CLEO/QELS 2008 Postdeadline Papers

Agenda of Sessions

Session	Room	Time
CPDA—CLEO Postdeadline Session I	A2	8:00 p.m.–10:00 p.m.
CPDB—CLEO Postdeadline Session II	A3	8:00 p.m.–10:00 p.m.
QPDA—QELS Postdeadline Session I	A4	8:00 p.m.–9:45 p.m.
QPDB—QELS Postdeadline Session II	A1	8:00 p.m.–10:00 p.m.

CLEO Abstracts

CPDA • CLEO Postdeadline Session I

Room: A2
8:00 p.m.–10:00 p.m.
CPDA • CLEO Postdeadline Session I
Konstantin Vodopyanov; Stanford Univ., USA, Presider

CPDA1 • 8:00 p.m.
115 J, 85% Efficiency Second Harmonic Generation in LBO, *Gabriel Mennerat[1], Jacques Rault[1], Odile Bonville[1], Philippe Canal[1], Philippe Villeval[2], Bruno Rainaud[2], Hervé Albrecht[2], Dominique Lupinski[2], A. Kokh[3], N. Kononova[3], V. Vlezko[3], K. Kokh[3], Gilles Chériaux[4], Moana Pittman[4], Jean-Paul Chambaret[4], Gérard Mourou[4]; [1]Commissariat a l'Energie Atomique, CESTA, France, [2]Cristal Laser, France, [3]Inst. of Geology and Mineralogy, Siberian Branch of Russian Acad. of Sciences, Russian Federation, [4]ENSTA, Ecole Polytechnique, Chemin de la Hunière, France.* To assess potential of LiB_3O_5 for very-high power frequency doubling, we demonstrate 115 J second-harmonic generation at 527nm with 85% efficiency in 50mm large crystals.

CPDA2 • 8:10 p.m.
Efficient, 0.2-W, All-Solid-State CW 244-nm Laser, *Yushi Kaneda[1], J. M. Yarborough[1], Li Li[1], N. Peyghambarian[1], Li Fan[1], Chris Hessenius[1], Mahmoud Fallahi[1], Jörg Hader[1], Jerome V. Moloney[1], Yoshiyuki Honda[2], Masato Nishioka[2], Kenshi Miyazono[2], Hiroya Shimatani[2], Masashi Yoshimura[2], Yusuke Mori[2], Yasuo Kitaoka[2], Takatomo Sasaki[2]; [1]Univ. of Arizona, USA, [2]Osaka Univ., Japan.* We report an all-solid-state laser system generating >200mW continuous-wave at 244nm. An intracavity-doubled optically pumped semiconductor laser at 488nm is further converted to 244nm using $CsLiB_6O_{10}$ in an external resonator with >30% efficiency.

CPDA3 • 8:20 p.m.
Highly Efficient Planar-Waveguide Green Laser, *Yoshihito Hirano, Syuhei Yamamoto, Yasuharu Koyata, Masao Imaki, Makoto Okano, Tsuneo Hamaguchi, Akira Nakamura, Tetsuya Yagi, Takayuki Yanagisawa; Mitsubishi Electric Corp., Japan.* Combination of planar-waveguide devices improves performance of an intra-cavity SHG green laser dramatically. With an ultra-compact size of 3.2mm x 7mm, average green output of 7.6W with the record-high electrical efficiency of 20% was demonstrated.

CPDA4 • 8:30 p.m.
Complex Nonlinear Opto-Fluidity, *Carmel Rotschild[1], Meirav Saraf[1], Assaf Barak[1], Ramy El-Ganainy[2], Efrat Lifshitz[1], Demetrios N. Christodoulides[2], Mordechai Segev[1]; [1]Solid State Inst., Technion, Israel, [2]College of Optics and Photonics, CREOL, Univ. of Central Florida,, USA.* We demonstrate symbiotic dynamics of light and nano-particles suspended in liquid. Light-force varies the local particle density, modifies the fluid properties (surface-tension, viscosity), inducing motion/rotation in the fluid, causing synergetic nonlinear-dynamics of light and fluid.

CPDA5 • 8:40 p.m.
An Ultra Low Loss THz Waveguide, *Rajind Mendis, Daniel M. Mittleman; Rice Univ., USA.* We demonstrate a new concept for guiding THz radiation with dB/km attenuation, by exploiting the unique properties of the TE_1 mode of a parallel-plate-waveguide. This represents a thousand-fold decrease of the attenuation over existing waveguides.

