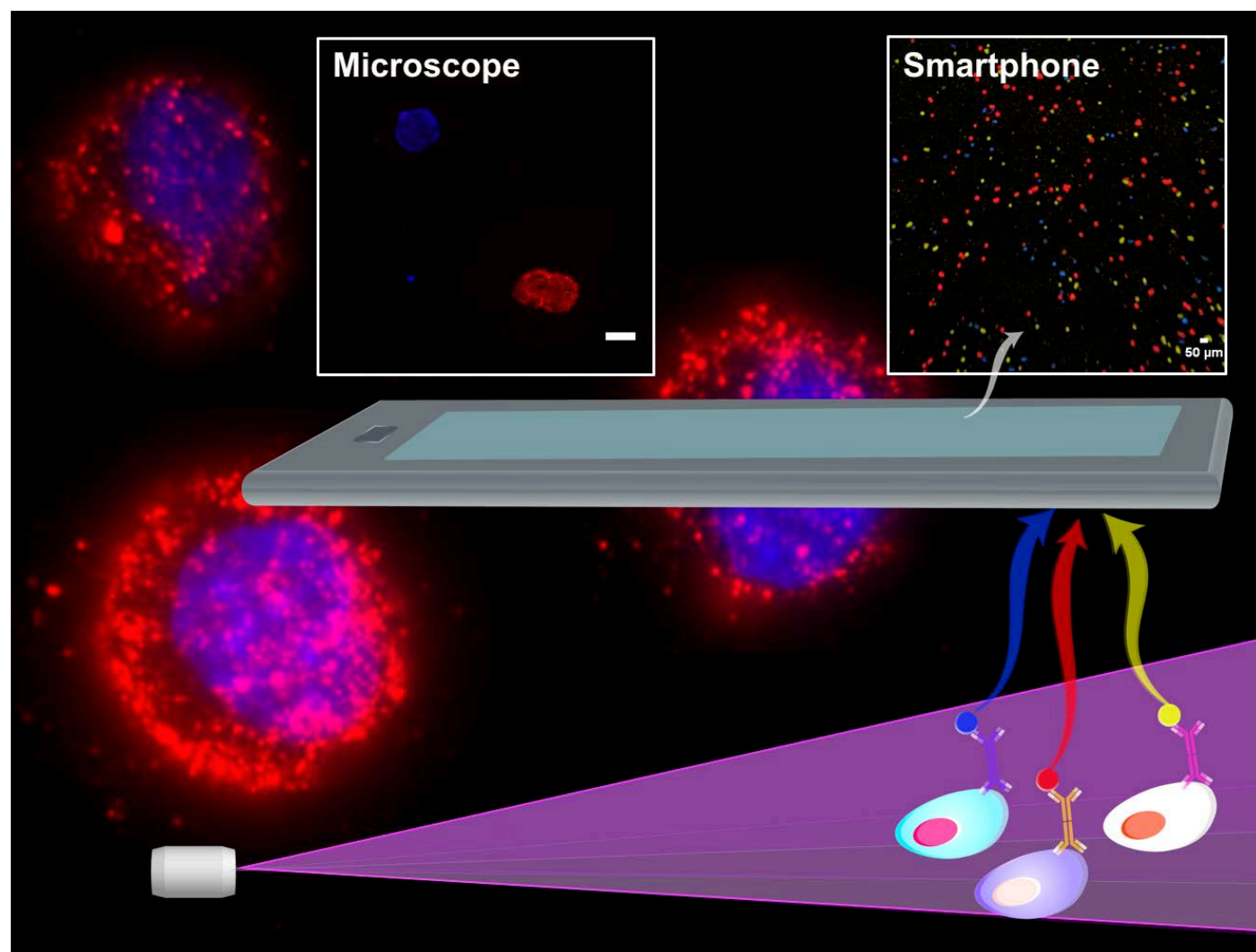

THE GOLD STANDARD

Analytical Chemistry Division Newsletter
The Chemical Institute of Canada

Fall/Winter 2018

In this issue:

- Student award winners recap
- Upcoming CSC 2019 Conference
- New faculty profiles
- Canadian content on The Analytical Scientist Top 40 Under 40



Cover art by Michael V. Tran.

