TANN20

PROCEEDINGS OF THE 4TH INTERNATIONAL CONFERENCE ON THEORETICAL AND APPLIED NANOSCIENCE AND NANOTECHNOLOGY (TANN'20)

November 9, 2020 - November 11, 2020 | ~~Niagara Falls, Canada~~ | Virtual Conference

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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 4th International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'20).

TANN'20 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'20 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 4th International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'20). We wish you a very successful and enjoyable experience.

Dr. Jin Zhang
Conference Chair
TANN'20

Dr. Amirkianoosh Kiani
Conference Co-Chair and Proceedings Editor
TANN'20

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ABOUT TANN'20

The International Conference of International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'20) aims to become the leading annual conference in fields related to nanoscience and nanotechnology. The goal of TANN'20 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'19 in Canada, TANN'20 is hosted in Canada as well this year.

TANN is an acronym for **T**heoretical, **A**pplied, **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)

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SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the TANN'20 Conference:

Scientific Committee Chairs

Dr. Jin Zhang
University of Western Ontario, Canada
Conference Chair

Dr. Amirkianoosh Kiani
Ontario Tech University, Canada
Conference Co-Chair

Scientific Committee Members

- **Dr. M.P. Anantram,** University of Washington, USA
- **Dr. Daolun Chen,** Ryerson University, Canada
- **Dr. Byoung-Chul Choi,** University of Victoria, Canada
- **Dr. Zhang Di,** Shanghai Jiao Tong University, China
- **Dr. Supratim Ghosh,** University of Saskatchewan, Canada
- **Dr. Michael Hilke,** McGill University, Canada
- **Dr. Mehdi Keshavarz Hedayati,** University of Durham, UK
- **Dr. Alex Kalamkarov,** Dalhousie University, Canada
- **Dr. Shahram Karimi,** Lambton College of Applied Arts and Technology, Canada
- **Dr. Narinder Kaur,** Dongguk University, South Korea
- **Dr. Paul Kiekens,** Ghent University, Belgium
- **Dr. Ghada Koleilat,** Dalhousie University, Canada
- **Dr. Harri Lipsanen,** Aalto University, Finland
- **Dr. Koon Gee Neoh,** National University of Singapore, Singapore
- **Dr. Subhathirai Subramaniyan Parim,** Concordia University, Canada
- **Dr. Simone Pisana,** York University, Canada
- **Dr. Shi San Qiang ,** The Hong Kong Polytechnic University, Hong Kong
- **Dr. Ahmed Soliman,** Concordia University, Canada
- **Dr. Shihe Yang,** Peking University Shenzhen Graduate School, China
- **Dr. L.Q. Wang,** The University of Hong Kong, Hong Kong
- **Dr. Wilfred van der Wiel,** University of Twente, Netherlands
- **Dr. Gu Xu,** McMaster University, Canada

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KEYNOTE SPEAKERS

The keynote information for the 7th International Conference of Control, Dynamic Systems, and Robotics (CDSR'20) is as follows:

Plenary Speaker

Dr. Jifeng Liu
Dartmouth University, USA

Keynote Speakers

Dr. Jonathan Baugh
University of Waterloo, Canada

Dr. Simone Pisana
York University, Canada

Dr. Wilfred van der Wiel
University of Twente, Netherlands

Dr. Michael Hilke
McGill University, Canada

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PLENARY SPEAKER

Titles: Nanophotonics: There's Plenty of Room to "Light up" the Bottom

Dr. Jifeng Liu, Dartmouth University, USA

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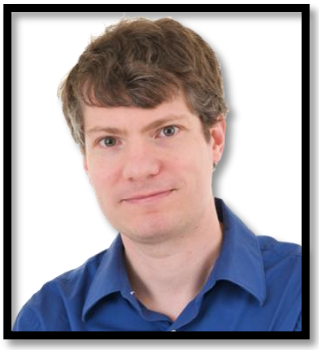
Dr. Jifeng Liu is currently an Associate Professor at Thayer School of Engineering, Dartmouth College. He received his B.S. and M. S. degrees in Materials Science and Engineering from Tsinghua University, Beijing, China, and his Ph.D. degree from Massachusetts Institute of Technology. His major research field is nanophotonic materials and devices, including integrated photonics for ultralow energy photonic datalinks as well as nanomaterials and nanostructures for novel photodetectors, solar photovoltaics and solar thermal energy harvesting. He has authored or co-authored more than 80 peer-reviewed journal papers, more than 70 conferences papers, and 6 book chapters, which have been cited ~10,000 times according to Google Scholar. Dr. Liu has also been granted 14 U.S. patents related to nanophotonic materials and devices. He received National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award in 2013, and was elected a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) in 2015.