CPDA6 • 8:50 p.m.
InGaAs Quantum Posts: Tunable Terahertz Nanostructures, *Christopher M. Morris[1], Dominik Stehr[1], Dan G. Allen[1], Hubert J. Krenner[2], Jun He[2], Craig Pryor[3], Pierre M. Petroff[2,4], Mark S. Sherwin[1]; [1]Physics Dept. and Inst. for Quantum and Complex Dynamics, Univ. of California at Santa Barbara, USA, [2]Materials Dept., Univ. of California at Santa Barbara, USA, [3]Dept. of Physics and Astronomy, Univ. of Iowa, USA, [4]Dept. of Electrical and Computer Engineering, Univ. of California at Santa Barbara, USA.* Electron intersubband absorption in quantum post nanostructures is observed at THz frequencies. Absorption is strongly tunable via the Stark effect. Polarization and absorption measurements confirm coupling to transition predicted by theory.

CPDA7 • 9:00 p.m.
Dynamically Reconfigurable Liquid-Core Liquid-Cladding (L^2) Lens in a Microfluidic Channel, *Sindy K. Y. Tang, Claudiu A. Stan, George M. Whitesides; Harvard Univ., USA.* We form a liquid lens by flowing liquids in a microchannel with lateral expansion. The resulting biconvex fluidic structure focuses light. Changing flow conditions reconfigures the shape and focus of this lens in real time.

CPDA8 • 9:10 p.m.
Ultrabright Laser-Based MeV-Class Light Source, *F. Albert, G. Anderson, S. Anderson, A. Bayramian, B. Berry, S. Betts, J. Dawson, C. Ebbers, D. Gibson, C. Hagmann, J. Hall, Fred Hartemann, E. Hartouni, J. Heebner, J. Hernandez, M. Johnson, M. Messerly, D. McNabb, H. Phan, J. Pruet, V. Semenov, M. Shverdin, A. Sridharan, A. Tremaine, Craig W. Siders, C.P.J. Barty; Lawrence Livermore Natl. Lab, USA.* We report first light from a new source of 10-ps 0.776-MeV gamma-ray pulses known as T-REX (Thomson-Radiated Extreme X-Rays). The MeV-class radiation produced by T-REX is unique due to its brightness and laser-like beam character.

CPDA9 • 9:20 p.m.
Extended Phase-Matching of High-Order Harmonics Driven by Mid-Infrared Light, *Tenio Popmintchev[1], Ming-Chang Chen[1], Oren Cohen[1], Michael E. Grisham[2], Jorge J. Rocca[2], Margaret M. Murnane[1], Henry C. Kapteyn[1]; [1]JILA, NIST and Univ. of Colorado , USA, [2]Colorado State Univ., USA.* We demonstrate that increasing the wavelength of the driving pulse in high harmonic generation significantly increases the photon energies for which the process is truly phase matched, suggesting a promising path for producing bright X-rays.

CPDA10 • 9:30 p.m.
Overcoming the Power Scalability Limit in Intracavity HHG, *Dylan C. Yost, Thomas R. Schibli, Jun Ye; JILA, NIST and Univ. of Colorado, USA.* We demonstrate a novel output-coupling technique for XUV frequency combs generated inside femtosecond enhancement cavities, permitting virtually unlimited power scalability. A first demonstration yields record-high average powers and highest order harmonics from multi-megahertz repetition-rate HHG.

CPDA11 • 9:40 p.m.
Stable Mode-Locked Pulses from Mid-Infrared Quantum Cascade Lasers, *Christine Y. Wang[1], Lyuba Kuznetsova[2], Laurent Diehl[2], Franz Kärtner[3], Mikhail Belkin[2], Harald Schneider[4], H. C. Liu[5], Federico Capasso[2]; [1]Dept. of Physics, Harvard Univ., USA, [2]School of Engineering and Applied Sciences, Harvard Univ., USA, [3]Res. Lab of Electronics, MIT, USA, [4]Inst. of Ion Beam Physics and Materials Res., Germany, [5]Inst. for Microstructural Sciences, Natl. Res. Council, Canada.* We report direct evidence of active mode-locking of quantum cascade lasers from second-order interferometric autocorrelation measurements with a non-linear quantum well infrared photodetector. A FWHM of 3ps was deduced for the stable train of pulses.

