

CINT publications - 2007

Y. Yoon, L. Mourokh, T. Morimoto, N. Aoki, Y. Ochiai, J. L. Reno, and J. P. Bird, "Probing the microscopic structure of bound states in quantum point contacts", *Phys. Rev. Lett.* **99**, 136805 (2007)

J.-U. Bae, T.-Y. Lin, Y. Yoon, S. J. Kim, J. P. Bird, A. Imre, W. Porod, and J. L. Reno, "Large hysteretic magneto-resistance in high-mobility semiconductor quantum wires bridged by single-domain nanomagnets", *Appl. Phys. Lett.* **91**, 022105 (2007)

A. Ramamoorthy, J. P. Bird, and J. L. Reno, "Using split-gate structures to explore the implementation of a coupled-electron-waveguide qubit scheme", *J. Phys.: Condens. Matter* **19**, 276205 (2007).

B. Naser, D. K. Ferry, J. Heeren, J. L. Reno, and J. P. Bird, "Pulsed measurements of the non-linear conductance of quantum point contacts", *Appl. Phys. Lett.* **90**, 043103 (2007)

A. Ramamoorthy, J. P. Bird, and J. L. Reno, "Quantum asymmetry of switching in laterally-coupled quantum wires with tunable coupling strength", *Appl. Phys. Lett.* **89**, 153128 (2006)

N. A. Kabir, Y. Yoon, J. R. Knab, J.-Y. Chen, A. G. Markelz, J. L. Reno, Y. Sadofyev, S. Johnson and Y.-H. Zhang, and J. P. Bird, "Terahertz transmission characteristics of high-mobility GaAs and InAs two-dimensional-electron-gas systems", *Appl. Phys. Lett.* **89**, 132109 (2006)

B. Naser, D. K. Ferry, J. Heeren, J. L. Reno, and J. P. Bird, "*Large capacitance in the nanosecond-scale transient response of quantum point contacts*", *Appl. Phys. Lett.* **89**, 083103 (2006)

A. Ramamoorthy, J. P. Bird, and J. L. Reno, "*Switching characteristics of coupled quantum wires with tunable coupling strength*", *Appl. Phys. Lett.* **89**, 013118 (2006)

Spectroscopic Near-Field Imaging of Flat Gold nanoparticles, L.A. Bumm, M. Achermann, D.H. Dahanayaka, K.L. Shuford, G.C. Schatz, V.I. Klimov, APS, Batimore, MD (13-17 Mar 2006).

Matthew Spletzer, Arvind Raman, Hartono Sumali, and John Sullivan, "Highly sensitive mass detection and identification using vibration localization in large arrays of weakly coupled microcantilevers", Submitted to *Appl. Phys. Lett.*, 2007.

H. Wang, R. Araujo J.G. Swadener, Yongqiang Wang, X. Zhang, E. G. Fu and T. Cagin *Ion Irradiation Effects in Nanocrystalline TiN Coatings*, *Nuclear Instruments and Methods in Physics Research B*, **261**, 1162 (2007).

W. Li, K.L. Kavanagh, A. A. Talin, J. W. P. Hsu. "Ballistic Electron Emission Microscopy Studies of Au/Molecule/n-GaAs Diodes" *J. Appl. Phys.* **102** (2007) 013703.

J. Demsar., A. Gozar, V. K. Thorsmølle, A. J. Taylor, and I. Bozovic, Long-lived near-infrared photoinduced absorption in LaSrAlO₄ excited with visible light, *PHYSICAL REVIEW B* **76**, 054304 2007

Michael Norton, B. Scott Day, Huan Cao, Mashiur Rahman and Aaron Gin, "Arrays of Nanoarrays: Elements of Binding", *IEEE Sensors Special Issue: Nanosensors for Defense & Security* 2007.

Mashiur Rahman, B. Scott Day, Huan Cao, Aaron Gin, Michael L. Norton, " Fabrication of gold dots for DNA-based nanosensors", Invited paper, *Nanosensing: Materials, Devices, and Systems III, Optics East, 6769-14, Vol. 6769, Proceedings of SPIE* 2007

Michael L. Norton, Mashiur Rahman, B. Scott Day, Chad Huffman, Huan Cao, David Neff, Heather Butts, Aaron Gin, "Recent advances in molecular lithography", Invited paper, *Nanosensing: Materials, Devices, and Systems III, Optics East, 6769-14, Vol. 6769, Proceedings of SPIE* 2007

Jessica E. Bickel¹, Normand A. Modine², Anton Van der Ven¹, Joanna Mirecki Millunchick. Atomic Size Mismatch Strain Induced Surface Reconstructions. Submitted to *Applied Physics Letters*, 2007.