CSC Analytical Chemistry Division

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Department of Chemistry, University of Calgary, Calgary, AB
thurbide@ucalgary.ca



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jf.masson@umontreal.ca



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cbottaro@mun.ca



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Dr. Michael Serpe, Department of Chemistry, University of Alberta

Three Ways to Stay Informed!



www.anchem.ca



<http://www.facebook.com/anchemca.ca>



[@analytical_chem](https://twitter.com/analytical_chem)

Membership Benefits and Information

The Chemical Institute of Canada's (CIC) Career Services.

- The CIC is the association for all chemical professionals in Canada.
- The CIC provides a unique online job networking resource CareerSite for all chemical professionals and students.

<http://www.cheminst.ca/career/>

Increase your career opportunities by taking advantage of the CIC Career Services. Access Canada's sole chemical related job site. Opportunities abound! Receive multiple benefits with membership to The Chemical Institute of Canada.



Other Benefits of Membership in the Analytical Chemistry Division of the CSC

In addition to the activities of the particular Student Chapter, membership will confer the following benefits for students:

- Receipt of Canadian Chemical News/ L'Actualité Chimique Canadienne for members in 2nd and higher years (by bulk mail);
- Eligibility to apply for group insurance on car and home insurance through Monnex Inc.;
- Use of the CIC Employment Service for students in the final year of their program who are seeking permanent employment after graduation;
- Substantially reduced registration fees for the annual CSC Conference;
- Full membership in the CSC in the first year after graduation for one-half of the full membership fee.
- Eligibility for a range of scholarships and awards, a comprehensive list of which is given in this newsletter.

ANALYTICAL CHEMISTRY WEBSITES

The Chemical Institute of Canada:

<http://ANchem.ca/>
<http://www.cheminst.ca/>

American Chemical Society
Division of Analytical Chemistry:

<http://www.analyticalsciences.org/>



About the ACD Student Awards

ACD Undergraduate Student Travel Award in Honour of Dr. Nick Tolti

This award was named in honor of Dr. Nick Tolti on the occasion of his passing in 2017. A long-serving member of the ACD executive, Dr. Tolti was passionate about the education and mentorship of undergraduate students in analytical chemistry.

The intent of the award is to honor outstanding senior undergraduate students in analytical chemistry, to encourage them into postgraduate studies and to expose them to a stimulating scientific environment at the annual Canadian Chemical Conference.

The Undergraduate Student Travel awards are open to all undergraduate students pursuing studies in the area of Analytical Chemistry and in attendance at a Canadian University. The winner is expected to give a poster or oral presentation of his/her work at the 2019 CSC conference (Toronto, ON).

One award will be given this year, in the form of a travel/conference expense reimbursement up to \$500. The application package should contain:

- a curriculum vitae of the student,
- a copy of student's academic transcript, and
- one supporting letter (submitted by supervisor)

Supervisors should email their nomination to Dr. Alan Doucette (alan.doucette@dal.ca) prior to **January 14th, 2019**. Each supervisor may nominate one candidate per competition.

ACD Graduate and Undergraduate Student Poster Awards at the 2019 CSC Conference

Graduate students who will be making poster presentations in the Analytical Chemistry poster session are eligible for this award. Only one submission per student is permitted.

Two cash awards will be given.

Students that wish to be considered for this award should select the poster competition option when submitting their abstracts to the conference.

ACD Graduate Student Award in Honour of Douglas Ryan and Walter Harris

These prestigious awards, named in honour of two senior and well-known analytical chemists in Canada (Dr. Douglas Ryan of Dalhousie University and Dr. Walter Harris from the University of Alberta) are presented in alternate years to an outstanding senior graduate student in analytical chemistry in Canada.

Nominations are solicited from Canadian Universities each fall, by contacting both Chemistry Department Heads and all Professors who are active in research in analytical chemistry. The selection of the recipient is made on the basis of outstanding research contributions and the excellence of the academic record.

The recipient of the award, who receives a cash award and framed certificate, is expected to make a presentation at the next annual CSC meeting. The awardee and supervisor are invited to attend the ACD Award Reception, normally held after the Annual General Meeting of the ACD at the annual CSC conference.

