



10TH BIENNIAL CONFERENCE ON  
**QUANTUM DOTS**

June 25-29, Toronto, Canada

Myhal Centre for Engineering Innovation and Entrepreneurship  
55 St. George Street, University of Toronto

[www.qd2018.com](http://www.qd2018.com)

# Monday June 25

08:15-08:45

**Continental Breakfast (Location: Upper Level)**

08:45-09:00

**Opening Ceremony**

09:00-09:45

Plenary talk  
Victor Kilmov

Quantum Dot Lasing: From Prehistoric Times until Now

09:45-10:10

**Coffee Break (Location: Upper Level)**

10:10-12:00

**Session 1: Quantum Information Technology and Quantum Computing**

Chairs: Artur Zrenner

10:10-10:35

Armando Rastelli

Wavelength-tunable sources of highly entangled photons based on epitaxial quantum dots

10:35-10:50

Vigneshwara  
Chandrasekaran

On-chip single-photon emission from deterministically positioned and embedded InP-based colloidal quantum dots

10:50-11:05

Tina Müller

A quantum light emitting diode for the standard telecom window around 1550 nm

11:05-11:30

Edo Waks

Scalable quantum photonics using quantum dots

11:30-11:45

Anshuman Singh

Quantum frequency conversion of a quantum dot single-photon source through integrated nanophotonics

11:45-12:00

Christian Schimpf

Two-photon interference from remote GaAs quantum dots. A prospect towards deterministic multi-photon applications on-demand

12:00-13:30

**Lunch Break**

13:30-15:20

**Session 2: Quantum Dot Coherence**

Chairs: Armando Rastelli

13:30-13:55

Jacek Kasprzak

Single quantum dot coherence enhanced with nanophotonics

13:55-14:10

Gabriel Ethier-  
Majcher

Improving a solid-state qubit through an engineered mesoscopic environment

14:10-14:25

Łukasz  
Dusanowski

High indistinguishability single photons generation from an in-plane integrated quantum dot waveguide device

14:25-14:50

Jason Petta

Coherent coupling of a single spin to a single photon

14:50-15:05

Alistair Brash

High Purcell factor generation of indistinguishable on-chip single photons

15:05-15:20

Richard Hostein

Resonance fluorescence revival in a voltage-controlled semiconductor quantum dot

15:20-15:40

**Coffee Break (Location: Upper Level)**

15:40-17:45

**Session 3: Photonics**

Chairs: Edo Waks

15:40-16:05

Jelena Vuckovic

Optimized quantum photonics

16:05-16:20

Sarah Fischbach

A strain-tunable deterministically fabricated single-photon source with high efficiency

16:20-16:35

Ryota Katsumi

Integration of multiple quantum-dot single-photon sources on a photonic waveguide by transfer printing

16:35-17:00

Zeger Hens

Colloidal quantum dots for optical gain and lasing enhanced gain characteristics by QD design

17:00-17:15

Marcelo Davanco

Heterogeneous integration for on-chip quantum photonics with single InAs quantum dots

17:15-17:30

Björn Jonas

Quantum dot rapid adiabatic passage by ultrafast Stark tuning

17:30-17:45

Ludmila  
Szulakowska

Optical properties of armchair and zigzag graphene quantum dots

# Tuesday June 26

08:15-09:00	<b>Continental Breakfast (Location: Upper Level)</b>	
09:00-09:45	Plenary talk Yasuhiko Arakawa	Progress in Quantum Dot Photonics: From Science to Practical Realization
09:45-10:10	<b>Coffee Break (Location: Upper Level)</b>	
10:10-12:00	<b>Session 1: Emerging applications and devices</b> Chairs: Efrat Lifshitz	
10:10-10:35	Emily Weiss	Colloidal photocatalysis
10:35-10:50	Eun Kyu Kim	Formation of MoS <sub>2</sub> quantum dots by thermal annealing and memory device application
10:50-11:05	Sergio Brovelli	Advances and challenges in quantum-dot luminescent solar concentration for building integrated photovoltaics
11:05-11:30	Vladimir Bulovic	Reaching for commercial viability of quantum dot photovoltaics
11:30-11:45	Michael Reimer	Towards perfect photon entanglement with a quantum dot
11:45-12:00	Kevin Silverman	Unconventional lasing from quantum dots in the cavity-QED regime
12:00-13:30	<b>Lunch Break</b>	
13:30-15:20	<b>Session 2: Quantum Optics and Magneto-Optics</b> Chairs: Pawel Hawrylak	
13:30-13:55	Maurice Skolnick	On-chip quantum optics in III-V nano-photonic systems
13:55-14:10	Alexander Mintairov	Whispering gallery modes of electrons in emission spectra of semiconductor quantum dots
14:10-14:25	Joel Grim	Tuning individual InAs quantum dots into resonance in photonic network structures with micro-laser processing
14:25-14:50	Eva Monroy	GaN/AlN dots-in- a-wire photodetectors
14:50-15:05	Ahsan Nazir	Phonon scattering inhibits simultaneous near-unity efficiency and indistinguishability in semiconductor single-photon sources
15:05-15:20	Efrat Lifshitz	A control of magneto-optical properties of magnetically doped semiconductor nanocrystals by hyperfine interactions
15:20-15:40	<b>Coffee Break (Location: Upper Level)</b>	
15:40-17:50	<b>Session 3: Quantum Dot Theory and Characterization</b> Chairs: Oleksandr Voznyy	
15:40-16:05	Pat Kambhampati	Surface science of semiconductor nanocrystals
16:05-16:20	Ilya Sychugov	Intermixing of direct and indirect states in Si quantum dots: size and shape effect
16:20-16:35	Elena Shornikova	Spins of surface dangling bonds in colloidal CdSe nanocrystals: magnetic polaron formation and giant Zeeman splitting
16:35-16:50	Sebastian Krehs	Ultrasensitive, high spectral resolution photocurrent detection of QDs excitons
16:50-17:05	Ivan Infante	A rational control of the surface structure and electronic passivation of lead halide perovskite nanocrystals
17:05-17:20	Mahi Singh	Light-matter interaction in quantum dot and graphene hybrids
17:20-17:35	Boris Spokoyny	Single molecule spectroscopy of short-wave infrared emitting quantum dots
17:35-17:50	Alexander Efros	Band edge exciton in CdSe nanocrystals – Revisited
18:00-19:30	<b>Poster Presentation Session (Part 1)</b> <b>Location: Main Floor Lobby</b>	