CPDA12 • 9:50 p.m.
Harmonic Holographic Microscopy Using Nano-Materials as Imaging Probes, *Chia-Lung Hsieh[1,2], Rachel Grange[1], Ye Pu[2], Demetri Psaltis[1,2]; [1]EPFL, Switzerland, [2]Caltech, USA.* Second harmonic generation was observed from $BaTiO_3$ nanoparticles and $KNbO_3$ nanowires excited by near-infrared femtosecond laser. We used them as imaging probes and demonstrated the harmonic holographic microscopy which captures three-dimensional distribution with sub-micron resolution.

CPDB • CLEO Postdeadline Session II

Room: A3
8:00 p.m.–10:00 p.m.
CPDB • CLEO Postdeadline Session II
Claire Gmachl; Princeton Univ., USA, Presider

CPDB1 • 8:00 p.m.
54 GHz Multimode VCSELs by Optical Injection Locking, *Devang Parekh[1], Xiaoxue Zhao[1], Werner Hofmann[2], Markus C. Amann[2], Luis A. Zenteno[3], Connie J. Chang-Hasnain[1]; [1]Univ. of California at Berkeley, USA, [2]Walter Schottky Inst., Technical Univ. of Munich, Germany, [3]Corning Inc., Science and Technology, USA.* We demonstrate a resonance frequency of 54 GHz and a 3-dB bandwidth of 38 GHz on multi-transverse-mode 1.55-μm VCSELs by injection-locking the fundamental transverse mode using a single-mode continuous-wave high-power master laser.

CPDB2 • 8:10 p.m.
30 Gb/s Directly Modulated 850 nm Datacom VCSELs, *Ralph H. Johnson[1], Daniel M. Kuchta[2]; [1]Finisar, USA, [2]IBM T. J. Watson Res. Ctr., USA.* Error free data transmission at 30 Gb/s has been demonstrated at 850 nm using a oxide AlGaAs based VCSEL with GaAs quantum wells. This is comparable to the best results for VCSELs at any wavelength.

CPDB3 • 8:20 p.m.
Photonic Temporal Integrator, *Radan Slavík[1], Yongwoo Park[2], Nicolas Ayotte[3], Serge Doucet[3], Tae-Jung Ahn[2], Sophie LaRochelle[3], Jose Azaña[2]; [1]Inst. of Photonics and Electroncis AS CR, v.v.i., Czech Republic, [2]Inst. Natl. de la Recherche Scientifique, Canada, [3]COPL, Univ. Laval, Canada.* We report the first experimental realization of an all-optical temporal integrator capable of calculating the cumulative integral of complex (amplitude and phase) optical signals. Its potential for all-optical, real-time computing of differential equations is demonstrated.

CPDB4 • 8:30 p.m.
Bit-Error-Rate Characterization of Silicon Four-Wave-Mixing Wavelength Converters at 10 and 40 Gb/s, *Benjamin G. Lee[1], Aleksandr Biberman[1], Mark A. Foster[2], Amy C. Turner[3], Michal Lipson[3], Alexander L. Gaeta[2], Keren Bergman[1]; [1]Dept. of Electrical Engineering, Columbia Univ., USA, [2]School of Applied and Engineering Physics, Cornell Univ., USA, [3]School of Electrical and Computer Engineering, Cornell Univ., USA.* We present the first bit-error-rate characterization of silicon four-wave-mixing wavelength converters. Power penalties below 0.5 dB are demonstrated over a 20-nm EDFA-limited wavelength range at 10 Gb/s, while 40-Gb/s measurements yield a 2.4-dB power penalty.

CPDB5 • 8:40 p.m.
"Diffraction-Free," Self-Healing Bessel Beams from Fibers, *Siddharth Ramachandran, Samir Ghalmi; OFS Labs, USA.* We demonstrate a fiber device whose output resembles ideal, infinite-energy Bessel beams. We confirm the beam's two most-intriguing properties: depth-of-focus ~32x that of Gaussians of similar size, and its ability to completely reform past obstructions.

CPDB6 • 8:50 p.m.
Robust and Practical Optical Fibers for Single Mode Operation with Core Diameters up to 170µm , *Liang Dong, Jun Li, Hugh McKay, Andrius Marcinkevicius, Brian Thomas, Michael Moore, Libin Fu, Martin E. Fermann; IMRA America Inc., USA.* All-glass leakage-channel-fibers with core up to ~170µm are demonstrated with substantial differential mode losses. No tight coils are needed for single-mode-operation, minimizing bend-induced mode reduction. Elimination of air-holes significantly enables ease of fabrication and use.

