



**CANADIAN MICROSCOPY & CYTOMETRY SYMPOSIUM  
SYMPOSIUM CANADIEN DE MICROSCOPIE & DE CYTOMÉTRIE**

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## Tuesday, May 9, 2017

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08:00-18:00	Registration	Foyer
08:30-17:30	Scientific Platforms Meeting (SPM)	Ambassador A
09:00-17:00	MSC: Hands-On Workshops	University Labs
12:00-17:00	MSC: Executive Meeting	Executive
18:00-20:00	MSC Opening Reception <i>Sponsored by Nikon</i>	Governor 1
18:00-22:00	SPM Networking Dinner	McGill Faculty Club

## Wednesday, May 10, 2017

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<b>08:00-18:00</b>	<b>Registration</b>	Foyer
<b>08:45-10:30</b>	<b>Welcome and Plenary Lectures</b>	Ambassador BC
08:45	<b>Welcome Address</b>	
09:00	PL-1 Live-cell analysis of pollen tube guidance identifies key signaling molecules <u>Tetsuya Higashiyama</u> , Nagoya University, Nagoya, Japan	
09:45	PL-2 Precision immunology through deeper, single cell profiling <u>Pratip Chattopadhyay</u> , New York University, New York University, New York, United States	
<b>10:30-11:00</b>	<b>Coffee Break and Exhibits</b> <i>Sponsored by Oxford Instruments</i>	Foyer/ Les Verrières/ Governor 1
11:00-12:30	<b>Plenary Lectures</b>	Ambassador BC
11:00	PL-3 Zooming in on cells and macromolecules with correlative light-electron microscopy <u>Bram Koster</u> , Leiden University Medical Center, Leiden, Netherlands	
11:45	PL-4 Crystal cartography: mapping the nano-world in two and three dimensions <u>Paul Midgley</u> , University of Cambridge, Cambridge, England	
12:30-14:00	<b>Lunch, Exhibits and Posters</b>	Foyer/ Les Verrières/ Governor 1
<b>13:00-13:50</b>	<b>Lunch-n-Learn Session</b>	
<b>13:00-13:20</b>	<b>BD Biosciences:</b> Optimizing strategies for reliable multicolour flow data: moving to 50-colour flow cytometry	Ambassador A
	<b>Thermo Fisher Scientific:</b> Visualizing RNA and protein by microscopy and flow cytometry	Ambassador B
	<b>Gatan Incorporated:</b> In-Situ TEM holders for observing dynamic processes at the nanoscale	Ambassador C
<b>13:30-13:50</b>	<b>Carl Zeiss Canada:</b> Approaches to correlative microscopy	Ambassador A
	<b>MBF Bioscience:</b> Automatically mapping brain images and measurements to regions in a brain atlas	Ambassador B
	<b>Milipore Sigma:</b> Amnis imaging flow cytometry / microscopy in flow: technology overview and review of latest published applications	Ambassador C

14:00-15:30

**Parallel Sessions 1**

**EM-MS 1 Imaging across the scales**

Senator

*Sponsored by Hitachi High-Technologies Canada, Inc.*

14:00 EM-MS 1.1 The need and the challenges of material characterization in the development of batteries

Pierre Hovington, Hydro-Quebec

14:30 EM-MS 1.2 State of the art study of doped-carbon nanostructures using EELS and nanodiffraction in a scanning electron microscope in low voltage transmission mode

José Verde-Gómez, McGill University

14:45 EM-MS 1.3 Study on lithium-based cathode materials using analytical transmission electron microscopy

Hanshuo Liu, McMaster University

15:00 EM-MS 1.4 The  $f$ -ratio quantification method for x-ray microanalysis with a field emission SEM applied to multi-elements specimen

Chaoyi Teng, McGill University

15:15 EM-MS 1.5 Evaluation of core-hole approximation for simulations of eels spectra

Quentin Stoyel, McGill University

**FC 1 Flow cytometry and transcriptomics**

Ambassador A

14:00 FC 1.1 Single cell transcriptomics- flow cytometry meets the genomics world