M.H. Huang, H.M. Soyez, B. Dunn, J.I. Zink, A. Sellinger and C.J. Brinker, "In-situ fluorescence probing of the chemical and structural changes during formation of cetyltrimethylammonium bromide (CTAB) mesostructured systems" (in preparation).

Sushil Kumar, B. S. Williams, Q. Qin, A. W. M. Lee, Q. Hu, and J. L. Reno, "Surface-emitting distributed feedback terahertz quantum-cascade lasers in metal-metal waveguides," *Optics Express*, **15**, 113-128 (2007).

Alan Wei Min Lee, Qi Qin, Sushil Kumar, Benjamin S. Williams, Qing Hu, John L. Reno, "High-power and high-temperature THz quantum-cascade lasers based on lens-coupled metal-metal waveguides", *Optics Letters*, **32**, 2840 (2007).

X. Zhang, R.G. Hoagland, A. Misra, *et al.*, "High-strength sputter-deposited Cu foils with preferred orientation of nanoscale growth twins", *Applied Physics Letters*, v. 88, p. 173116-1-3 (2006).

X. Zhang, O. Anderoglu, A. Misra, *et al.*, "Influence of Deposition Rate on the Formation of Growth Twins in Sputter-deposited 330 Austenitic Stainless Steel Films", *Applied Physics Letters*, v. 90, p. 153101 (2007).

X. Zhang, A. Misra, M.F. Hundley, R.G. Hoagland, *et al.*, "Thermal Stability of Sputter-deposited 330 Austenitic Stainless Steel Thin Films with Nanoscale Growth Twins", *Applied Physics Letters*, v. 87 p. 233116-1-3 (2005).

X. Zhang, A. Misra, M. F. Hundley, R. G. Hoagland, *et al.*, "Effects of Deposition Parameters on Residual Stresses, Hardness and Electrical Resistivity of Nanoscale Twinned 330 Stainless Steel Thin Films", *Journal of Applied Physics*, v. 97, p. 094302 (2005).

O. Anderoglu, X. Zhang and A. Misra, "Influence of Annealing on the Microstructures and Mechanical Properties of Nanotwinned Cu", submitted to *Acta Materialia*.

E. Nazaretski, R. Movshovich, T. Mewes, D. V. Pelekhov and P. C. Hammel. Low temperature magnetic resonance force microscope: design and performance. AIP conference proceedings, 850, 1641 (2006)

E. Nazaretski, J.D Thompson, R. Movshovich, M. Zalalutdinov, J. W. Baldwin, B. Houston, T. Mewes, D. V. Pelekhov, P. Wigen, J. Kim and P. C. Hammel. Magnetic resonance force microscopy studies in a thin permalloy film. *Journal of Magnetism and Magnetic Materials* 310, e941 (2007)

E. Nazaretski, J.D Thompson, R. Movshovich, M. Zalalutdinov, J. W. Baldwin, B. Houston, T. Mewes, D. V. Pelekhov, P. Wigen and P. C. Hammel. Temperature-dependent Magnetic Resonance Force Microscopy studies of a thin Permalloy film. *Journal of Applied Physics*, 101, 074905 (2007)

Evan J. Reed, Michael R. Armstrong, Ki-Yong Kim, James H. Glowia, Atomic-scale time and space resolution of THz frequency acoustic waves, In Press *Physical Review Letters*, 2007.

E. J. Reed, M. R. Armstrong, K. Kim, M. Soljagic, R. Gee, J. H. Glowia, J. D. Joannopoulos, "Nonlinear strain and shock wave sources of THz and optical frequency radiation," invited article in *Materials Today* magazine 10, 44 (2007).

Wang, H.; Araujo, R.; Swadener, JG; Wang, YQ; Zhang, X.; Fu, EG; Cagin, T, "Ion Irradiation Effects in Nanocrystalline TiN Coatings," *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*; 2007; v.261, p.1162-1166.