CPDB7 • 9:00 p.m.
Demonstration of High Spectral Efficient Long Reach Passive Optical Networks Using OFDM-QAM, *C. W. Chow[1], C. H. Yeh[2], Y. T. Li[1], C. H. Wang[1], F. Y. Shih[3], Y. M. Lin[2], C. L. Pan[1], S. Chi[1]; [1]Dept. of Photonics, Natl. Chiao Tung Univ., Taiwan, [2]Industrial Technology Res. Inst., Taiwan, [3]Dept. of Electrical Engineering, Yuan Ze Univ., Taiwan.* We demonstrate a high-spectral-efficient LR-PON (100km without dispersion-compensation) using 4Gb/s OFDM-QAM for both up-and-downstream, achieving a high split-ratio of 256, using optical components optimized for GPON (~1GHz). Rayleigh-backscattering performance of the OFDM-QAM is also studied.

CPDB8 • 9:10 p.m.
Broadband, Frequency Comb Spectroscopy, *Ian R. Coddington, William C. Swann, Nathan R. Newbury; NIST, USA.* A stabilized frequency comb provides a broadband array of highly resolved comb lines. Using a multiheterodyne technique, we measure the amplitude and phase of every comb line, allowing for massively parallel, high-resolution spectroscopy.

CPDB9 • 9:20 p.m.
Frequency Combs for Astronomy, *Tobias Wilken[1], Theodor W. Hänsch[1], Thomas Udem[1], Tilo Steinmetz[1], Ronald Holzwarth[1], Constanza Araujo-Hauck[2], Luca Pasquini[2], Sandro D'Odorico[2], Antonio Manescau[2], Michael T. Murphy[3], Thomas Kentischer[4], Wolfgang Schmidt[4]; [1]Max-Planck-Inst. of Quantum Optics, Germany, [2]European Southern Observatory, Germany, [3]Swinburne Univ. of Technology, Australia, [4]Kiepenheuer-Inst. für Sonnenphysik, Germany.* For the first time a mode filtered frequency comb has been used to calibrate an astronomical spectrometer online. Solar and calibration spectra have been recorded simultaneously.

CPDB10 • 9:30 p.m.
Passively Mode-Locked 10 GHz Femtosecond Ti:Sapphire Laser with >1 mW of Power per Frequency Comb Mode, *Albrecht Bartels[1,2], Dirk Heinecke[1], Scott A. Diddams[3]; [1]Univ. of Konstanz, Germany, [2]Gigaoptics GmbH, Germany, [3]NIST, USA.* We report a mode-locked Ti:sapphire femtosecond laser emitting 42fs pulses at 10GHz repetition rate. The emitted frequency comb is resolved with a grating spectrometer. The power per mode exceeds 1mW at an average power >1W.

CPDB11 • 9:40 p.m.
Tunable High-Power High-Repetition-Rate UV Source for Planar LIF of OH Radical, *Mikhail N. Slipchenko[1], Joseph D. Miller[1], Terrence R. Meyer[1], Naibo Jiang[2], Walter R. Lempert[2], James R. Gord[3]; [1]Dept. of Mechanical Engineering, Iowa State Univ., USA, [2]Depts. of Mechanical Engineering and Chemistry, Ohio State Univ., USA, [3]AFRL, Propulsion Directorate, Wright-Patterson AFB, USA.* We report on a source for MHz-rate, pulse-burst, tunable high-energy UV radiation and its application to high-speed imaging and temperature measurements of combustion based on planar laser-induced fluorescence (PLIF) spectroscopy of the OH radical.

CPDB12 • 9:50 p.m.
Optofluidic Trapping in Exposed Mode Slot Waveguides, *Sean D. Moore, Allen H. J. Yang, Brad Schmidt, Michal Lipson, David Erickson; Cornell Univ., USA.* We have demonstrated trapping of 80nm particles in an Integrated Optofluidic Trapping Architecture using an exposed mode waveguides. The exposed mode waveguide allows access to the region of highest optical intensity, providing increased trapping stability.

NOTES

QELS Abstracts

QPDA • QELS Postdeadline Session I

Room: A4
8:00 p.m.–9:45 p.m.
QPDA • QELS Postdeadline Session I
Aephraim Steinberg; Univ. of Toronto, Canada, Presider

QPDA1 • 8:00 p.m.
Tomography of a Supersonically Cooled Molecular Jet by Direct Frequency Comb Spectroscopy, *Florian Adler, Michael J. Thorpe, Kevin C. Cossel, Jun Ye; JILA, NIST and Univ. of Colorado, USA.* We demonstrate frequency comb spectroscopy as a novel technique for performing tomography on a supersonic molecular jet. Broad bandwidth and high resolution detection allow simultaneous mapping of thermodynamic distribution of internal states and external temperatures.