Pratip Chattopadhyay, New York University

14:45 FC 1.2 RNA flow cytometry

Amy Baxter, CR-CHUM

**LM 1 Advanced light microscopy in plant research**

Ambassador C

14:00 LM 1.1 Patterning the Arabidopsis flower: superman and the definition of the stamen/carpel boundary

Nathanaël Prunet, Caltech

14:30 LM 1.2 Biomechanical properties in the cell walls of living plant cells assessed by Brillouin light scattering spectroscopy

Bara Altartouri, Université de Montréal

**LM 1 Advanced light microscopy new development**

14:45 LM 1.3 Using CellProfiler 2.3.0 for the analysis of processing bodies

Elizabeth Castle, Dalhousie University

15:00 LM 1.4 Practical approaches to optical microscopy education at the ICI resource lab

Rima Wazen, Live Cell Imaging Resource Lab

15:15 LM 1.5 3D standard samples and protocols for light microscopy

Erika Wee, McGill University

**EM-BS 1 Whole Cell Tomography**

Ambassador B

14:00 EM-BS 1.1 Structure, function, and evolution of bacterial contractile injection systems

Martin Pilhofer, ETH Zurich

14:40 EM-BS 1.2 Subnanometer-resolution structure of the doublet microtubule and insights into its assembly mechanism

Muneyoshi Ichikawa, McGill University

14:55	EM-BS 1.3 The use of cryotomography to study the complex morphological remodeling of membranes in bacteria <u>Elitza Tocheva</u> , Université de Montréal	
15:25	Open discussion	
<b>15:30-16:00</b>	<b>Coffee Break, Exhibits and Posters</b> <i>Sponsored by Oxford Instruments</i>	Foyer/ Les Verrières/ Governor 1
<b>16:00-17:30</b>	<b>Parallel Sessions 2</b>	
	<b>EM-MS 2 Imaging across the scales</b>	Senator
16:00	EM-MS 2.1 Measuring sub-grain scale elastic and plastic deformations in polycrystalline metallic alloy by electron microscopy digital image correlation <u>Philippe Bocher</u> , ETS Montreal	
16:30	EM-MS 2.2 Outlier identification using measurement repeatability to compare standard and additively manufactured surfaces <u>Adam Frewin</u> , WPI Surface Metrology Lab	
16:45	EM-MS 2.3 Humidity and its effects on the microscopy of surface roughness characteristics of a baseball <u>Mason Handy</u> , Worcester Polytechnic Institute	
17:00	EM-MS 2.4 Investigation of metal/ceramic interfaces created by cold spray <u>Sara Imbriglio</u> , McGill University	
17:15	EM-MS 2.5 A simple way to produce tungsten carbide particles by HEBM and annealing <u>Romain Fernique</u> , Université de Sherbrooke	
	<b>FC 2 Alternative approaches: microfluidics, molecular interactions and troubleshooting in flow cytometry</b>	Ambassador A
16:00	FC 2.1 Microfluidics/lab-on-a-chip cell sorting technology <u>Maryam Tabrizian</u> , McGill University	
16:45	FC 2.2 Microscopy for flow cytometrists <u>Peter Lopez</u> , NYU School of Medicine	
	<b>LM 2 Micro and Nano-fluidics for microscopy: imaging under flow and confinement</b>	Ambassador C
16:00	LM 2.1 Squeezing new information out of macromolecules using adjustable nanoconfinement <u>Sabrina Leslie</u> , McGill University	
16:30	LM 2.2 Novel design of microchambers and microfluidic devices to study pollen tip growth under high resolution optical and fluorescence microscopy <u>Hana Rakusova</u> , McGill University	
16:45	LM 2.3 A plasmonic/microfluidic hybrid device approach for in situ pH imaging with oral health applications <u>Jesse Greener</u> , Université Laval	
17:15	LM 2.4 Microfluidic chips for detection and sorting of primary cells using fluorescence microscopy <u>Tohid Didar</u> , McMaster University	

