



TANN¹⁹

**PROCEEDINGS OF THE 3RD INTERNATIONAL
CONFERENCE ON THEORETICAL AND APPLIED
NANOSCIENCE AND NANOTECHNOLOGY
(TANN'19)**

June 13 - 14, 2019 | Ottawa, Canada

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TABLE OF CONTENTS

Welcome Message from the Conference Chair.....	3
About TANN'19.....	4
Scientific Committee.....	5
Keynote Speakers.....	6
List of Papers	10
Sponsors	13
Journal Special Issue.....	14
Ethics & Malpractice	15
Contact Us	20

WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to the 3rd International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'19).

TANN'19 is aimed to become one of the leading international annual conferences in the fields related to nanoscience and nanotechnology. This conference will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

TANN'19 is a series of international conferences which are held yearly. These conferences focus on all aspects of traditional and modern control and dynamic systems. After the success of the third conference in Ottawa, Canada, TANN will remain in Canada and will host the fourth international conference.

In the third meeting of this conference, six keynote speakers will share their expertise with the aim of exposing participants to a wide spectrum of applications, and to foster crosspollination of ideas and develop new research interests. In addition, approximately 20 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 3rd International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'19). We wish you a very successful and enjoyable experience.

Dr. Jin Zhang
Conference Chair
TANN'19

Dr. Amirkianoosh Kiani
Conference Co-Chair and Proceedings Editor
TANN'19

ABOUT TANN'19

The International Conference of International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'19) aims to become the leading annual conference in fields related to nanoscience and nanotechnology. The goal of TANN'19 is to gather scholars from all over the world to present advances in the fields related to nanoscience and nanotechnology and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

TANN is a series of international conferences held yearly. These conferences focus on all aspects of nanoscience and nanotechnology. After successfully holding TANN'18 in Canada, TANN'19 is hosted in Canada as well this year.

TANN is an acronym for **T**heoretical, **A**ppplied, **N**anoscience, and **N**anotechnology.

The proceedings are published in Ottawa, Canada.

All papers were peer-reviewed

The congress proceedings is published under an ISSN and ISBN number

Each paper is assigned a unique DOI number by [Crossref](#)

The conference proceedings is indexed by [Google Scholar](#)

The proceedings is permanently archived in [Portico](#) (one of the largest community-supported digital archives in the world)

 Google Scholar

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 PORTICO

[Return to Top](#)

SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the TANN'19 Conference:

Scientific Committee Chairs



[Dr. Jin Zhang](#)
**University of Western
Ontario, Canada**
Conference Chair



[Dr. Amirianoosh Kiani](#)
**Ontario Tech
University, Canada**
Conference Co-Chair

Scientific Committee Members

- **Dr. Daolun Chen**, Ryerson University, Canada
- **Dr. Zhang Di**, Shanghai Jiao Tong University, China
- **Dr. Paul Kiekens**, Ghent University, Belgium
- **Dr. Narinder Kaur**, Dongguk University, Korea
- **Dr. Harri Lipsanen**, Aalto University, Finland
- **Dr. Koon Gee Neoh**, National University of Singapore, Singapore
- **Dr. Shi San Qiang**, The Hong Kong Polytechnic University, Hong Kong
- **Dr. Gottfried Strasser**, Vienna University of Technology, Austria
- **Dr. L.Q. Wang**, The University of Hong Kong, Hong Kong
- **Dr. Gu Xu**, McMaster University, Canada

KEYNOTE SPEAKERS

The keynote information for the 3rd International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'19) is as follows:



[Dr. Winnie Ye](#)

Carleton University, Canada



[Dr. Murukeshan Vadakke Matham](#)

Nanyang Technological University, Singapore



[Dr. Nadi Braidy](#)

Sherbrooke University, Canada



[Dr. Tobin Filleter](#)

University of Toronto, Canada



[Dr. Byron Gates](#)

Simon Fraser University, Canada



[Dr. John Wang](#)

National University of Singapore, Singapore

KEYNOTE SPEAKERS



Titles: Silicon Nanophotonics in Data Communication, Telecommunication, Biosensing and Photovoltaics

[Dr. Winnie Ye, Carleton University, Canada](#)

[View Abstract](#)

[Return to Top](#)

Dr. Winnie Ye is a Canada Research Chair (Tier II) in Nano-scale IC Design for Reliable Opto-Electronics and Sensors. She is currently an Associate Professor in the Department of Electronics at Carleton University. Her expertise is in silicon photonics and its applications in biophotonics, telecommunications, and renewable energy. Dr. Ye received her B.Eng. degree in Electrical Engineering from Carleton University. She then studied Photonics and received her M.A.Sc. and Ph.D degree in Electrical and Computer Engineering from the University of Toronto and Carleton University, respectively. After working with the Silicon Photonics/Optoelectronics team at the National Research Council (NRC) during her Ph.D. program, she joined Prof. Lionel Kimerling's laboratory at the Massachusetts Institute of Technology (MIT) and Prof. Kenneth Crozier's laboratory at the Harvard University as a NSERC postdoctoral fellow to work on opto-electronic integration and silicon nanofabrication. Dr. Ye returned to Canada in 2009.