QPDA2 • 8:15 p.m.
Efficient Radiative Coupling of Single Quantum Dots to a Photonic Crystal Waveguide, *Toke Lund-Hansen[1], Søren Stobbe[1], Brian Julsgaard[1], Thomas Sünner[2], Martin Kamp[2], Alfred Forchel[2], Peter Lodahl[1]; [1]Technical Univ. of Denmark, Denmark, [2]Technische Physik, Univ. Würzburg, Germany.* We present time-resolved spontaneous emission measurements of quantum dots in photonic crystal waveguides. Pronounced decay rate enhancement is observed for quantum dots coupled to the waveguides.

QPDA3 • 8:30 p.m.
Single Photons with Arbitrary Waveforms, *Pavel Kolchin, Chinmay Belthangady, Shengwang Du, G. Y. Yin, S. E. Harris; Stanford Univ., USA.* We use EIT to generate biphotons with a temporal width of about 400 ns. A detected Stokes photon sets the time origin for electro-optic modulation (amplitude or phase) of an anti-Stokes photon.

QPDA4• 8:45 p.m.
Near-Field Atom Microtraps Based on Fresnel Diffraction, *Thejesh N. Bandi[1,2], Vladimir G. Minogin[1,2,3], Sile NicChormaic[2,4]; [1]Dept. of Applied Physics and Instrumentation, Cork Inst. of Technology, Ireland, [2]Photonics Ctr., Tyndall Natl. Inst., Ireland, [3]Inst. of Spectroscopy Russian Acad. of Science, Russian Federation, [4]Physics Dept., Univ. College Cork, Ireland.* We propose atom near-field microtraps based on diffraction of laser wave on small apertures in thin screen. We show that near-field atom microtraps can store atoms in micron-sized regions during times about 1 second.

QPDA5• 9:00 p.m.
Ultrafast Bleaching and Gain of a Single Exciton, *Florian Sotier[1], Tim Thomay[1], Tobias Hanke[1], Suddhasatta Mahapatra[2], Alexander Frey[2], Karl Brunner[2], Alfred Leitenstorfer[1], Rudolf Bratschitsch[1]; [1]Dept. of Physics and Ctr. for Applied Photonics, Univ. of Konstanz, Germany, [2]Univ. of Würzburg, Germany.* The transient quantum dynamics in a single CdSe/ZnSe quantum dot is investigated via femtosecond spectroscopy. A two-color Er:fiber laser with excellent noise performance is key to these first resonant pump-probe measurements on a single-electron system.

QPDA6 • 9:15 p.m.
Emission Spectrum of a Dressed Exciton-Biexciton Complex in a Semiconductor Quantum Dot, *Andreas Muller[1], Wei Fang[1], John Lawall[2], Glenn S. Solomon[1]; [1]Joint Quantum Inst., NIST and Univ. of Maryland, USA, [2]NIST USA.* The four-level exciton-biexciton complex in a single quantum dot was dressed by a near-resonant laser while being populated by a non-resonant pump. The distinctive features observed in emission include resonant triplets and Autler-Townes doublets.

QPDA7 • 9:30 p.m.
Ultralow-Power Four-Wave Mixing with Rb in a Hollow-Core Photonic Band-Gap Fiber, *Pablo S. Londero, Vivek Venkataraman, Amar R. Bhagwat, Aaron D. Slepkov, Alexander L. Gaeta; Cornell Univ., USA.* We demonstrate extremely efficient four-wave mixing with gains as high as 6 at microwatt pump powers in Rb vapor confined to a hollow-core photonic bandgap fiber.

QPDB • QELS Postdeadline Session II

Room: A1
8:00 p.m.–10:00 p.m.
QPDB • QELS Postdeadline Session II
Hailin Wang; Univ. of Oregon, USA, Presider

QPDB1 • 8:00 p.m.
Dynamic Release of Short Pulse from Ultrahigh-*Q* Nanocavities via Adiabatic Wavelength Conversion, *Takasumi Tanabe[1,2], Masaya Notomi[1,2], Hideaki Taniyama[1,2], Eiichi Kuramochi[1,2]; [1]NTT Basic Res. Labs, NTT Corp., Japan, [2]CREST-JST, Japan.* We demonstrate in the spectrally resolved time domain that short pulses (<60 ps) are released from an ultrahigh-*Q* modegap photonic crystal nanocavity (Q~3.8×10^5) by dynamically tuning Q, followed by adiabatic wavelength conversion.