KEYNOTE SPEAKER



Titles: Semiconductor Nano-electronics for Quantum Information and Sensing

Dr. Jonathan Baugh, University of Waterloo, Canada

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Jonathan Baugh is an Associate Professor in the Department of Chemistry and the Institute for Quantum Computing at the University of Waterloo. His research group investigates the potential of semiconductor nanoelectronics for scalable quantum information applications. Dr. Baugh obtained a PhD in Physics in 2001 at the University of North Carolina at Chapel Hill, and did seminal work on nuclear magnetism in quantum dots during postdoctoral studies at the University of Tokyo. He has published more than 60 research papers across many subfields, including magnetic resonance, quantum control, quantum transport, quantum dots, nanowires, proximity superconductivity, nanomechanics and materials science. Recently, he has engaged the engineering community by giving invited tutorials on emerging quantum technologies at several international semiconductor/microelectronics conferences.

KEYNOTE SPEAKER

Titles: Nanoscale Heat Transport at Plasmonic Interfaces and in 2D Crystals

Dr. Simone Pisana, York University, Canada

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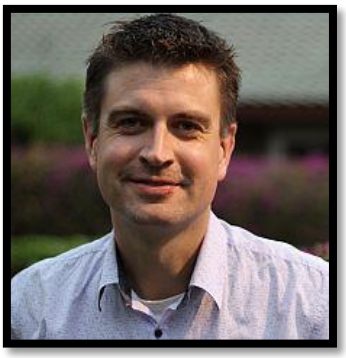
Simone Pisana received his PhD at the University of Cambridge in 2008. His graduate studies focused on electronic properties of novel nanostructured materials such as carbon nanotubes, semiconducting nanowires, and graphene. He then joined Hitachi Global Storage Technologies (now Western Digital) as a Postdoctoral Researcher and continued on to become Research Staff Member in 2010 and Senior Research Manager in 2014. While in industry, he worked on nanoscale magnetic field sensing devices and energy-assisted magnetic recording technologies. Dr. Pisana joined the Department of Electrical Engineering and Computer Science in the Lassonde School of Engineering at York University in 2014 as Associate Professor, and is serving as Graduate Program Director since 2018. His research is aimed at exploring transport phenomena in nanoscale devices & materials for energy efficient nanoelectronic device engineering. He is Senior Member of the IEEE, and has authored over 40 refereed journal articles with over 8,000 citations and 12 US patents & applications.

KEYNOTE SPEAKER



Titles: Material Learning
Dr. Wilfred van der Wiel, University of Twente, Netherlands

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Name: Van der Wiel
Given names: Wilfred Gerard
Academic titles: Prof. Dr. MSc.
Birth date and place: 28 May 1975, Gouda, The Netherlands
Present function: Professor of NanoElectronics and
Director of Center for Brain-Inspired Nano Systems (BRAINS)
E: W.G.vanderWiel@utwente.nl W: www.utwente.nl/brains

EDUCATION

1993-1997 MSc Applied Physics (cum laude), Delft University of Technology, The Netherlands
1998-2002 PhD Applied Physics (cum laude1), Delft University of Technology, The Netherlands; NTT Basic Research Labs. Japan

WORK EXPERIENCE

2002-2005 PostDoc and JST Sakigake Fellow, University of Tokyo, Japan
2002-2007 Research Program Leader, University of Twente, The Netherlands
2002-2009 Associate Professor, University of Twente, The Netherlands
2009-present Full Professor and Chair, University of Twente
2018-present Director Center for Brain-Inspired Nano Systems (BRAINS)

For more information please visit:
https://tannconference.com/program/

KEYNOTE SPEAKER

Titles: Phonon Coherence and Phonon Engineering in Nanostructures and Graphene Isotope Superlattices

