



TANN₂₀

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

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

TANN'20

November 10

November 11

**OUR PROGRAM SCHEDULE IS BASED ON EASTERN TIME
(ET - OTTAWA TIME)**

TANN'20

TANN'20 Scientific Committee Chair



Dr. Jin Zhang

University of Western Ontario, Canada
Conference Chair

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Dr. Amirkianoosh Kiani

Ontario Tech University, Canada
Conference Co-Chair

[View Profile](#)

Return to Top

NOVEMBER 10

ROOM 1

8:30 AM - 9:00 AM	Registrations
9:00 AM - 9:10 AM	Official Opening
	Dr. Jin Zhang, University of Western Ontario, Canada
9:10 AM - 10:10 AM	PLENARY LECTURE
	<u>Nanophotonics: There's Plenty of Room to "Light up" the Bottom</u> Dr. Jifeng Liu, Dartmouth University, USA
10:10 AM - 10:55 AM	KEYNOTE LECTURE
	<u>Material Learning</u> Dr. Wilfred van der Wiel, University of Twente, Netherlands
10:55 AM - 11:05 AM	Break

NOVEMBER 10

11:05 AM - 11:50 AM KEYNOTE LECTURE

[Phonon Coherence and Phonon Engineering in Nanostructures and Graphene Isotope Superlattices](#)

Dr. Michael Hilke, McGill University, Canada

11:50 AM - 1:25 PM

Session

[Nanomaterials, Nanodevices: Fabrication, Characterization and Application](#)

PLENARY LECTURE

NOVEMBER 10 | 9:10 AM - 10:10 AM | SESSION CHAIR: DR. JIN ZHANG, UNIVERSITY OF WESTERN ONTARIO, CANADA



Titles: Nanophotonics: There's Plenty of Room to "Light up" the Bottom
Dr. Jifeng Liu, Dartmouth University, USA

[View Abstract](#)

[Return to Top](#)

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 LECTURE

NOVEMBER 10 | 10:10 AM - 10:55 AM | SESSION CHAIR: DR. JIN ZHANG, UNIVERSITY OF WESTERN ONTARIO, CANADA



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

[View Abstract](#)

[Return to Top](#)

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 LECTURE

NOVEMBER 10 | 11:05 AM - 11:50 AM | SESSION CHAIR: DR. JIN ZHANG, UNIVERSITY OF WESTERN ONTARIO, CANADA



Titles: Phonon Coherence and Phonon Engineering in Nanostructures and Graphene Isotope Superlattices
Dr. Michael Hilke, McGill University, Canada

[View Abstract](#)

[Return to Top](#)

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.

SESSION

NANOMATERIALS, NANODEVICES: FABRICATION, CHARACTERIZATION AND APPLICATION

NOVEMBER 10 | 11:50 AM - 1:25 PM | SESSION CHAIR: DR. JIN ZHANG, UNIVERSITY OF
WESTERN ONTARIO, CANADA

Titles: Quantum Simulation of SiC Nanotubes

TANN 134

Time: 11:50 - 11:55

Presenter: Qiyin Luo, Kyoto University, Japan

Authors: Qiyin Luo, Mitsuhiro Matsumoto

[View Abstract](#)

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

TANN 137

Time: 11:55 - 12:10

Presenter: Pitirat Pholpabu, King Mongkut's University of Technology Thonburi,
Thailand

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

[View Abstract](#)

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

TANN 139

Time: 12:10 - 12:25

Presenter: Ahmad Al Shboul, École de Technologie Supérieure (ETS), Canada

Authors: Ahmad Al Shboul, Ricardo Izquierdo

[View Abstract](#)

[Return to Top](#)

SESSION

NANOMATERIALS, NANODEVICES: FABRICATION, CHARACTERIZATION AND APPLICATION

NOVEMBER 10 | 11:40 AM - 12:45 PM | SESSION CHAIR: DR. JIN ZHANG, UNIVERSITY OF WESTERN ONTARIO, CANADA

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

TANN 140

Time: 12:25 - 12:40

Presenter: Yiren Wang, University of Washington, USA

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

[View Abstract](#)

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

TANN 141

Time: 12:40 - 12:55

Presenter: Jin Zhang, University of Western Ontario, Canada

Authors: Deepthi Muraleedharan, Jin Zhang

[View Abstract](#)

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

TANN 142

Time: 12:55 - 1:10

Presenter: Rana Faryad Ali, Simon Fraser University, Canada

Authors: Rana Faryad Ali, Byron Gates

[View Abstract](#)

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

TANN 143

Time: 1:10 - 1:25

Presenter: Audrey K. Taylor, Simon Fraser University, Canada

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

[View Abstract](#)

[Return to Top](#)

NOVEMBER 11

9:00 AM - 9:45 AM **KEYNOTE LECTURE**

[Semiconductor Nano-electronics for Quantum Information and Sensing](#)

Dr. Jonathan Baugh, University of Waterloo, Canada

9:45 AM - 10:30 AM **KEYNOTE LECTURE**

[Nanoscale heat transport at plasmonic interfaces and in 2D crystals](#)

Dr. Simone Pisana, York University, Canada

10:30 AM - 10:40 AM **BREAK**

10:40 AM - 11:10 AM **SESSION**

[Modeling and Simulation](#)

Return to Top

KEYNOTE LECTURE

NOVEMBER 11 | 9:00 AM - 9:45 AM | SESSION CHAIR: DR. AMIRKIANOOSH KIANI, ONTARIO
TECH UNIVERSITY, CANADA



Titles: Semiconductor Nano-electronics for
Quantum Information and Sensing
Dr. Jonathan Baugh, University of Waterloo,
Canada

[View Abstract](#)

[Return to Top](#)

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 LECTURE

NOVEMBER 11 | 9:45 AM - 10:30 AM | SESSION CHAIR: DR. AMIRKIANOOSH KIANI, ONTARIO
TECH UNIVERSITY, CANADA



Titles: Nanoscale Heat Transport at
Plasmonic Interfaces and in 2D Crystals
Dr. Simone Pisana, York University, Canada

[View Abstract](#)

[Return to Top](#)

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.

SESSION

MODELING AND SIMULATION

NOVEMBER 11 | 10:40 AM - 11:10 AM | SESSION CHAIR: DR. AMIRKIANOOSH KIANI,
ONTARIO TECH UNIVERSITY, CANADA

Titles: Investigation and Application of Zig-zag and Armchair Edged Graphene Nanoribbons as a Potential Junctions between Graphene Electrodes in Nanoscale Electronic Device

TANN 129

Time: 10:40 - 10:55

Presenter: Nikolay Delibozov, Technical University of Sofia, Bulgaria

Authors: Nikolay Delibozov

[View Abstract](#)

Titles: Hydrolysis of Cellulose in Supercritical Water: Quantum Simulation

TANN 132

Time: 10:55 - 11:00

Presenter: Taketo Oku, Kyoto University, Japan

Authors: Taketo Oku, Mitsuhiro Matsumoto

[View Abstract](#)

Titles: Nanoscale Investigation of Frost Formation on Cold Plates

TANN 135

Time: 11:00 - 11:05

Presenter: Kentaro Nagashima, Kyoto University, Japan

Authors: Kentaro Nagashima, Mitsuhiro Matsumoto

[View Abstract](#)

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

TANN 136

Time: 11:05 - 11:10

Presenter: Haili Li, Kyoto University, Japan

Authors: Haili Li, Mitsuhiro Matsumoto

[View Abstract](#)

[Return to Top](#)