	<b>EM-BS 2 Novel software and computational approaches</b>	Ambassador B
16:00	EM-BS 2.1 Algorithms for reducing the computational burden of cryo-EM <u>Marcus Brubaker</u> , York University	
16:30	EM-BS 2.2 Structure of UDP-glucose: glycoprotein glucosyltransferase, a sensor of misfolded glycoproteins, by single-particle electron microscopy <u>Yang Meng</u> , McGill University	
17:00	EM-BS 2.3 Quantitative analysis of 3D alignment in cryo-EM: soft-validation, particle pruning and homogeneity analysis <u>Javier Vargas</u> , Biocomputing Unit, Centro Nacional de Biotecnologia-CSIC	
<b>17:30-19:30</b>	<b>Cocktail Reception, Exhibits, Poster Session and Judging</b> Sponsored by Systems for Research / FEI	Foyer/ Les Verrières/ Governor 1

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**Thursday, May 11, 2017**

<b>08:00-17:30</b>	<b>Registration</b>	Foyer
<b>09:00-10:30</b>	<b>Parallel Sessions 3</b>	
	<b>EM-MS 3 Spectro-microscopy: challenges and opportunities</b>	Senator
09:00	EM-MS-3.1 Electron channelling contrast imaging (ECCI) For quantitative analysis of crystal lattice defects in bulk samples <u>Stefan Zaeferrer</u> , Max-Planck-Institut für Eisenforschung	
09:30	EM-MS 3.2 Optimization of secondary ion mass spectrometry quantification for high concentration compounds <u>Stéphanie Bessette</u> , Hydro-Québec / McGill University	
09:45	EM-MS 3.3 Characterization of magnetic Fe@FexOy/Pd nanoparticle catalysts for hydrogenation reactions by X-ray analysis <u>Stefano Rubino</u> , Soquelec, Ltd.	
10:00	EM-MS 3.4 Understanding plasmon resonances supported by planar nanostructures: an electron energy loss spectroscopy study <u>Edson Bellido Sosa</u> , McMaster University	
10:15	EM-MS 3.5 Infrared plasmonic response of indium tin oxide (ito) nanostructures using electron energy loss spectroscopy <u>Viktor Kapetanovic</u> , McMaster University	
	<b>FC 3 Solutions to new challenges in flow cytometry</b>	Ambassador A
09:00	FC 3.1 Simplified science with near UV to IR <u>John Tigges</u> , Beth Israel Deaconess Medical Center <i>Sponsored by Beckman Coulter</i>	
09:45	FC 3.2 Technical challenges and solutions in small particle flow cytometry <u>Chris Spring</u> , St-Michael's Hospital	

	<b>LM 3 Super resolution light microscopy</b>	Ambassador C
09:00	LM 3.1 Super resolution: you can't beat physics except with photo-physics <u>Simon Watkins</u> , University of Pittsburgh <i>Sponsored by Nikon</i>	
09:45	LM 3.2 Super-resolving the brain <u>Thomas Stroh</u> , McGill University	
10:00	LM 3.3 The characterization of cellulose nanostructure using super-resolution fluorescence microscopy <u>Jose Moran-Mirabal</u> , McMaster University	
10:15	LM 3.4 Primary ciliary dyskinesia diagnosis by quantitative super-resolution fluorescence imaging <u>Zhen Liu</u> , The Hospital for Sick Children	
	<b>EM-BS 3 Single particle EM</b>	Ambassador B
09:00	EM-BS 3.1 Capturing atomic resolution snapshots of the ribosome assembly process using direct electron detectors <u>Jaoquin Ortega</u> , McMaster University	
09:30	EM-BS 3.2 Cryo-EM structure of the Triclosan Efflux pump triaxbc from pseudomonas aeruginosa <u>Jurgen Sygush</u> , Université de Montréal	
10:00	EM-BS 3.3 Nonribosomal peptide synthesis studied by single particle EM and x-ray crystallography <u>Martin Schmeing</u> , McGill University	
<b>10:30-11:00</b>	<b>Coffee Break, Exhibits and Posters</b>	Foyer/ Les Verrières/ Governor 1
	<i>Sponsored by Oxford Instruments</i>	
<b>11:00-12:30</b>	<b>Parallel Sessions 4</b>	
	<b>BS-MS 4 Challenges, opportunities and technological development</b>	Ambassador C
	Joint Session	
11:00	BS-MS 4.1 Phase plate imaging in a transmission electron microscope <u>Marek Malak</u> , National Institute for Nanotechnology	
11:30	BS-MS 4.2 Analyzing nanoparticles using focused ion beam scanning electron microscopy <u>Keana Scott</u> , National Institute of Standards and Technology <i>Sponsored by the Canadian Centre for Electron Microscopy, McMaster University</i>	
12:00	BS-MS 4.3 Hyperspectral microscope platform for highly multiplex biological imaging <u>Marc Verhaegen</u> , Photon etc	
	<b>FC 4 High sensitivity small particle flow cytometry</b>	Ambassador A
11:00	FC 4.1 Single-particle analysis of virus by flow virometry: methods for flow cytometer set-up and virus labeling <u>Vera Tang</u> , University of Ottawa	
11:45	FC 4.2 Extracellular vesicles as cancer biomarkers <u>Desmond Pink</u> , University of Alberta <i>Sponsored by Apogee</i>	

