Suvranta Kumar Tripathy

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EDUCATION

Dec. 2006 **PhD, Experimental Condensed Matter Physics**, University of Cincinnati
Advisor: Prof. Hans-Peter Wagner

Sept. 2015 Teaching Certificate Course, Center of Teaching and Learning, University of Pennsylvania

2014 – 2017 Postdoctoral Fellow, Department of Physiology, University of Pennsylvania

2009 – 2013 Assistant Project Scientist, Department of Physics and Department of Developmental and Cell Biology, University of California Irvine

2006 – 2009 Research Associate**,** Department of Electrical and Computer Engineering, Lehigh University

PROFESSIONAL EXPERIENCE

Teaching

2015 – 2018 **Adjunct Teaching Faculty, Drexel University**

2000 – 2006 **Teaching Assistant, University of Cincinnati**

Research

2014 – 2017 **Postdoctoral Fellow, Department of Physiology, University of Pennsylvania**
Studying the load-dependent interactions between microtubule and its associated proteins involved in mitosis phase of cell division using single molecule biophysical techniques of optical tweezers and fluorescence.

2009 – 2013 **Assistant Project Scientist, Department of Physics and Department of Developmental and Cell Biology, University of California Irvine**
Investigated the mechanical regulation of molecular motors involved in cellular long-distance transportation system using single molecule biophysical techniques of optical tweezers.

2006 – 2009 **Research Associate, Department of Electrical and Computer Engineering, Lehigh University**
Studied the heating effects due to the generation of longitudinal optic (LO) phonons at very high voltages in GaN based heterostructures and high electron

mobility transistors using pump-probe Raman scattering with femtosecond pulses.

2003 – 2006 **Research Assistant, Department of Physics, University of Cincinnati**
Investigated the coherent phenomena of excitons in ZnSe single quantum wells using four-wave mixing techniques with femtosecond pulses. The study led to understanding the formation of new quasi-particle state of exciton-phonon, an all optical phase coherent photorefractive effect, and study of quantum kinetics.

PUBLICATIONS (PEER REVIEWED JOURNALS)

1. Heterogeneity in kinesin function; Babu JN Reddy, ***Suvranta Tripathy***, Michael Vershinin, Marvin Tanenbaum, Jing Xu, Michelle Mattson-Hoss, Karim Arabi, Dail Chapman, Tory Doolin, Changbong Hyeon, Steven P Gross; **Traffic**. 2017; 18:658–671
2. CENP-E Drives Polar Chromosome Congression by Moving on Detyrosinated Microtubules; Marin Barisic, Ricardo Silva e Sousa*, ***Suvranta K. Tripathy***, Maria M. Magiera*, Anatoly Zaytsev, Carsten Janke, Ekaterina L. Grishchuk, and Helder Maiato, **Science**, Vol. 348 no. 6236 pp. 799-803 (2015) (*Equal contribution).
3. Autoregulatory Mechanism for Dynactin Control of Processive and Diffusive Dynein Transport; ***Suvranta K. Tripathy***, Sarah J. Weil*, Chen Chen, Preetha Anand, Richard B. Vallee, and Steven P. Gross, **Nature Cell Biology**, 16, 1192–1201 (2014) (*Equal contribution).
4. Calibration of Optical Tweezers for in Vivo Force Measurements: How do Different Approaches Compare? Y Jun, ***SK Tripathy***, BRJ Narayanareddy, MK Mattson-Hoss, SP Gross, **Biophysical journal** 107 (6), 1474-1484 (2014).
5. Isolation and Purification of Kinesin from Drosophila Embryos; R. Sigua, ***S. Tripathy***, P. Anand+†, and S.P. Gross+†; J. Vis. Exp. (62), e3501, DOI: 10.3791/3501 (2012).
6. Casein kinase 2 reverses tail-independent inactivation of kinesin-1; J. Xu, B.J. Reddy, P. Anand, Z. Shu, S. Cermelli, M.K. Mattson, ***S.K. Tripathy***, M.T. Hoss, N.S. James, S.J. King, L. Huang, L. Bardwell, S.P. Gross; **Nature Communications 3**, Article 754, (2012).
7. Mechanical Stochastic Tug-of-war Models Cannot Explain Bi-directional Lipid Droplet Transport; Ambarish Kunwar*, ***Suvranta K. Tripathy***, Jing Xu, Michelle K. Mattson, Preetha Anand, Roby Sigua, Michael Vershinin, Richard J. McKenney, Clare C. Yu, Alex Mogilner and Steven P. Gross, **PNAS**, Vol. 108, 472011 (2011) (*Equal contribution).
8. Anti-Stokes photoluminescence from n-type free-standing GaN at room temperature based on competition between phonon-assisted and two-photon absorption; ***Suvranta K Tripathy***, Yujie J Ding, Jacob B. Khurgin; Semicond. Sci. Technol. 24, 055010 (2009).
9. Phonon Assisted Ultraviolet Anti-Stokes Photoluminescence in GaN grown on Si (111); ***Suvranta K. Tripathy***, Guibao Xu, Xiaodong Mu, Yujie J. Ding, Mohamed Jamil, Ronald A. Arif, and Nelson Tansu, and Jacob B. Khurgin; **Appl. Phys. Lett**. 93, 201107 (2008).
10. Investigation of hot phonons induced by electric fields in a GaN/AlN heterostructure based on first-order and second-order resonant Raman scattering; Guibao Xu, ***Suvranta K. Tripathy***, Xiaodong Mu, and Yujie J. Ding, Kejia Wang, Cao Yu, and Debdeep Jena, Jacob B. Khurgin, Appl. Phy. Lett. 93, p.051912 (2008).