Titles: Diagnostic Biomedical Optics and Effect of Nano-Scale Contrast Agents

[Dr. Murukeshan Vadakke Matham](#)

[Nanyang Technological University, Singapore](#)

[View Abstract](#)

[Return to Top](#)

Murukeshan Vadakke Matham is a faculty and Deputy Director (Research and Education) of Centre for Optical & Laser Engineering (COLE), at Nanyang Technological University (NTU), Singapore. Prof. Murukeshan Vadakke Matham pursued his doctoral degree at the Indian Institute of Technology, Madras and at the University of Oldenburg, Germany with the DAAD Fellowship award and was awarded PhD in 1997 from IIT Madras (INDIA). Since 1997, he has been attached to Nanyang Technological University (NTU), Singapore where he is currently working as an Associate Professor. He has 25+ years of research experience, and close to 19 years of professional experience (full time), which includes 3 and half years of postdoctoral experience and 16 years of teaching experience. He is a Life member of Optical Society of India (OSI), and regular member of Optical Society of America (OSA) and SPIE. **He is also a Fellow of Institute of Physics, UK.**

KEYNOTE SPEAKERS



Titles: The dark side of the interface of catalysis: the point of view of nanomaterials

Dr. Nadi Braidy, Sherbrooke University, Canada

[View Abstract](#)

[Return to Top](#)

Biosketch

2018- Founder and Scientific Director of the Québec Network for Electron Microscopy of Materials

2015-20 Canada research chair on synthesis and characterization of hybrid nanomaterials

Education

2009 - Associate professor, Department of Chemical and Biotechnological Engineering, Université de Sherbrooke



Titles: Failure Mechanics of 2D Materials

Dr. Tobin Filleter, University of Toronto, Canada

[View Abstract](#)

[Return to Top](#)

Tobin Filleter is the Erwin Edward Hart Professor of Mechanical & Industrial Engineering at the University of Toronto. Prof. Filleter received a B.Sc. in Engineering Physics from Queen's University in 2003, and a Ph.D. in Physics from McGill University in 2009. Prior to joining the University of Toronto, Prof. Filleter was a postdoctoral fellow in the Department of Mechanical Engineering at Northwestern University from 2009-2012. Prof. Filleter leads the Nanomechanics and Materials Laboratory (NanoM2) at the University of Toronto which conducts cutting-edge research in the fields of nanomechanics and nanotribology. He is the recent recipient of the 2014 I.W. Smith Award from the Canadian Society for Mechanical Engineering (CSME), 2016 Early Researcher Award from the Ontario Ministry of Research and Innovation (OMRI), and 2017 Connaught New Researcher Award.

KEYNOTE SPEAKERS



Titles: Tuning the Surface Chemistry of Nanomaterials: A Perspective on the Challenges and Opportunities

Dr. Byron Gates, Simon Fraser University, Canada

[View Abstract](#)

[Return to Top](#)

As a Tier II Canada Research Chair in Surface Chemistry at Simon Fraser University, Byron Gates built a research program to investigate the interface and surface chemistry of nanomaterials. His research program has sought to advance our knowledge of and ability to control these interfaces and to improve our understanding and control over nanomaterials for a variety of potential applications. Significant developments include the preparation of designer syntheses of nanoscale materials, delivery and release on command of small molecules from the surfaces of nanoparticles using the photothermal effect, and stabilization of materials through surface chemistry modifications. Dr. Gates has also demonstrated new technologies in materials design and fabrication through self-assembly (e.g., photonic bandgap materials and porous membranes with nanoscale features) and patterning materials through alternative lithographic approaches to existing technologies (e.g., establishing the limits of replicating nanoscale features by soft lithography).



Titles: Engineering of MOFs and MOF-derived Materials for Energy and Water Technologies

Dr. Tobin Filleter, University of Toronto, Canada

[View Abstract](#)

[Return to Top](#)

Professor John Wang is Professor and Head of Department of Materials Science and Engineering, National University of Singapore. He has more than 30 years of experience in education and research of functional materials and materials chemistry. His current research focuses include: energy materials and devices, 2D materials chemistry, and nanostructured materials for water technologies. Professor John Wang has published >400 papers in prestigious, top international refereed journals.