Zhang, X.; Li, Nan; Anderoglu, O.; Wang, H.; Swadener, JG; Hochbauer, T.; Misra, A.; Hoagland, RG, "Nanostructured Cu/Nb multilayers subjected to helium ion-irradiation," *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*; August 2007; v.261, p.1129-1132.

J. J. Glennon, D. A. Bussian, H. Htoon, V. I. Klimov, R. Tang, W. E. Buhro and R. A. Loomis, Localization and migration of 1D exciton in CdSe nanowires, in preparation for *Physical Review Letters*, 2007.

J. Tatebayashi, A. Khoshakhlagh, S. H. Huang, G. Balakrishnan, L.R Dawson, D. L. Huffaker, D. A. Bussian, H. Htoon, V. I. Klimov, Lasing characteristics of GaSb/GaAs self-assembled quantum dots embedded in an InGaAs quantum well, *Appl. Phys. Lett.* 90. 26115 (2007)

J. Werner, G. Montañó, A. Zurek, E. Akhadov, Garcia, G. Lopez, and A. Shreve, "Formation and characterization of supported phospholipid membranes on a periodic nanotextured substrate", in preparation.

H. Fehske and S. A. Trugman, "Numerical solution of the Holstein polaron problem," book chapter in *Polarons in Advanced Materials*, ed. A. Alexandrov (2007), cond-mat/0611020.

D. Talbayev, S. A. Trugman, A. V. Balatsky, A. J. Taylor, and R. D. Averitt, "Detection of coherent magnons via transient reflectance in $\text{Ba}_{0.6}\text{Sr}_{1.4}\text{Zn}_2\text{Fe}_{12}\text{O}_{22}$," preprint, 2007.

A. A. Garcia, A. Egatz-Gomez, S. A. Lindsay, S. Melle, M. Marquez, P. Domínguez-García, M. A. Rubio, S. T. Picraux, D. Yang, P. Aella, M. A. Hayes, D. Gust, S. Loyprasert, T. Vazquez-Alvarez, J. Wang, J. Magnetic Movement of Biological, *Magnetism and Magnetic Materials* 311, 238-243 (2007).

Ana Egatz-Gómez, John Schneider, P. Aella, D. Yang, P. Domínguez-García, Solitaire Lindsay, S. T. Picraux, Miguel A. Rubio, Sonia Melle^{1,5}, Manuel Marquez^{1,6}, Antonio A. García, Silicon nanowire and polyethylene superhydrophobic surfaces for discrete magnetic microfluidics, *Appl. Surface Science* [Proceedings of the 13th ICSFS] (in press)

P. Aella, S. Ingole, W. T. Petuskey, S.T. Picraux, Influence of plasma stimulation of Si nanowire nucleation and orientation dependence, *Adv. Matls.* 19, 2603-2607 (2007) Also the Cover Picture for Adv. Matls for Sept. 2007.

S. Ingole, P. Aella, Sean J. Hearne, S.T. Picraux, Self assembly of nanowire-metal contacts using electrodeposition, *Appl. Phys. Lett.* 91, 33106 (2007). Also the Cover Picture for APL 16 July 2007 issue

D. Yang, M. Piech, N.S. Bell, D. Gust, S. Vail, A.A. Garcia, J. Schneider, C-D Park, M.A. Hayes, S.T. Picraux, Photon control of liquid motion on reversibly photoresponsive surfaces, *Langmuir* 23, 10864-10872 (2007).

M. Achermann, K. L. Shuford, G. C. Schatz, D. H. Dahanayaka, L. A. Bumm, V. I. Klimov, Near-field spectroscopy of surface plasmons in flat gold nanoparticles, *Opt. Lett.* 32, 2254 (2007).

J. Tatebayashi, A. Khoshakhlagh, S. H. Huang, G. Balakrishnan, L.R Dawson, D. L. Huffaker, D. A. Bussian, H. Htoon, V. I. Klimov, Lasing characteristics of GaSb/GaAs self-assembled quantum dots embedded in an InGaAs quantum well *Appl. Phys. Lett.* 90, 26115 (2007).