	<b>LM 4 Fluorescent probes – key tools in light microscopy and cytometry</b>	Ambassador B
11:00	LM 4.1 Engineering the next generation of genetically encoded reporters of cell signaling activity <u>Robert Campbell</u> , University of Alberta	
11:30	LM 4.2 Super-resolved protein analysis and orientation in the brain <u>Sarah Aufmkolk</u> , University of Wuerzburg	
12:00	LM 4.3 Fluorophore combinations for two-color STED microscopy <u>Walaa Alshafie</u> , McGill University	
12:15	LM 4.4 Incident light engineering to reduce photo-toxicity in fluorescence microscopy <u>Firas Mubaid</u> , McGill University	
12:30-14:00	<b>Lunch, Exhibit and Posters</b>	Foyer/ Les Verrières/ Governor 1
13:00-13:50	<b>Lunch-n-Learns Sessions</b>	
13:00-13:20	<b>Beckman Coulter:</b> Dare to explore the full spectrum: introduction to the IR Laser	Ambassador A
	<b>Lumenera:</b> Microscope cameras: when high quality meets low budget	Ambassador B
13:30-13:50	<b>Miltenyi Biotec:</b> A solution for the antibody crisis	Ambassador A
	<b>Oxford Nanoimaging:</b> The next generation of super-resolution microscopes has arrived - meet the Nanoimager	Ambassador B
<b>14:00-15:30</b>	<b>Parallel Sessions 5</b>	
	<b>EM-MS 5 In situ and operando analyses in microscopy</b>	Senator
14:00	EM-MS 5.1 Capturing materials in space and time <u>Aycan Yurtsever</u> , Institut National de la Recherche Scientifique (INRS)	
14:30	EM-MS 5.2 <i>In-situ</i> study of Li metal dendrite in battery applications <u>Maryam Golozar</u> , Hydro-Quebec Research Institute / McGill University	
14:50	EM-MS 5.3 Cellulose nanocrystals as chiral inducers: enantioselective catalysis and transmission electron microscopy 3d characterization <u>Audrey Moores</u> , McGill University	
15:10	EM-MS 5.4 The fluorescence correction of multilayer materials for quantitative x-ray microanalysis <u>Yu Yuan</u> , McGill University	
	<b>FC 5 Novel sub-cellular applications of flow cytometry</b>	Ambassador A
14:00	FC 5.1 Analyzing EVs with imaging flow cytometry (Imagestream) <u>Joanne Lannigan</u> , University of Virginia School of Medicine	
14:45	FC 5.2 Connected component masks to study phagocytosis and the phagocytic synapse <u>Aja Rieger</u> , University of Alberta	
15:10	FC 5.3 Cytometric quantification of protein-protein interactions via Split-YFP in living protoplasts: observations and notes <u>Kenneth Berendzen</u> , ZMBP-Central Facilitie	