# Wednesday June 27

08:15-09:00	<b>Continental Breakfast (Location: Upper Level)</b>	
09:00-09:45	Plenary talk Dmitri Talapin	Engineering Functionality in Colloidal Quantum Dots
09:45-10:10	<b>Coffee Break (Location: Upper Level)</b>	
10:10-12:00	<b>Session 1: Quantum Dot Spin</b> Chairs: Maurice Skolnick	
10:10-10:35	Akira Oiwa	Photon-spin conversion using gate-defined GaAs quantum dots
10:35-10:50	Pierre Renucci	Electrical initialization of electron and nuclear spins in a single quantum dot at zero magnetic field
10:50-11:05	Jonathan Bodey	Coherent Raman manipulation of a single quantum dot-confined spin.
11:05-11:30	John Rarity	Photonic quantum technologies: metrology, spins and photons
11:30-11:45	Shun-Tsung Lo	Unveiling Kondo physics in a hybrid dot-wire system
11:45-12:00	Wojciech Pacuski	Fine structure of an exciton coupled to a single Fe <sup>2+</sup> ion in a CdSe/ZnSe quantum dot
12:00-13:30	<b>Lunch Break</b>	
13:30-15:20	<b>Session 2: Quantum Dot Materials Synthesis and Growth</b> Chairs: Zhenyu Yang	
13:30-13:55	Taekhoon Kim (Eunjoo Jang)	Environmentally friendly quantum dots for display applications
13:55-14:10	Celso de Mello Donega	Nanoscale ion-exchange: a versatile route to tailored colloidal quantum dots
14:10-14:25	Yong-Jin Pu	Control of surface ligands density on blue emitting core/shell-type CdZnS/ZnS quantum dots
14:25-14:50	Liberato Manna	Halide perovskites nanocrystals: synthesis, transformations and their application in devices
14:50-15:05	Mickael D. Tessier	Synthesis of III-V colloidal quantum dots
15:05-15:20	Hwan-Seop Yeo	Fabrication and optical characterization of a site-controlled three-fold symmetric III-Nitride quantum dot grown by MOCVD
15:20-15:40	<b>Coffee Break (Location: Upper Level)</b>	
15:40-17:45	<b>Session 3: Emerging and Hybrid Quantum Dot Systems</b> Chairs: Pat Kambhampati	
15:40-16:05	Gerasimos Konstantatos	Engineering CQD solids at the suprananocrystalline level and their synergism with 2D materials for optoelectronic applications and solar harvesting
16:05-16:20	Oleksandr Voznyy	Improving quantum dot synthesis with machine learning
16:20-16:35	Simon Fairclough	The colloidal synthesis of luminescent nitride-based quantum dots
16:35-17:00	Maksym Kovalenko	Colloidal nanocrystals of APbX <sub>3</sub> perovskites [A=Cs <sup>+</sup> , CH(NH <sub>2</sub> ) <sub>2</sub> <sup>2+</sup> , X=Cl <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup> ]: synthesis, spectroscopy and applications
17:00-17:15	Maryam Alimoradi Jazi	Quantum of optical absorption in 2D PbSe & CdSe nanocrystal superlattices
17:15-17:30	Andreas Riedinger	Kinetic growth instabilities in isotropic materials lead to nanoplatelets
17:30-17:45	Ulrike Woggon	Directional emission and two photon absorption in colloidal CdSe quantum wells
18:30-20:30	<b>Gala Dinner</b> <b>Location: Royal Ontario Museum (100 Queens Park, Toronto)</b>	