V. I. Rupasov and V. I. Klimov, Carrier multiplication in nanocrystals via photostimulated generation of biexcitons from vacuum, *Phys. Rev. B* 76, 125321 (2007)

R. P. Prasankumar, R. S. Attaluri, R. D. Averitt, A. Stintz, S. Krishna, and A. J. Taylor, „Ultrafast carrier dynamics in an InAs/InGaAs quantum-dots-in-a-well mid-infrared photodetector,“ presented at *Ultrafast Optics*, 2007

- R. P. Prasankumar, R. S. Attaluri, R. D. Averitt, A. Stintz, S. Krishna, and A. J. Taylor, „Ultrafast carrier dynamics in an InAs/InGaAs quantum-dots-in-a-well mid-infrared photodetector," presented at the *Conference on Lasers and Electro-Optics*, 2007
- H-T. Chen, J.F. O'Hara, A. J. Taylor, R. D. Averitt, C. Highstrete, Mark Lee, and W.J. Padilla, "Complementary planar, terahertz materials," *Opt. Express* 15, 1084 (2007).
- J. F. O'Hara, E. Smirnova, H.-T. Chen, A.J. Taylor, R. D. Averitt, C. Highstrete, M. Lee, W. J. Padilla, "Properties of Planar electric metamaterials for novel terahertz applications," *Journal of Nanoelectronics and Optoelectronics* 2, 90 (2007).
- W.J. Padilla, M. T. Aronsson, C. Highstrete, Mark Lee, A.J. Taylor, and R.D. Averitt, "Novel electrically resonant terahertz metamaterials: Theoretical and experimental investigations," *Phys. Rev. B* 75, 041102R (2007).
- H. -T. Chen, W. J. Padilla, J.M.O. Zide, S.R. Bank A.C. Gossard, A.J. Taylor, and R.D. Averitt, "Ultrafast optical switching of terahertz metamaterials fabricated on ErAs/GaAs nanoisland superlattices," *Opt. Lett.* 32, 1620 (2007).
- S. Kilina, S. Tretiak, D. Yarotski, J.X. Zhu, N. Modine, A.J. Taylor and A. Balatsky, "Electronic Properties of DNA base molecules adsorbed on a metallic surface", *Journal of Physical Chemistry* (2007), in press.
- J. F. O'Hara, A.K. Azad, H.T. Chen, A.J. Taylor, and E. Smirnova, "Effects of microstructure variations on macroscopic terahertz metafilm properties," *Active and Passive Electronic Components* (2007), in press.
- A. K. Azad, A. J. Taylor, E. Smirnova, J. F. O'Hara, "Characterization and analysis of terahertz metamaterials based on rectangular split-ring resonators," *Appl. Phys. Lett.* (2007), in press.
- J.K.Lee, T.A. Harriman, D.A. Lucca, H.S. Jung, D.B. Ryan, M. Nastasi, Dynamic recovery and optical properties changes in He-implanted ZnO nanoparticles, *Nucl. Instr. Meth. B* **257** (2007) 71.
- L.G. Jacobsohn, J.D. Thompson, R.M. Dickerson, M. Nastasi, Magnetic properties of cobalt nanoparticles obtained by ion implantation into amorphous silica, *Nucl. Instr. Meth. B* **257** (2007) 447.
- J.K. Lee, M.F. Hundley, J.D. Thompson, R.K. Schulze, H.S. Jung, J.A.Valdez, M. Nastasi, X. Zhang, Magnetic anisotropy study of ion-beam synthesized cobalt nanocrystals, *Appl. Phys. Lett.* **89** (2006) 182502
- M. M. Qazilbash, M. Brehm, B. G. Chae, P.-C. Ho, G. O. Andreev, B. J. Kim, S. J. Yun, A. V. Balatsky, M. B. Maple, F. Keilmann, H. T. Kim, D. N. Basov, Mott transition in VO₂ revealed by infrared spectroscopy and nano-imaging, *Science*, Dec 14 2007 issue, to be published

T. Wehling, *et al*, Impurity States in Graphene, *PRB* 75 125425 (2007)

A. M. Dattelbaum, R. K. Hicks, J. Shelly, A. T. Koppisch and S. Iyer, Surface assisted laser desorption-ionization mass spectrometry on nanoporous silica thin films. *Microporous Mesoporous Mater.*, submitted.