LIST OF PAPERS

The following papers were presented at the 3rd International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'19)

Poster Session

Titles: Holistic Health improvement using the Internet of Bio-Nano Things Based Treatment

Authors: Shifa Sarker

[View Paper](#)

Titles: Synthesis And The Development Of Graphene-layered Substrates For Flexible Wearable Biosensors

Authors: Murukeshan Vadakke Matham, Jian Yi Pae, Rohit Medwal, Rajdeep Singh Rawat

[View Paper](#)

Titles: Diverse Nanofibrous Silicon Structures Induced by Identical Plasma Energy Deposition

Authors: Chirag Paladiya, Amirkianoosh Kiani

[View Paper](#)

Titles: Potential use of antibiotic-loaded polycaprolactone electrospun nanofibers to prevent implant related infections

Authors: Babak B Naghshine, Shawn R MacLellan, Amirkianoosh Kiani

[View Paper](#)

LIST OF PAPERS

Nanomaterials, Nanodevices: Fabrication, Characterization and Application

Titles: Temperature and Refractive Index Sensing Based on Plasmonic Fano Resonance

Authors: Sharmistha Chatterjee, Giovanna Palermo, Theodore Letsou, Giuseppe Lio, Antonio De Luca, Giuseppe Strangi

[View Paper](#)

Titles: Dispersing Carbon Black Nano-particle in Photosensitive Polymer and Its Application

Authors: Wen Tung Cheng, W. T. Yeh

[View Paper](#)

Titles: Study of surface energy of SiO₂ and TiO₂ on charge carrier mobility of rubrene organic field effect transistor

Authors: Anupama Shivamurthy, Parameshwara S, Prashanth G R, Renukappa N M, Sundara Rajan J

[View Paper](#)

Titles: Nanocrystalline MoS₂ Wear Mechanics by Friction Force Microscopy

Authors: Peter Serles, Guillaume Colas, Jason Tam, Jane Howe, Aurélien Saulot, Tobin Filleter

[View Paper](#)

Titles: Light Management in Advanced Photoelectrodes for Efficient Charge Collection and Light Absorption

Authors: Shihe Yang

[View Paper](#)

LIST OF PAPERS

Nanomaterials, Nanodevices: Fabrication, Characterization and Application

Titles: Indian medicine incinerated silver particles and their application in cancer therapy

Authors: Subha Subramaniyan Parimalam, Ahmad Sohrabi Kashani, Simona Badilescu, Rama Bhat, Alisa Piekny, Muthukumaran Packirisamy

[View Paper](#)

Titles: New Procedure of Biocompatibility Increment of Transparent Materials via Picosecond Pulse Ionization Process

Authors: Naghmeh Safaie, Amirkianoosh Kiani

[View Paper](#)

Titles: Comparative study of tribological behaviours of different base greases enhanced by graphene nano platelets

Authors: Jankhan Patel, Amirkianoosh Kiani

[View Paper](#)

Titles: Band Alignment in Van der Waals Phosphorous Heterostructures

Authors: Daniel Hashemi, Michael Snure, Stefan C. Badescu

[View Paper](#)

SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of TANN'19:



[Return to Top](#)

JOURNAL PUBLICATION

Selected articles from the conference will be published in the [International Journal of Theoretical and Applied Nanotechnology \(IJTAN\)](#) after a secondary review process.

The publication fee will be waived for papers that win the best paper award. Other attendees will receive a 25% discount towards the publication fee of the journal.

This journal has adopted to the open-access model, meaning all free access to the journal's articles and content with no need for subscription. This ensures larger audience and therefore higher citations.

Users are allowed to read, download, copy, distribute, print, search, or link to the full texts of the articles in this journal without asking prior permission from the publisher or the author. This is in accordance with the BOAI definition of open access.

All published papers of IJTAN will be submitted to Google Scholar, Microsoft Academic Search, Open J-Gate, Mendeley, Index Copernicus International, Academic Index, Mendeley, Primo Central, and Genomics JournalSeek for possible indexing. Additionally, they will be permanently archived in Portico (one of the largest community-supported digital archives in the world) and will be assigned unique DOIs.

ETHICS & MALPRACTICE

Publication Ethics and Publication Malpractice Statement

The following statement is mainly based on the [Code of Conduct and Best-Practice Guidelines for Journal Editors](#) (Committee on Publication Ethics, 2011).

Scientific Committee

Scientific Committee

Scientific committees consisting of experts in the fields are established. The committees oversee the peer-review and publication process. To see the scientific committee members, please follow the link below.

[Scientific Committee](#)

Equality and Decisions

One or more reviewer, scientific committee member, or chair, (internal or external), are responsible for evaluating the relevance of the submitted manuscripts to the proceedings, technical and scientific merit, originality, and impact. These evaluations are to be carried out regardless of ethnicity, religion, gender, sexual orientation, political beliefs, and institutions. Successive to peer-review, the Chair has full authority and is solely responsible for the published content and the process thereof.