Dr. Michael Hilke, McGill University, Canada

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Michael Hilke is currently a faculty member in the department of Physics at McGill University. After completing his doctorate at the University of Geneva on disordered systems, he joined the group of Daniel Tsui (Physics Nobel laureate in 1998) in Princeton in 1996 to work with on two dimensional electron systems, where he discovered the quantized Hall insulator. After joining McGill in 2001 he built-up the Quantum Nano Electronics Laboratory (QNEL), a low temperature laboratory and a facility for the fabrication, processing and simulations of quantum, nano and low dimensional materials as well as applications in the biomedical field. He was the director of INTRIQ (Center for Quantum Information in Quebec) for 3 years, director of CPM (Center for the physics of Materials) at McGill for 6 years, and director of RQMP (Advanced Materials Center in Quebec) for 2 years. He is also active in several research projects on physics education research using new smart online learning tools.

LIST OF PAPERS

The following papers were presented at the 4th International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'20)

Nanomaterials, Nanodevices: Fabrication, Characterization and Application

Title: Quantum Simulation of SiC Nanotubes

Authors: Qiyin Luo, Mitsuhiro Matsumoto

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Title: Gold Nanoparticle-Coated Microspheres for Enhancing Immunosensor Detection of Hepatitis B Virus Surface Antibody

Authors: Pitirat Pholpabu, Rungtiva P. Poo-arporn, Dujduan Waraho-Zhmayev, Boonnisa Watcharapathorn, Chanikan Thongdaeng, Paisit Luesiripanich, Thonthun Tueanwiradet, Jadsadakorn Juntratip

View Paper

Title: Enhanced H2S Sensing Properties at Room Temperature of Printed In2O3-Based Sensors for Food Quality Control Applications

Authors: Ahmad Al Shboul, Ricardo Izquierdo

View Paper

Title: Effect of Counterions on DNA Charge Transport: A Theoretical Study

Authors: Yiren Wang, Hashem Mohammad, M. P. Anantram

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Nanomaterials, Nanodevices: Fabrication, Characterization and Application

Title: The Effect of Metallic Ions on the Enhanced Upconversion Emission of NaGdF4 Nanostructures

Authors: Deepthi Muraleedharan, Jin Zhang

View Paper

Title: Non-linear Optical Materials at Nanoscale: Synthesis of Second Harmonic Active Lithium Niobate Nanocrystals through Solution-Phase Methods

Authors: Rana Faryad Ali, Byron Gates

View Paper

Title: Linear Ridge Arrays Induce a Self-Cleaning Functionality and Improved Electrochemical Performance during the Oxygen Evolution Reaction

Authors: Taylor K. Audrey, Muo Tiffany, Sonea Ana; Yee B. Brenden, Chen Jiayue, Gates, D. Byron

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Modeling and Simulation

Title: Investigation and Application of Zig-zag and Armchair Edged Graphene Nanoribbons in Nanoscale Electronic Devices

Authors: Qiyin Luo, Mitsuhiro Matsumoto

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Title: Hydrolysis of Cellulose in Supercritical Water: Quantum Simulation

Authors: Taketo Oku , Mitsuhiro Matsumoto

View Paper

Title: Nanoscale Investigation of Frost Formation on Cold Plates

Authors: Kentaro Nagashima, Mitsuhiro Matsumoto

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Title: Structure and Electronic Properties of a-Si:H Investigated with Quantum Simulation

Authors: Haili Li, Mitsuhiro Matsumoto

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SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of TANN'20:

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JOURNAL SPECIAL ISSUES

Selected articles from the coference 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 defi nition 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.

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CDSR’21

The 8th International Conference of Control, Dynamic Systems, and Robotics (CDSR'21) will be held on May 23 - 25, 2021 in Niagara Falls, Canada.

For inquiries and to obtain further information on the congress, please visit the website or call us at:

+1-613-834-9999

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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

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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, originally, 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.

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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.

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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.

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

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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.

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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.

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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.

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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.

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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.

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

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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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Ownership and Management

This conference-proceedings is managed and operated by the International ASET (International Academy of Science, Engineering, and Technology) and Avestia Publishing (the publishing arm of ASET).

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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