A. S. Anderson, A. M. Dattelbaum, G. A. Montaña, J. G. Schmidt, J. S. Martinez, W. K. Grace, K. M. Grace and B. I. Swanson, Biocompatible thin films with minimal non-specific binding for waveguide-based assays. Functionalized waveguides for biological assays. *Langmuir*, 2007, in press.

Pietryga, Jeffrey; Werder, Donald; Williams, Darrick; Casson, Joanna; Schaller, Richard; Klimov, Victor; Hollingsworth, Jennifer; Utilizing the lability of lead selenide to produce heterostructured nanocrystals with bright, stable infrared emission, submitted to *J. Am. Chem. Soc.* as a Full Article on Nov. 19, 2007.

Vela, Javier; Prall, Bradley; Werder, Donald; Casson, Joanna; Williams, Darrick; Klimov, Victor; Hollingsworth, Jennifer; Sensitization and Protection of Lanthanide Ion Emission in In₂O₃:Eu Nanocrystals, submitted to *J. Am. Chem. Soc.* as a Communication on Nov. 30, 2007.

Javier Vela and Jennifer Hollingsworth; Semiconductor Nanocrystals: Doped Compositions, submitted to the *Encyclopedia of Inorganic Chemistry* on Nov. 15, 2007 for publication in the EIC Book "Nanomaterials: Inorganic and Bioinorganic Perspectives."

Barhorst, A.A., Harrison, O.P., and Bachand, G.D. (2007). Modeling elasto-mechanical phenomena involved in motor-driven assembly of nanomaterials. *Proceedings of IDETC 2007, American Society of Mechanical Engineers International Design Engineering Technical Conference (in press)*.

W. -J. Li, K. L. Kavanagh, A. A. Talin, W. M. Clift, C. M. Matzke, and J. W. P. Hsu, "Ballistic Electron and Photocurrent Transport in Au-molecular layer-GaAs Diodes" *J. Appl. Phys.* 102, 013703 (2007)

Flint Pierce, Mesfin Tsige, Oleg Borodin, Dvora Perahia, and Gary S. Grest, Interfacial Properties of Semifluorinated Alkanes via Atomistic Simulation, submitted to *Journal of Chemical Physics*, 2007

Mesfin Tsige and Gary S. Grest, Surface tension and surface activity of perfluorinated alkanes, submitted to *Journal of Physical Chemistry* (2007).

B. Medasani, Y. H. Park, and I. Vasiliev, "Theoretical Study of the Surface Energy, Stress, and Lattice Contraction of Silver Nanoparticles", *Phys. Rev. B* 75, 235436 (2007).

Lee, A. W. M., Q. Qin, S. Kumar, B. S. Williams, Q. Hu, J. L. Reno, *Real-Time Terahertz Imaging over a Standoff Distance (>25 Meters)*, *Applied Physics Letters*, submitted 8/06.

Ramamoorthy, A., J. P. Bird, J. L. Reno, *Quantum vs. Classical Switching in Laterally-Coupled Quantum Wires with Tunable Inter-Wire Coupling*, Applied Physics Letters, submitted 8/06.

Naser, B., D. K. Ferry, J. Heeren, J. L. Reno, J. P. Bird, *Non-Linear Conductance of Quantum Point Contacts Studied with Nanosecond-Scale Transient Pulses*, Applied Physics Letters, submitted 9/06.

Kumar, S., B. S. Williams, Q. Qin, A. W. M Lee, Q. Hu, J. L. Reno, *Surface-Emitting Distributed Feedback Terahertz Quantum-Cascade Lasers in Metal-Metal Waveguides Operating up to 149 K*, Optics Express, submitted 10/06.

Bae, J. U., T. Y. Lin, Y. Yoon, S. J. Kim & J. P. Bird, A. Imre & W. Porod, J. L. Reno, Large hysteretic magneto-resistance in high-mobility semiconductor quantum wires bridged by single-domain nanomagnets, *Applied Physics Letters*, submitted 5/07.

Yoon, Y., L. Mourokh, T. Morimoto, N. Aoki, Y. Ochiai, J. L. Reno, J. P. Bird, *Quantum point contacts: a naturally-formed single-spin system*, Nature, submitted 3/07.

Bae, J. U., T. Y. Lin, Y. Yoon, S. J. Kim, J. P. Bird, A. Imre, W. Porod, J. L. Reno, Characterization of Nanomagnet Fringing Fields in Hybrid Semiconductor/Ferromagnetic Devices, *IEEE Transactions on Magnetism*, submitted 6/07.