11. Evidence of Hot Electrons Drifting in an AlN/GaN High-Electron-Mobility Transistor; ***Suvranta. K Tripathy***, G Xu, X Mu, Y. J. Ding, K. Wang, D. Jena, Appl. Phy. Lett. 92, p.013513 (2008).
12. Coherent exciton-LO-phonon polarons in ZnSe quantum wells with strong confinement; ***S. Tripathy***, H. P. Wagner, A. Ueta, D. Hommel; Phys. Rev. B v 75, p.245316 (2007).
13. Spectral and thermal dependence of phase coherent photorefractivity in ZnSe quantum wells; H. P. Wagner, ***S. Tripathy***, H. P. Tranitz; Phys. Rev. B v 73, p.085318 (2006).
14. Phase Coherent Photorefractivity in ZnSe Single Quantum Wells; H. P. Wagner, ***S. Tripathy***, H. P. Tranitz, W. Langbein, **Phys. Rev. Lett**, v 94, p.147402 (2005).
15. Dephasing of coherences between σ+ and σ- exciton states in a ZnSe single quantum well; H. P. Wagner, ***S. Tripathy***; Phys. Rev. B v 69, Issue 12, p.125325-125325 (2004).
16. Dephasing of interacting σ+ and σ- excitons in a ZnSe single quantum well; H.P. Wagner, ***S. Tripathy***; Physica Status Solidi B v 241 p.583-6 (2004).

INVITED SEMINAR PRESENTATIONS

2013 "Active Intracellular Transport: how do you tune a nano-machine's function?", Department of Physics, University of Cincinnati

2012 "Molecular Motor Based Transport; How Important Are Tug-of-Wars?", Department of Physics, University of California, Merced

ORAL AND POSTER PRESENTATIONS IN CONFERENCES

1. Ndc80 complex as an intrinsic regulator of molecular friction at mitotic kinetochores. V.M. Demidov, ***S.K. Tripathy***, F.I. Ataullakhanov, E.L. Grishchuk; ASCB (Dec, 2017).
2. Motility of Kinetochore Kinesin CENP-E is Enhanced by Tubulin Detyrosination; ***Suvranta K. Tripathy***, Ricardo Silva e Sousa, Maria M. Magiera, Anatoly V. Zaytsev, Marin Barisic, Helder Maiato, Carsten Janke, Ekaterina L. Grishchuk; Biophysical Society (2015).
3. CENP-E kinesin exhibits enhanced motility on detyrosinated microtubules; R. Silva e Sousa, ***S. K. Tripathy***, M.M. Magiera, A.V. Zaytsev, M. Barisic, H. Maiato, C. Janke, E. L. Grishchuk; ASCB (2014).
4. Molecular Mechanism for Dynactin Regulation of Processive and Diffusive Dynein Transport; ***S. K. Tripathy***, S.J. Weil, C. Chen, S. Gross, R. Vallee; ASCB (2014).
5. The Dynein Binding Site of Dynactin Promotes Dynein Processivity through an Allosteric Mechanism, ***Suvranta Tripathy***, Sarah Weil, Steven P. Gross and Richard B. Vallee; ASCB (2013).
6. Detachment Kinetics of Single Kinesin and Dynein; ***Suvranta K. Tripathy***, Jing Xu, Michelle K. Mattson, Preetha Anand, Roby Sigua, Michael Vershinin, Richard J. McKenney, Clare C. Yu, Steven P. Gross; Biophysical Society (2012).
7. Observation of Anti-Stokes Fluorescence from GaN Film Grown on Si (111) Substrate; ***Suvranta K. Tripathy***, Guibao Xu, Xiaodong Mu, Yujie J. Ding, Muhammad Jamil, Ronald A. Arif, Nelson Tansu, and Jacob B. Khurgin; CLEO/QELS Conference, Baltimore, MD, May (2009).
8. Resonant Raman scattering of coherent picosecond pulses by one and two longitudinal-optical phonons in GaN film grown on silicon (111) substrate; ***Suvranta K. Tripathy***, Guibao

Xu, Xiaodong Mu, Yujie J. Ding, Muhammad Jamil, Ronald A. Arif, Nelson Tansu; CLEO/QELS Conference, San Jose, CA, May (2008).