	<b>LM 5 Advanced microscopy techniques applied to in vivo imaging</b>	Ambassador C
14:00	LM 5.1 Neuropeptidergic control of an emotion state produced by stress <u>Moriel Zelikowsky</u> , Caltech	
14:30	LM 5.2 Intravital imaging of the eosinophil using a novel reporter system <u>Katarzyna Wojcik</u> , Live Cell Imaging Facility	
14:45	LM 5.3 Multiphoton laser scanning microscopy: taking a close look at peri-implant endosseous wound healing <u>Niloufar Khosravi</u> , University of Toronto	
15:00	LM 5.4 Cell morphodynamic analysis to characterize cell-cell communication during collective cell migration in vivo <u>Cédric Plutoni</u> , IRIC – Université de Montréal	
15:15	Panel Discussion	
	<b>EM-BS 5 Advances using TEM/SEM approaches</b>	Ambassador B
14:00	EM-BS 5.1 Chemical nanocavitation of stainless steel surfaces to enhance medical use <u>Antonio Nanci</u> , Université de Montréal	
14:30	EM-BS 5.2 Effect of cell shape on mechanics of the epidermis <u>Amir Bidhendi</u> , Université de Montréal	
14:45	EM-BS 5.3 The ultrastructural feature of serotonin and dopamine axons in parkinsonian monkey's <u>Martin Parent</u> , Université Laval	
15:15	EM-BS 5.4 Biochemical and structural analysis of TraE from the pKM101 type IV secretion system <u>Bastien Casu</u> , Université de Montréal	
<b>15:30-16:00</b>	<b>Coffee Break, Exhibits and Posters</b>	Foyer/ Les Verrières/ Governor 1
	<i>Sponsored by Systems for Research / FEI</i>	
<b>16:00-17:30</b>	<b>Parallel Sessions 6</b>	
	<b>EM-MS 6 Beyond conventional electron microscopy</b>	Sentator
16:00	EM-MS 6.1 Focused ion beam imaging, patterning and "Painting with Elemental Colours" <u>Nabil Bassim</u> , McMaster University	
16:30	EM-MS 6.2 Low accelerating voltage scanning transmitted electron microscope: imaging, diffraction, x-ray microanalysis, and electron energy-loss spectroscopy at the nanoscale <u>Hendrix Demers</u> , McGill University	
17:00	EM-MS 6.3 Using raman chemical imaging to evaluate pharmaceutical process alternatives <u>Clémence Fauteux-Lefebvre</u> , Université de Sherbrooke	
17:15	EM-MS 6.4 PEEM/LEEM spectromicroscope, a tool for surface and nano sciences <u>Pierre Levesque</u> , Université de Montréal	
	<b>FC 6 Viral immunity and vaccine development</b>	Ambassador A
16:00	FC 6.1 Zika and dengue virus and novel antivirals <u>Francois Jean</u> , University of British Columbia	
16:45	FC 6.2 HITS - immune monitoring and evaluation of vaccine efficacy <u>Alina Lelic</u> , McMaster University	



	<b>LM-EM 6 Correlative LM/EM microscopy</b>	Ambassador B
	Joint Session	
16:00	LM-EM 6.1 CLEM, 1 + 1 = 3 <u>Paul Verkade</u> , University of Bristol	
16:45	LM-EM 6.2 Tracing non-canonical sphingolipids by electron microscopy using novel click-chemistry detection <u>Christian Lamberz</u> , German Center for Neurodegenerative Disease	
17:00	LM-EM 6.3 Dissecting the assembly mechanism and structure of the intraflagellar transport complex by correlative light microscopy and cryo-electron tomography <u>Shun Kai Yang</u> , McGill University	
17:15	LM-EM 6.4 Correlated atomic force microscopy and fluorescence microscopy imaging: Interaction of saponin 1688-1 with supported lipid bilayers <u>Maohui Chen</u> , National Research Council Canada	
<b>17:30-18:30</b>	<b>CCMA annual general meeting</b> <b>MSC business meeting</b>	Ambassador A Senator
<b>18:30-24:00</b>	<b>Closing lecture, awards, scholarships, banquet and dance</b>	Ambassador BC
18:45-19:15	PL-5 You just look at the thing <u>John Bergeron</u> , McGill University, Montreal, Canada	

Friday, May 12, 2017

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**Offsite MSC workshops**