The nomination should contain the following:

1. Two letters of recommendation, one of which must be from the nominee's research supervisor and include the reasons why the nominee is deserving of the Award.
2. A brief statement about the thesis research project (to be submitted by the candidate).
3. A list of research contributions (to be submitted by the candidate).
4. Transcripts of the student's undergraduate and graduate academic records.

Nomination materials should be emailed to Dr. Denis Boudreau (denis.boudreau@chm.ulaval.ca) prior to **January 14th, 2019**.

Conference News



Canadian Society for Chemistry | *For Our Future*
Société canadienne de chimie | *Pour notre avenir*

102nd Canadian Chemistry Conference and Exhibition

QUÉBEC, QC
MONDAY, JUNE 3 TO
FRIDAY, JUNE 7, 2019

CELEBRATING IUPAC'S 100th ANNIVERSARY:
CANADA'S PLACE IN GLOBAL CHEMICAL
RESEARCH, INNOVATION AND EDUCATION



Call For Papers

Opens December 10, 2018 and closes February 11, 2019

2019 Analytical Chemistry Division Program

Division representative: Zhifeng Ding, University of Western Ontario

Analytical Chemistry/Applications of Nanomaterials (Joint with IN/MAT)

Organizers: Alex Brolo (UVic), Russ Algar (UBC)

Analytical Chemistry Education (joint with CE)

Organizers: Charles Lucy (UofA), Russ Algar (UBC), Jean-François Masson (UdeM)

Analytical Chemistry in Industry

Organizer: Nicole Heshka (Natural Resources Canada)

Analytical General Session

Organizers: Sam Mugo (MacEwan), Olena Zenkina (UOIT),

Analytical Tools for the Organic Chemist (joint with OR)

Organizer: Lekha Sleno (UQAM)

Analytical, Physical and Interfacial Electrochemistry in honour of Jacek Lipkowski (joint with MT, PT, SS)

Organizers: Aicheng Chen (Guelph), Christa Brosseau (Saint Mary's), Dan Bizzotto (UBC)

Bioanalytical Chemistry

Organizer: John G Marshall (Ryerson)

Canada-China Symposium in Analytical Chemistry

Organizers: Zhifeng Ding (Western), Xiaoquan Lu (Tianjin University, China)

Chemistry Building Our Future: Bringing Together Green and Sustainable Chemistry Education and Systems Thinking (joint with CE)

Organizer: Peter Mahaffy (King's U.)

Metabolomics Applications and Techniques

Organizers: Paulina de la Mata (UofA), Dajana Vuckovic (Concordia),

Smaller is better: Emerging Applications of Microfluidics in Analytical Chemistry and Biology

Organizers: Mohsen Akbari (UVic), Katherine Elvira (UVic)

Watch your email and anchem.ca for details about the CIC Analytical Chemistry Division Annual General Meeting and Dinner during the CSC Conference.

Regional Conference Recap

SOUSCC 2018

The 46th Annual Southern Ontario Undergraduate Student Chemistry Conference

The 2018 winners of the Analytical Chemistry Presentation Awards are:

1st Place: Baian Almusned

University of Western Ontario (Supervisor: David Shoesmith)

The Role of Molybdenum in the Passivity of Ni-Cr-Mo Alloys in Chloride Containing Environments

2nd Place: Alexandra Deckert

University of Ontario Institute of Technology (Supervisor: Olena Zenkina)

Selective Molecular Receptor for the Detection and Removal of Mercury Ions from Solutions

3rd Place: Abhilash Kavuru

York University (Supervisor: Derek Wilson)

Understanding Conformational Dynamics of Substrate Binding to GST M2-2 Using TRESI-HDX

Photos can be found in the [previous edition](#) of the newsletter.