9. Anti-stokes Raman scattering of photoluminescence phonon replica in GaN heterostructures: an effective technique for probing hot phonons; ***Suvranta K. Tripathy***, Guibao Xu, Xiaodong Mu, Yujie J. Ding, K. Wang, D. Jena, J. B. Khurgin; CLEO/QELS Conference, Baltimore, MD, May (2007).
10. Observation of a coherent exciton-LO phonon resonance in a ZnSe single quantum well; ***S. Tripathy***, P. Bajracharya, H. P. Wagner, A. Ueta, D. Hommel; APS March Meeting, Baltimore, MD, (2006).
11. Phase coherent photorefractivity in ZnSe quantum wells; ***S. Tripathy***, P. Bajracharya, H. P. Wagner; Ohio Nanotechnology Summit 2006, Columbus, Ohio, USA, (2006).
12. Phase Coherent Photorefractivity in ZnSe Single Quantum Wells; ***S. Tripathy***, H. P. Wagner, H. P. Tranitz, W. Langbein; APS March Meeting, Los Angeles, CA, (2005).
13. Photorefractive Effect in Znse/ZnMgSe Quantum Wells; ***S. Tripathy***, H. P. Wagner; APS March meeting, Montreal, Quebec, Canada, (2004).
14. Dephasing of interacting excitons in a ZnSe quantum well; ***S. Tripathy***, H. P. Wagner; APS March meeting, Austin, Texas, (2003).

CONFERENCE PROCEEDINGS

1. Photoluminescence emission in deep ultraviolet region from GaN/AlN asymmetric-coupled quantum wells; Guan Sun; ***Tripathy, S.K***.; Ding, Y.J.; Liu, Guangyu; Huang, G.S.; Hongping Zhao; Tansu, N.; Khurgin, J.B; CLEO and QELS, vol., no., pp.1,2, 16-21 (2010).
2. Photoluminescence Quenching Due to Relocation of Electrons in GaN/AlN Asymmetric-Coupled Quantum Wells; Guan Sun, ***Suvranta K. Tripathy***, Yujie J. Ding, Guangyu Liu, Hongping Zhao, G. S. Huang, Nelson Tansu, and Jacob B. Khurgin; CLEO and QELS, vol., no., pp.1,2, 16-21 May (2010).
3. Anti-Stokes photoluminescence in GaN single crystals and heterostructures; ***Suvranta K Tripathy***, Yujie J Ding, Jacob B. Khurgin; Proc. SPIE, Vol. 7228, 722807 (2009).
4. Investigation of hot electrons generated from AIN/GaN-based high electron mobility transistor; ***Suvranta K. Tripathy***, Guibao Xu, Xiaodong Mu, Yujie J. Ding, Kejia Wang, Yu Cao, Debdeep Jena, and Jacob B. Khurgin; Proc. SPIE 6892, 689208 (2008).
5. Hot and cold phonons induced by electric field and resonant Raman scattering in GaN/AlN triangular quantum well; Guibao Xu, ***Tripathy, S.K.***, Xiaodong Mu; Ding, Y.J.; Wang, Kejia (Albert); Cao Yu; Jena, D.; Khurgin, J.B.; Lasers and Electro-Optics (2008).
6. Phase Coherent Photorefractive Effect in ZnSe Quantum Wells Using Ultrashort Pulses; ***S. Tripathy***, P. Bajracharya, H. P. Wagner; AIP Conf. Proc. 893, p.1459 (2007).
7. Dephasing of Excitons in ZnSe Quantum Wells Using Ultrashort Excitation Pulses; ***S. Tripathy***, P. Bajracharya, A. Kabir, H. P. Wagner; AIP Conf. Proc. 893, p.419 (2007).
8. Exciton Associated Photorefractive Effect in ZnMgSe/ZnSe Quantum Wells; H. P. Wagner, H.-P. Tranitz, and ***S. Tripathy***, AIP Conf. Proc. 772, 1244 (2005).

AWARDS

2004 University Research Summer Fellowship (URC), University of Cincinnati

2003 University Research Summer Fellowship (URC), University of Cincinnati

1997 State wise Third Position in Bachelor of Science, with Distinction, Odisha, India

1997 – 1999 Odisha State Government Scholarship for Higher Education, India

PROFESSIONAL AFFILIATIONS

1. Biophysical Society
2. American Society of Cell Biology (ASCB)
3. The Conference on Lasers and Electro-Optics (CLEO)
4. Optical Society of America (OSA)
5. American Physical Society (APS)