNOM, and MFM. Gordon Research Conference on Plasmonics (2014).

56. **A.T. Hammack**, L.V. Butov, L. Mouchliadis, A.L. Ivanov, and A.C. Gossard. Low temperature behavior of excitons in an optically-induced trap. International Conference on Spontaneous Coherence in Exciton Systems 4 (2008).

57. **A.T. Hammack**, L.V. Butov, L. Mouchliadis, L.E. Smallwood, A.L. Ivanov, and A.C. Gossard. Kinetics of the laser-induced exciton trap. Fundamental Optical Processes in Semiconductors 3 (2007).

conference abstracts

58. K. Gilmore, **A. Hammack**, A. Sawvel, E. Rosen, D.F. Ogletree, J. Urban, D. Milliron, B. Helms, B. Cohen, and D. Prendergast. First-principles spectroscopic characterization of PbSe nanoparticles passivated with Fe Complexes. Bulletin of The American Physical Society March Meeting 57 (2012).

59. J. Leonard, A. Winbow, M. Remeika, Y. Kuznetsova, A. High, **A. Hammack**, L. Butov, J. Wilkes, A. Guenther, A. Ivanov, M. Hanson, A. Gossard. Excitons in moving lattices. Bulletin of The American Physical Society March Meeting 56 (2011).

60. K. Gilmore, **A. Hammack**, A. Sawvel, E. Rosen, D.F. Ogletree, J. Urban, D. Milliron, B. Helms, B. Cohen, and D. Prendergast. Characterization of the surface environment of PbSe nanoparticles by correlating calculated and measured x-ray spectra. Bulletin of The American Physical Society March Meeting 56 (2011).

61. Sen Yang, **A.T. Hammack**, A.V. Mintsev, E.E. Novitskaya, L.V. Butov, L.S. Levitov, B.D. Simmons, and A.C. Gossard. Spontaneous coherence, interaction and kinetics of macroscopically ordered exciton state. Fundamental Optical Processes in Semiconductors 3 (2007).

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