Yoon, Y., L. Mourokh, T. Morimoto, N. Aoki, Y. Ochiai, J. L. Reno, J. P. Bird, Interacting Localized Spins on Closely-Coupled Quantum Point Contacts, *Physical Review Letters*, submitted 7/07.

Hu, Q., B. S. Williams, S. Kumar, A. W. M. Lee, Q. Qin, J. L. Reno, H. C. Liu, Z. R. Wasilewski, *Terahertz Quantum Cascade Lasers and Real-Time T-Rays Imaging*, Proceedings of the 2006 Advanced Research Workshop on Future Trends in Microelectronics: Up the Nano Creek, 6/26-30/06, Crete, Greece.

Naser, B., D. K. Ferry, J. Heeren, J. L. Reno, J. P. Bird, *Investigations of the Non-Linear Transient Response of Quantum Point Contacts Using Pulsed Excitation with Sub-Nanosecond Time Resolution*, Proceedings of the International Seminar and Workshop on Quantum Coherence, Noise and Decoherence in Nanostructures, 5/15-26/06, Dresden, Germany.

Williams, B. S., Q. Qin, S. Kumar, Q. Hu, J. L. Reno, *High-Temperature and High-Power Terahertz Quantum-Cascade Lasers*, Proceedings of Photonics West Conference, 1/22-26/07, San Jose, CA.

Naser, B., D. K. Ferry, J. Heeren, J. L. Reno, J. P. Bird, *Investigations of the Non-Linear Transient Response of Quantum Point Contacts Using Pulsed Excitation with Sub-Nanosecond Time Resolution*, Proceedings of The 15th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors, 7/23-27/07, Tokyo, Japan.

Laroche, D., E. S. Bielejec, J. L. Reno, G. Gervais, M. P. Lilly, *Towards Coulomb Drag in Vertically Coupled Quantum Wires with Independent Contacts*, Proceedings of The 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-17), 7/15-20/07, Genova, Italy.

Buset, J. M., A. H. Mack, D. Laroche, C. R. Dean, M. P. Lilly, J. L. Reno, G. Gervais, *Towards Optical Manipulation and Resistive Readout of the GaAs Nuclear Spins*, Proceedings of The 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-17), 7/15-20/07, Genova, Italy.

S. Tretiak, S. Kilina, A. Piryatinski, A. Saxena, R.L. Martin and A.R. Bishop, Excitons and Peierls distortion in conjugated carbon nanotubes, *Nano Letters*, **7**, 86 - 92 (2007).

A. Piryatinski, S.A. Ivanov, S. Tretiak, and V.I. Klimov, Effect of Quantum and Dielectric Confinement on the Exciton-Exciton Interaction Energy in Type-II Core/Shell Semiconductor Nanocrystals, *Nano Letters*, **7**, 108 - 115 (2007).

C. Wu, S. Tretiak, and V. Chernyak, Excited states and optical response of a donor-acceptor substituted polyene: a TD-DFT study, *Chem. Phys. Lett.*, **433**, 305 - 311 (2007).

A.P. Shreve, E.H. Haroz, S.M. Bachilo, R.B. Weisman, S. Tretiak, S. Kilina, and S.K. Doorn, Determination of Exciton-Phonon Coupling Elements in Single-Walled Carbon Nanotubes by Raman Overtone Analysis, *Phys. Rev. Lett.*, **98**, 037405 (2007).

P.T. Araujo, S.K. Doorn, S. Kilina, S. Tretiak, S. Maruyama, H. Chacham, M.A. Pimenta and A. Jorio, Study of the third and fourth optical levels in carbon nanotubes, *Phys. Rev. Lett.*, **98**, 067401 (2007).

R. J. Magyar and S. Tretiak, The implications of spurious charge-transfer in TDDFT on the accurate description of large molecules and clusters, *J. Chem. Theory and Comput.*, **3**, 976 - 987 (2007).

C. Katan, F. Terenziani, C. Droumaguet, O. Mongin, M.H.V. Werts, A. Bain, E. Badaeva, S. Tretiak, and M. Blanchard-Desce, Two-photon transitions in quadrupolar and branched chromophores: experiment and theory, *J.Phys. Chem. A*, **111**, 9468 - 9483 (2007).