QPDB2 • 8:15 p.m.
Demonstration of Negative Refractive Index in a Three-Dimensional Optical Metamaterial, *Jason Valentine, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho A. Genov, Guy Bartal, Xiang Zhang; Univ. of California at Berkeley, USA.* We report experimental realization of the first three-dimensional (3-D) optical negative index metamaterial. We measure the bulk refractive index using a 3-D prism and Snell's Law, unambiguously demonstrating negative phase propagation in the material.

QPDB3 • 8:30 p.m.
Memory Effects in Photoinduced Femtosecond Magnetization Rotation in GaMnAs , *Jigang Wang[1,2], I. Cotoros[1,2], D. S. Chemla[1,2], X. Liu[3], J. K. Furdyna[3], J. Chovan[4], I. E. Perakis[4]; [1]Lawrence Berkeley Natl. Lab, USA, [2]Univ. of California at Berkeley, USA, [3]Dept. of Physics, Univ. of Notre Dame, USA, [4]Dept. of Physics, Univ. of Crete, Greece.* We report on the first observation of femtosecond response in the photoinduced cooperative magnetization rotation in ferromagnetic semiconductor GaMnAs, which enables the detection of four-state magnetic memory at the femtosecond time scale.

QPDB4 • 8:45 p.m.
Experimental Confirmation of Infrared Magnetic Response in a Random Silicon Carbide Micro-Powder, *Mark S. Wheeler, J. Stewart Aitchison, Mohammad Mojahedi; Dept. of Electrical and Computer Engineering, Univ. of Toronto, Canada.* We report the first experimental evidence of magnetic response in a randomly shaped and polydisperse SiC powder. The results match our theory well. This crude powder could immensely simplify the fabrication of negative permeability metamaterials.

QPDB5 • 9:00 p.m.
Electromagnetically Induced Transparency in Optical Metamaterials, *Na Liu, Stafan Kaiser, Tilman Pfau, Harald Giessen; Univ. of Stuttgart, Germany.* We demonstrate theoretically and experimentally electromagnetically induced transparency in asymmetric metamaterial molecules using magnetoinductive coupling. We increase the coupling strength by joining two split rings together, demonstrating the transition from EIT to Autler-Townes splitting.

QPDB6 • 9:15 p.m.
Ultrafast Optical-Pump THz-Probe Spectroscopy of the Dirac-Fermion Dynamics in Graphene, *Paul A. George[1], Jared H. Strait[1], Jahan Dawlaty[1], Shriram Shivaraman[1], MVS Chandrashekhar[1], Farhan Rana[1], Michael G. Spencer[1], Adam L. Bingham[2], Daniel R. Grischkowsky[2]; [1]Cornell Univ., USA, [2]Oklahoma State Univ., USA.* We present ultrafast optical-pump THz-probe measurements of the electron-hole dynamics and recombination rates in graphene. We find density-dependent recombination times in the 2-5 ps range at 300 K.

QPDB7 • 9:30 p.m.
Hot Dirac Fermion Dynamics and Interlayer Thermal Coupling in Epitaxial Graphene, *Dong Sun[1], Zong-Kwei Wu[1], Charles Divin[1], Xuebin Li[2], Claire Berger[2], Walt A. de Heer[2], Phillip N. First[2], Theodore B. Norris[1]; [1]Univ. of Michigan, USA, [2]Georgia Tech, USA.* Nondegenerate ultrafast pump-probe spectroscopy of epitaxial graphene is used to study hot electron relaxation and interlayer thermal coupling. The DT spectra are understood in terms of hot thermal carrier distributions with no electron-hole interaction.

QPDB8 • 9:45 p.m.
Room Temperature Extinction Detection and Study of Individual CdSe Quantum Dots, *Philipp Kukura[1], Michele Celebrano[2], Alois Renn[1], Vahid Sandoghdar[1]; [1]ETH Zurich, Switzerland, [2]Politecnico di Milano, Italy.* We report the first direct extinction measurement of a single quantum emitter at ambient condition. Thereby, we observe a significant reduction of the extinction cross section upon photobleaching while it remains unchanged during fluorescence blinking.