# Thursday June 28

08:15-09:00	<b>Continental Breakfast (Location: Upper Level)</b>	
09:00-09:45	Plenary talk Manfred Bayer	Spin Physics in Colloidal Nanocrystals
09:45-10:10	<b>Coffee Break (Location: Upper Level)</b>	
10:10-12:00	<b>Session 1: Sensors, Detectors, and Bio-applications</b> Chairs: Sergio Brovell	
10:10-10:35	Horst Weller	Tailor made nanocrystals for materials and life science
10:35-10:50	Valerio Adinolfi	CQD:silicon heterostructures for fast, ultrasensitive infrared detection
10:50-11:05	Matthew Ackerman	High performance mid-wave photodetection with colloidal HgTe
11:05-11:30	Hilmi Volkan Demir	An emerging field of nanocrystal optoelectronics: all-colloidal nanocrystal lasers of quantum dots to wells
11:30-11:45	Sergii Kalytchuk	Carbon dot photoluminescence lifetime thermal sensing
11:45-12:00	Lingju Meng	Flexible colloidal quantum dot triboelectric field-effect transistor with application of touch sensing
12:00-13:30	<b>Lunch Break</b>	
13:30-15:20	<b>Session 2: Photovoltaics and Photodetectors</b> Chairs: Gerasimos Konstantatos	
13:30-13:55	Hunter McDaniel	Beyond displays – how quantum dots will help power and feed future cities
13:55-14:10	Zhijun Ning	Quantum optical upconversion photodetector
14:10-14:25	Eric Hansen	CuInS <sub>2</sub> nanocrystals: ideal optical properties via synthetic insights
14:25-14:50	Sohee Jeong	Surface chemistry of III-V semiconductor nanocrystals for photovoltaics
14:50-15:05	Ebuka Arinze	Tuning color and transparency in colloidal quantum dot solar cells via multi-objective optimization
15:05-15:20	Zhenyu Yang	Mixed quantum dot solar cells
15:20-15:40	<b>Coffee Break (Location: Upper Level)</b>	
15:40-17:50	<b>Session 3: Light Emission</b> Chairs: Maksym Kovalenko	
15:40-16:05	Osman Bakr	Enhancing perovskite nanocrystal stability and luminescence by self-assembly and molecular passivation for LED applications
16:05-16:20	Lazaro Padilha	Low-threshold up-converted lasing in perovskite quantum dots
16:20-16:35	Byeong Guk Jeong	Colloidal quantum dot heterostructures with near-unity quantum yield and suppressed blinking
16:35-16:50	Fengjia Fan	Colloidal quantum dot lasers
16:50-17:05	Peter Palomaki	The future of quantum dots in displays
17:05-17:20	Gabriele Raino	Superfluorescence from superlattices of lead halide perovskite nanocrystals
17:20-17:35	Takahisa Omata	Design of cadmium-free and II-VI semiconductor quantum dot phosphors exhibiting green and red emissions
17:35-17:50	Francesca Freyria	Stabilized self-assembled J-aggregate antennas to enhance NIR QDs emission
18:00-19:30	<b>Poster Presentation Session (Part 2)</b> <b>Location: Main Floor Lobby</b>	

# Friday June 29

08:15-09:00	<b>Continental Breakfast (Location: Upper Level)</b>	
09:00-09:45	Plenary talk Xiaoyang Zhu	Polarons and Polaritons in Lead Halide Perovskites
09:45-10:10	<b>Coffee Break (Location: Upper Level)</b>	
10:10-12:00	<b>Session 1: Exciton/Charge Carrier Dynamics</b> Chairs: Susanna Thon	
10:10-10:35	David Norris	Bright triplet excitons in cesium lead halide perovskites
10:35-10:50	Michael Becker	Long exciton dephasing and bright emission from lead halide perovskite nanocrystals
10:50-11:05	Sergio Brovelli	Excitonic pathway to photoinduced magnetism in colloidal nanocrystals with nonmagnetic electronic dopants
11:05-11:30	Cherie Kagan	N- and p-doping of colloidal nanocrystal and nanowire assemblies
11:30-11:45	Hirokazu Tahara	Direct observation of harmonic dipole oscillations in PbS/CdS core/shell nanocrystals with phase-locked interference detection
11:45-12:00	Renu Tomar	A quantitative study of optical gain mechanisms in quasi-2D nanoscale materials
12:00-12:15	Sanford Ruhman	Tale of two excitons: the effect of spectator excitons on nanocrystal photophysics
12:15-13:00	<b>Closing Ceremony</b>	

An excursion to Niagara is planned for Saturday, June 30 2018.

Abstracts and poster programs can be found at  
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