WCUCC 2018

The 32nd Annual Western Canada Undergraduate Chemistry Conference

2018 winner of the Analytical Chemistry Presentation Awards:

1st Place Poster presentation: Gabriel Cohen

Shaftesbury High School/University of Manitoba

The Characteristics of Ph4Aza-BODIPY and Ph4AZA-BODIPY Catechol

ChemCon 2018

Science Atlantic - CIC Chemistry Student Conference

2018 winners of the Analytical Chemistry Presentation Awards:

Best overall oral presentation: Najwan Albarghouthi

Saint Mary's University (Supervisor: Christa Brosseau)

Development of Gold Plasmonic Nanoarrays for Efficient SERS Sensing of Environmental Contaminants

Second best overall oral presentation: Melanie Davidson

Saint Mary's University (Supervisor: Christa Brosseau)

An Exploration of 2D-LC-SERS: A Novel Detection Modality for Multidimensional Chromatography

Best graduate poster: Katharine Miller

Acadia University (Supervisor: Anthony Tong)

Treatment Efficiency and Stability of Antibiotics in Wastewater

Best undergraduate poster: Kathleen Allen

Saint Mary's University (Supervisor: Christa Brosseau)

Development of a SERS-Based Rapid Vertical Flow Assay for Point-of-Care Diagnostics

Second best undergraduate poster: Philip Jakubec

Dalhousie University (Supervisor: Alan Doucette)

Optimizing sodium dodecyl sulfate depletion via Transmembrane Electrophoresis: Combating Joule Heating

Photos can be found in the [previous edition](#) of the newsletter.

Analytical Chemistry Presentation Awards at Undergraduate Student Conferences

Each of the four regional undergraduate conferences are eligible to receive financial support for awards in oral or poster presentations on a topic related to analytical chemistry. A request from the conference organizers should be made to the ACD Chair (chair@ANchem.ca). Judging is the responsibility of designated faculty members in attendance at the meeting. Organizers should later notify the ACD Chair of the award winners.

Upcoming Conferences



103rd Canadian Chemistry Conference and Exhibition

Winnipeg, MB
May 24–28, 2020



48th IUPAC World Chemistry Congress and 51st IUPAC General Assembly Incorporating the 104th Canadian Chemistry Conference and Exhibition

Montréal, QC
August 13-20, 2021



Pittcon 2019, March 17-21, Philadelphia, PA
Pittcon 2020, March 1-5, Chicago, IL
Pittcon 2021, March 7-11, New Orleans, LA

Abstract submission is normally in August.



SciX 2019, October 13-18, Palm Springs, CA
SciX 2020, October 11-16, Reno-Sparks, NV
SciX 2021, September 26-October 1, Providence, RI

Abstract submission is normally in between April and July (depending on oral or poster pres.)

Advertise your conference, congratulate your award winners, or otherwise share your news with the ACD community in Canada!

Send information and photos to Russ Algar (algar@chem.ubc.ca).

Other News



THE
POWER
LIST 2018
The Analytical Scientist

The Fab Forty

The Top 40 Under 40 Power List returns to celebrate the gifted young scientists making waves in analytical science. Here we present the rising stars of the field (in alphabetical order), as nominated by our readers and shortlisted by our independent judging panel.



Canadian Content!

The 2018 Top 40 Under 40 Power List from *the Analytical Scientist* magazine featured (at least) five scientists with a strong Canadian connection.



Dr. Russ Algar

Associate Professor, *The University of British Columbia*
(Ph.D., M.Sc., B.Sc. University of Toronto)



Dr. Jennifer Chen

Associate Professor, *York University*
(Ph.D. University Toronto, B.Sc. Simon Fraser University)



Dr. Jean-François Masson

Professor, *Université de Montréal*
(B.Sc. Université de Sherbrooke)



Dr. Juris Meija

Research Officer, *National Research Council Canada, Ottawa*



Dr. Muhammed Faroq Wahab

Research Scientist, *University of Texas at Arlington*
(Ph.D. University of Alberta)



Analytica Chimica Acta (Elsevier) has reduced their embargo period for Green Open Access from 24 months to the 12 months, as required by NSERC.

Thanks to the Canadian Editors of ACA—Ulrich Krull (U. Toronto), Janusz Pawliszyn (U. Waterloo), and Liang Li (U. Alberta)—for successfully lobbying for this change.

Elsevier embargo periods can be viewed [here](#).