G.D. Scholes, S. Tretiak, T.J. McDonald, W.K. Metzger, C. Engrakul, G. Rumbles, and M.J. Heben, Low-lying exciton states determine the photophysics of semiconducting single wall carbon nanotube, *J. Phys.Chem. C*, **111**, 11139-11149 (2007).

S.A. Ivanov, A. Piryatinski, J. Nanda, S. Tretiak, K. R. Zavadil, W. O. Wallace, D. Werder, V.I. Klimov, Type-II Core/Shell CdS/ZnSe Nanocrystals: Synthesis, Electronic Structures, and Spectroscopic Properties, *J. Am. Chem. Soc.*, **129**, 11708-11719 (2007).

K. Igumenshchev, S. Tretiak, and V. Chernyak, Excitonic effects in a time-dependent density functional theory, *J. Chem. Phys.*, **127**, 114902 (2007).

S. Kilina, S. Tretiak, D. Yarotskii, J.X. Zhu, N. Modine, A. Taylor and A.V. Balatsky, Electronic properties of DNA base molecules adsorbed on a metallic surface, *J. Phys. Chem. C* **111**, 14541-14551 (2007).

S. Kilina and S. Tretiak, Excitonic and vibrational properties of single-walled semiconducting carbon nanotubes, *Adv. Func. Mat.* Feature Article **17**, 3405-3420 (2007).

E. Badaeva and S. Tretiak, Two photon absorption of extended substituted phenylenevinylene oligomers: a TDDFT study, *Chem. Phys. Lett.* (in press).

A. Piryatinski, S. Tretiak, and V. Chernyak, Dynamical variational approach to non-adiabatic electronic structure, (submitted).

C. Wu, S. Malinin, S. Tretiak, and V. Chernyak, Multiscale Modeling of Electronic Excitations in Branched Conjugated Molecules Using Exciton Scattering Approach, (submitted).

Z. Rinkevicius, G. P. Berman, D. L. Allara, V. I. Tsifrinovich, and S. Tretiak, Characteristic parameters and dynamics of two-qubit system in self-assembled monolayers, (submitted).

K. Becker, E. Da Como, J. Feldmann, F. Scheliga, E. Thorn Csnyi, S. Tretiak, J.M. Lupton. How chromophore shape controls photophysical function in phenylene-vinylenes, (submitted).

M. Galperin and S. Tretiak, Linear optical response of current-carrying molecular junction: A NEGF-TDDFT approach, (submitted).

Presentations:

Broadband Near-Field Interference Spectroscopy of Flat Gold Nanoparticles, L.A. Bumm, M. Achermann, D.H. Dahanayaka, K.L. Shuford, G.C. Schatz, V.I. Klimov, Center for Integrated Nanotechnologies (CINT) 5th User Workshop, Albuquerque, NM, 17 Jan 2007.

Near-field spectroscopy of surface plasmons in flat gold nanoparticles, M. Achermann, K. L. Shuford, G. C. Schatz, D. H. Dahanayaka, L. A. Bumm, V. I. Klimov, *Optics Letters*, 32(15), 2254-2256 (01 Aug 2007).

Magnetic resonance force microscopy studies in a thin permalloy film' E. Naz Mewes, D. V. Pelekhov, J. Kim, P. Wigen, P. C. Hammel and R. Movshovich International Conference on magnetism, Kyoto/Japan, August 2006

Temperature-dependent Magnetic Resonance Force Microscopy studies of a thin Permalloy film' E. Nazaretski, J. D. Thompson, M. Zala Mewes, D. V. Pelekhov, P. Wigen, P. C. Hammel and R. Movshovich ICAM meeting, Santa Fe, NM November 2006

Submicron Ferromagnetic Resonance Imaging Using Scanned Probe MRFM' (invited) P. C.