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Scientific committee member(s) and publishing staff may not utilize the contents of submitted manuscripts whether accepted or rejected, directly or indirectly for their own research purposes without prior written consent by the authors.

ETHICS & MALPRACTICE

Reviewers

Contribution to Decisions

In order for final decisions to be made regarding acceptance or rejection of papers, we rely on peer-review. Peer-review is the process of experts in the field reading, understanding, and objectively commenting on submitted papers. Through peer-review, scholars give back to the academic and scientific community by helping the chair(s) make decisions regarding manuscripts.

Promptness

Reviewers should promptly notify the chair(s) if they are unable or unqualified to carry out their reviewing duties. Reviewers should do their best to provide the reviews to the chair(s) as promptly as possible, and within the designated time-frame.

Confidentiality

Reviewers must not share the contents of the manuscripts they receive for review, regardless of their decision to review or contents of the review, directly or indirectly, with anyone other than the person who has assigned the review.

Fairness

Reviewers should review manuscripts fairly and objectively, with supporting evidence or arguments, regardless of personal feelings or biases.

Thoroughness

Reviewers should thoroughly read, understand, and provide constructive feedback with the aim of improving the manuscript. Reviewers should aim to identify and report technical issues, irregularities, mistakes, missing citations, and similarity to other published work.

Conflicts of Interest

Invited reviewers should immediately inform the chair(s) in case of a conflict of interest based on competitive, collaborative, personal, family, and other relationships with the authors or people involved in the work.

ETHICS & MALPRACTICE

Authors

Authorship

Only persons who have significantly contributed to the work and the manuscript can be named authors on a paper. These contributions include the idea/concept, design, experiments, evaluation, analysis, drafting or revision of the manuscript, and others. Authors must all have agreed to be named as such and for the manuscript to be submitted. Anyone who has contributed based on the above, but the level of contribution is not significant, may appear in the acknowledgement section of the manuscript.

Accuracy, Originality, and Plagiarism

Authors should describe their work and the results of their work accurately and in full. The level of provided accuracy and detail should be such that a reader can replicate the work independently. Inaccurate, incomplete, fraudulent, and misleading statements are considered unacceptable and unethical. Direct or indirect use of other people's work is not allowed, unless properly cited. Previous works that have influenced the current work should also be cited. Presenting someone else's work as one's own is strictly prohibited and is considered plagiarism.

Data and Material

Authors are encouraged to share their data, software, or other sharable material online, provided copyright and ownership laws surrounding that particular project permit. Authors may also be asked to share such material with the chair(s), and/or reviewers, and must be willing to do so if asked.

Dual Submissions

Submitting a manuscript to more than one venue (conference, journal, etc) simultaneously is not allowed. Presenting previously published work to be considered as a new submission, without a significant new interpretation or analysis, is prohibited.

ETHICS & MALPRACTICE

Conflicts of Interest

Authors must notify the chair(s) at the time of submission, if any factor outside the scope of the research has influenced any step of the work and manuscript writing. Examples of such factors include but are not limited to funding, grants, advisory and consultancy, stock ownership, current or past employment, and memberships, among others. All funding sources should be disclosed in the manuscript.

Animal and Human Subjects

Works involving human and/or animal subjects must ensure that the work has abided by institutional guidelines, and pre-approved by required bodies. Moreover, consent must be acquired from participants, and privacy of subjects must be ensured. All of the above must be specified with clear statements in the manuscript.

Hazardous Material

It should clearly be identified in the manuscripts if the works have involved hazardous chemicals and material, or devices that can be harmful.

Reporting of Mistakes, Errata, and Retractions

If an author identifies a major error in a published paper, he/she must immediately identify the publisher. Regardless of whether a significant error is reported by the authors of the work or other readers, authors are obligated to take the necessary steps to correct the issue. It is decided on a case-by-case basis whether an erratum will be submitted to notify future readers of the error and correction, or whether the paper will be retracted.

Unethical/plagiarism issues mostly result in a retraction, while unintended mistakes will mostly result in the publication of an erratum.

ETHICS & MALPRACTICE

Publisher

Errata and Retractions

The publisher takes the necessary steps to prevent mistakes, academic and scientific misconduct, and unethical behavior, both intended and unintended. When mistakes are reported, the publisher works with chair(s) and authors to publish an erratum clarifying the issue. In cases where the mistakes are severe and significant, the paper might be retracted. If unethical behavior, plagiarism, academic and scientific misconduct, or other such activities are proven to have taken place by an author or authors, the publisher will retract the paper.

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Schedule

This conference proceeding accompanies the conference, meaning a new proceedings will be published every year for the corresponding annual conference of this series.

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[Return to Top](#)