Professor Tao Huan

Department of Chemistry
The University of British Columbia

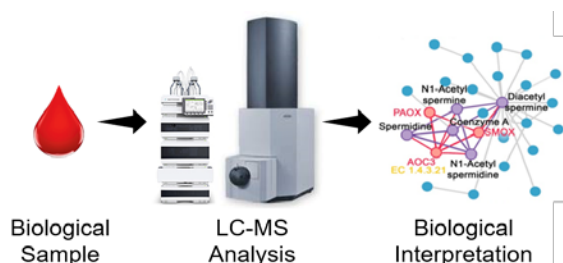
thuan@chem.ubc.ca

www.chem.ubc.ca/tao-huan



Dr. Huan received his Ph.D. in Analytical Chemistry from University of Alberta under the supervision of Dr. Liang Li. His research focused on developing chemical isotope labeling liquid chromatography-mass spectrometry-based metabolomics. After graduation, Dr. Huan did postdoctoral work with Dr. Gary Siuzdak at the Scripps Research Institute (La Jolla, CA) to bring metabolomics into systems biology for in-depth understanding of disease mechanisms. In July 2018, Dr. Huan started as an Assistant Professor in the Department of Chemistry at the University of British Columbia.

Dr. Huan has an outstanding research track record on the development of analytical and computational tools for metabolomics, a powerful and emerging technology to interrogate cellular biochemistry, perform disease diagnosis, and characterize biochemical mechanisms. As of September 2018, Dr. Huan has published over 25 peer-reviewed publications with first-author papers in journals such as *Nature Methods*, *Nature Protocols*, *Analytical Chemistry*, and *Nature Scientific Reports*, as well as co-authored papers in journals such as *Cell Chemical Biology*, *Cell Reports*, *Journal of Proteome Research*, and *Analytica Chimica Acta*.



At UBC, Dr. Huan will establish a multidisciplinary research program to further advance the analytical performance of mass spectrometry in global metabolomics and bring metabolomics into systems biology. Dr. Huan's research interests include: (1) integration of metabolomics with other 'omics' (epigenomics, genomics, transcriptomics, and proteomics) data for the systems-level interrogation of biological problems; (2) application of state-of-art metabolomics technologies in various biological challenges, such as mechanistic understanding of cancer metabolism and disease biomarker discovery; (3) synergetic development of analytical and bioinformatic techniques to enhance metabolomic coverage and improve the confidence of metabolite identification.

omics technologies in various biological challenges, such as mechanistic understanding of cancer metabolism and disease biomarker discovery; (3) synergetic development of analytical and bioinformatic techniques to enhance metabolomic coverage and improve the confidence of metabolite identification.

Dr. Huan's group currently has several open positions for interested undergraduate, graduate students and postdoctoral fellows.

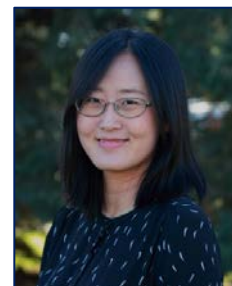
Selected publications:

- Huan, T et al., Metabolomics Analyses of Saliva Detect Novel Biomarkers of Alzheimer's Disease. *Journal of Alzheimer's Disease* **2018**, 65, 1401–1416
- Huan, T et al., Autonomous Multi-Modal Metabolomics Data Integration for Comprehensive Pathway Analysis. *Analytical Chemistry* **2018**, 90, 8396–8403
- Huan, T. et al., Systems Biology Guided by XCMS Online Metabolomics. *Nature Methods* **2017**, 14, 461.
- Huan, T. et al., MyCompoundID MS/MS Search: Metabolite Identification using a Library of Predicted Fragment-Ion-Spectra of 383,830 Possible Human Metabolites. *Analytical Chemistry* **2015**, 87, 10619-10626

Professor Lingzi Sang

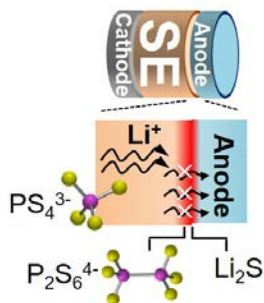
Department of Chemistry
University of Alberta