Hammel, J. Kim, Yu. Oboukhov, D. V. Pelekhov, E. Nazaretski, R. Movshovich and T. Mewes
Aspen 2007 Conference on Spins in Nanostructures, Aspen, CO, January 2007

‘Micromagnetic modeling of ferromagnetic resonance in nonuniform magnetic field’ D. V. Pelekhov, I. Martin, Yu. Obukhov, J. Kim, E. Nazaretski, T. Mewes, P. Wigen, R. Movshovich and P. C. Hammel APS March Meeting, Denver, CO, March 2007

‘Magnetic resonance force microscopy of a thin permalloy film’ E. Nazaretski, I. Martin, D. V. Pelekhov, J. D. Thompson, M. Zalalutdinov, J. W. Baldwin, B. Houston, T. Mewes, P. Wigen, P. C. Hammel and R. Movshovich APS March Meeting, Denver, CO, March 2007

‘Ferromagnetic resonance force microscopy studies of a continuous permalloy film’ (invited) E. Nazaretski, D. V. Pelekhov, I. Martin, M. Zalalutdinov, J. W. Baldwin, T. Tewes, B. Houston, P. C. Hammel, and R. Movshovich Seeheim Conference on Magnetism, Frankfurt, Germany, August 2007

‘Localized Ferromagnetic Resonance Force Microscopy of a Continuous Permalloy-Cobalt Film’ E. Nazaretski, D. V. Pelekhov, I. Martin, K. C. Cha, E. A. Akhadov, P. C. Hammel, and R. Movshovich MRS Fall Meeting, Boston, November 2007

B. Medasani, Y. H. Park, and I. Vasiliev, "Ab Initio Calculations for the Surface Energy of Silver Nanoparticles", APS 2007 March Meeting (Denver, Colorado, March 5-9, 2007).

I. Vasiliev, "Theoretical Modeling of Clusters, Nanoparticles, and Quantum Dots", SPIE Photonics West, Conference OE17: Quantum Dots, Particles, and Nanoclusters V (San Jose, California, January 19-24, 2008) - invited talk.

I. Vasiliev, B. Medasani, and Y. H. Park, "Surface Stress and Energy of Metal Nanoclusters", APS 2008 March Meeting (New Orleans, Louisiana, March 10-14, 2008).

Kumar, S., B. S. Williams, Q. Qin, A. W. M. Lee, Q. Hu, J. L. Reno, *Single-Mode Surface-Emitting Terahertz Quantum-Cascade Lasers Operating up to ~ 150 K*, Conference on Lasers and Electro-Optics, 5/6-11/07, Baltimore, MD.

Lee, A. W. M., Q. Qin, S. Kumar, B. S. Williams, Q. Hu, J. L. Reno, *High-Power Metal-Metal Waveguide Terahertz Quantum-Cascade Laser with a Hyperhemispherical Lens*, Conference on Lasers and Electro-Optics, 5/6-11/07, Baltimore, MD.

Lee, A. W. M., Q. Qin, S. Kumar, B. S. Williams, Q. Hu, J. L. Reno, *Real-Time, Transmission-Mode, Terahertz Imaging Over a 25-Meter Distance*, Conference on Lasers and Electro-Optics, 5/6-11/07, Baltimore, MD.

Williams, B. S., S. Kumar, Q. Qin, A. W. M. Lee, Q. Hu, J. L. Reno, Z. R. Wasilewski, H. C. Liu, *Terahertz Quantum Cascade Lasers*, Conference on Lasers and Electro-Optics, 5/6-11/07, Baltimore, MD.

Naser, B., D. K. Ferry, J. Heeren, J. L. Reno, J. P. Bird, *Investigations of the Non-Linear Transient Response of Quantum Point Contacts Using Pulsed Excitation with Sub-Nanosecond Time Resolution*, The 15th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors, 7/23-27/07, Tokyo, Japan.

Yoon, Y., J. P. Bird, L. Mourokh, T. Morimoto, N. Aoki, Y. Ochiai, J. L. Reno, *Probing the Microscopic Structure of the Localized State in Quantum Point Contacts*, The 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-17), 7/15-20/07, Genova, Italy.

Laroche, D., E. S. Bielejec, J. L. Reno, G. Gervais, M. P. Lilly, *Towards Coulomb Drag in Vertically Coupled Quantum Wires with Independent Contacts*, The 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-17), 7/15-20/07, Genova, Italy.

Buset, J. M., A. H. Mack, D. Laroche, C. R. Dean, M. P. Lilly, J. L. Reno, G. Gervais, *Towards Optical Manipulation and Resistive Readout of the GaAs Nuclear Spins*, The 17th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS-17), 7/15-20/07, Genova, Italy.