lsang@ualberta.ca



Dr. Lingzi Sang obtained her B.S. degree in Chemistry from Xiamen University (Xiamen, China) in 2009. She went on to the University of Arizona and obtained her Ph.D. in 2015 under the supervision of Prof. Jeanne E. Pemberton. During her Ph.D., she applied surface analytical spectroscopy to the study of charge transfer efficiencies at interfaces in organic photovoltaic devices. As a Ph.D. student, she was awarded Outstanding Research Scholar, Galileo Circle Scholar, Carl S. Marvel Fellow, and Outstanding Teaching Assistant Award. In 2015, Lingzi moved to the University of Illinois at Urbana-Champaign, where she worked as a joint postdoctoral researcher with Prof. Andrew A. Gewirth and Prof. Ralph G. Nuzzo. Driven by a strong interest in sustainable energy research and analytical spectroscopy measurements, Lingzi investigated solid-state lithium-ion batteries—a safer solution for future energy storage with potentially enhanced energy and power density. She combined her knowledge in analytical spectroscopy, electrochemistry, and materials science to characterize material transformations occurring at the electrode and electrolyte interfaces in these all-solid electrochemical devices. In particular, the transformations that are responsible for battery shorting and capacity fade.

In September 2018, Lingzi moved to Canada and started her independent career at the University of Alberta as an Assistant Professor. The Sang research group focuses on electrochemistry and spectroscopy measurements at the critical interfaces in all-solid energy conversion and storage systems such as batteries and solar cells. One particular interest is advanced measurements under perturbations that directly reflect device operation processes. These measurements will enable a greater understanding of the structure-property correlations that play key roles for high-performance energy devices. The new knowledge of solid-solid interfacial processes will ultimately enable optimized molecular design at device interfaces for superior performance.

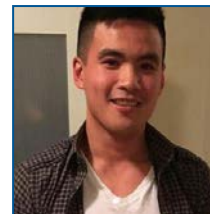


As an example, the Sang group is currently designing interlayer materials that function as protective layers to prevent solid electrolyte (SE) decomposition at the SE/Li electrode interface — a key origin for limited battery lifetime. This research direction is enlightened by the detailed interfacial failure mechanism interpreted in Dr. Sang's previous work. (L. Sang et. al. *Chem. Mater.* (2017) 29, 3029–3037) The group will also engage their expertise in interfacial characterizations to explore critical interfaces associated with other future energy devices, such as solar cells and fuel cells etc.

Selected Publications

- L. Sang, R. T. Haasch, A. A. Gewirth and R. G. Nuzzo, Molecular Level Evolution at Electrolyte/Anode Interface during Charge and Discharge processes in All Solid State Lithium Ion Batteries. *Chem. Mater.* **2017**, 29, 3029–3037
- L. Sang, A. Mudalige, M. Gliboff, K. M. Knesting, M. C. Schalnath, A. K. Sigdel, A. J. Giordano, S. R. Marder, J. J. Berry, D. Nordlund, D. S. Ginger, J. E. Pemberton, PM-IRRAS Investigation of Molecular Orientation of Model Phosphonic Acid Self-Assembled Monolayers on Indium Zinc Oxide Substrates. *Langmuir* **2015**, 31, 5603-5613
- L. Sang, D. L. Matz and J. E. Pemberton, Understanding the Reaction Chemistry of 2,2':5',2''-Terthiophene Films with Vapor Deposited Ag, Al and Ca using Raman spectroscopy. *J. Phys. Chem. C* **2015**, 119, 24290–24298

The cover art illustrates a rapid method for imaging and enumeration of fluorescently labeled cancer cells on a smartphone. A heterogeneous population of cancer cells is labeled with three distinct colours (red, yellow, blue) of magnetic nanoparticle/quantum dot composite materials. The labeled cells are isolated via magnetism and then imaged on a 3D-printed smartphone-based imaging platform. A single violet laser-diode is used to excite all the colours of the quantum dot-labeled cells, allowing for single excitation source multiplexing.



Michael Tran is a PhD candidate in chemistry at the University of British Columbia working under the supervision of Dr. Russ Algar. His research focuses on the development of a smartphone-based assay for the enumeration of fluorescently labeled cancer cells, where the number of cells counted directly correlates with cancer aggression, metastasis, and recurrence.

The newsletter needs content... from you!

Want to have your work featured as the next newsletter cover page?

Have a suggestion for a former student or faculty profile?

Have a conference or event to advertise?

Have award winners to recognize?

Have an idea for other content?

Contact Russ Algar (algar@chem.ubc.ca).