



# TANN<sup>22</sup>

## PROCEEDINGS OF THE 6<sup>TH</sup> INTERNATIONAL CONFERENCE ON THEORETICAL AND APPLIED NANOSCIENCE AND NANOTECHNOLOGY (TANN'22)

June 02- 04, 2022 | Niagara Falls, Canada

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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 6<sup>th</sup> International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'22).**

TANN'22 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 is a series of international conferences held yearly. These conferences focus on all aspects of Theoretical and Applied Nanoscience and Nanotechnology.

In the Sixth 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 6<sup>th</sup> International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'22). We wish you a very successful and enjoyable experience.

**Dr. Jin Zhang**  
*Conference Chair*  
TANN'22

**Dr. Amirkianoosh Kiani**  
*Conference Chair*  
TANN'22

# ABOUT TANN'22

**The International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'22) aims to become the leading annual conference in fields related to nanoscience and nanotechnology.** The goal of TANN'22 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 Theoretical and Applied Nanoscience and Nanotechnology. After successfully holding TANN'17 to TANN'21 in Canada, TANN'22 is hosted in Niagara Falls - Canada as well this year. TANN'22 is going to be held in a hybrid format, i.e. in person as well as online.

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

- All papers were peer-reviewed
- The congress proceedings are published under an ISSN and ISBN number
- Each paper is assigned a unique DOI number by [Crossref](#)
- The conference proceedings are indexed by [Google Scholar](#)
- The proceedings are permanently archived in [Portico](#) (one of the largest community-supported digital archives in the world)

Google Scholar



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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'22 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. Qammer H. Abbasi**, University of Glasgow, UK
- **Dr. Daolun Chen**, Ryerson University, Canada
- **Dr. Byoung-Chul Choi**, University of Victoria, Canada
- **Dr. Shahram Karimi**, Lambton College of Applied Arts and Technology, Canada
- **Dr. Harri Lipsanen**, Aalto University, Finland
- **Dr. Roger Newman**, University of Toronto, Canada
- **Dr. Mohsen Rahmani**, Nottingham Trent University, UK
- **Dr. Ahmad Taha**, Glasgow University, UK
- **Dr. Sihong Wang**, University of Chicago, USA
- **Dr. L.Q. Wang**, The University of Hong Kong, Hong Kong
- **Dr. Effie Marcoulaki**, National Centre for Scientific Research, Greece

# KEYNOTE SPEAKERS

The keynote information for the 6th International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'22) is as follows:

## Keynote Speakers



**[Dr. Qammer H. Abbasi](#)**  
University of Glasgow, UK



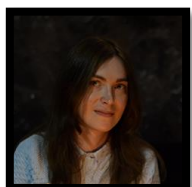
**[Dr. Anna Bershteyn](#)**  
University of Washington,  
USA



**[Dr. Anna Bershteyn](#)**  
University of Washington,  
USA



**[Dr. Jinju Chen](#)**  
Newcastle University, UK



**[Dr. Daria Smirnova](#)**  
The Australian National  
University, Australia



**[Dr. Shirley Tang](#)**  
The University of Waterloo,  
Canada

## KEYNOTE SPEAKERS



**Titles:** Can I Monitor Myself Without Any Sensor On My Body?

Dr. Qammer H. Abbasi, University of Glasgow, UK

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Dr Abbasi is a Reader with the James Watt School of Engineering, University of Glasgow, U.K., deputy head for Communication Sensing and Imaging group, Program Director for Dual PhD Degree, deputy theme lead for Quantum & Nanotechnology in the University's Advance Research Centre, CoManager for RF and terahertz laboratory and lead for healthcare and Internet of things use cases with Scotland 5G Center Urban testbed. He has grant portfolio of £6M and contributed to more than 350+ leading international technical journal and peer reviewed conference papers and 10 books and received several recognitions for his research including URSI Young Scientist Awards, UK exceptional talent endorsement by Royal Academy of Engineering, National talent pool award by Pakistan, International Young Scientist Award by NSFC China, National interest waiver by USA, University Research Excellence Award from TAMUQ in two consecutive years, Reward for Excellence from University of Glasgow, Research Culture award University of Glasgow, 7 best paper awards, most downloaded paper in IEEE Terahertz Transaction, cover of MDPI journal twice, and best representative image of an outcome by QNRF.



**Titles:** Nanotechnology at the Frontiers of Global Health

Dr. Anna Bershteyn, New York University, USA

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Anna Bershteyn, PhD is an Assistant Professor of Population Health at New York University Grossman School of Medicine. Her lab uses mathematical modeling to inform policy decision-making regarding disease prevention. She received a PhD in Materials Science and Engineering at MIT focusing on vaccine discovery using lipid-based nanoparticles.

## KEYNOTE SPEAKERS



**Titles:** MEMS-Actuated Metasurface

Alvarez Lens

Dr. Karl Böhringer, University of Washington, USA

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Karl F. Böhringer received his Dipl.-Inform. degree from the University of Karlsruhe, Germany in 1990 and his M.S. / Ph.D. degrees in computer science from Cornell University, Ithaca, NY in 1993 / 1997. He was a Visiting Scholar at Stanford University in 1994-95 and a Postdoctoral Researcher at the University of California, Berkeley from 1996 to 1998. He joined the University of Washington in Seattle, WA in 1998, where he is currently Professor of Electrical & Computer Engineering and Bioengineering, Director of the Nano-engineered Systems Institute, and Site Director for the University of Washington / Oregon State University node in the NSF National Nanotechnology Infrastructure Network. He held visiting faculty positions at the Universities of Tohoku, Tokyo, Kyoto (Japan), São Paulo (Brazil) and École Polytechnique Fédérale de Lausanne (Switzerland).



**Titles:** Nanostructures and Nanocoatings  
for Antibiofilm Applications

Dr. Jinju Chen, Newcastle University, UK

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Dr Chen is Associate Professor in Biointerface Engineering at Newcastle University, UK. She is a Principal Editor of Journal of Materials Research and Editorial Board Member of Scientific Reports. Her research spans nanobiomechanics, antimicrobial surfaces, biofilm control, cell-materials interactions, cell and tissue mechanics. Her antimicrobial surface work includes developing multiscale structures on orthopaedic implant materials and other bioinspired surfaces to inhibit biofilm formation. She has co-developed individual based models to predict biofilm growth, deformation and erosion.

## KEYNOTE SPEAKERS



**Titles:** Topological Nanophotonic  
Metasurfaces

Dr. Daria Smirnova, The Australian National  
University, Australia

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Daria Smirnova received her Ph.D. in Physics in 2016 from the Australian National University (ANU), followed by work experience in the USA, Russia and Australia. Currently, she holds a prestigious Discovery Early Career Research Fellow position supported by the Australian Research Council at the ANU. In 2020 she was honoured as one of Australia's leading young researchers in The Australian's Special Report. Her research interests include nonlinear physics, nanophotonics and topological photonics.



**Titles:** NanoBiomaterials for 3D Bioprinting  
Dr. Shirley Tang, The University of Waterloo,  
Canada

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Professor Xiaowu (Shirley) Tang joined the Department of Chemistry & Waterloo Institute for Nanotechnology (WIN) at the University of Waterloo (UW) in 2006. Currently, she is the Associate Dean of Science, Research, and a member of the Board of Directors for WIN. During 2014-2017, she served as the Director of Nanotechnology Engineering (NE) program, Canada's only undergraduate NE program. Prior to joining UW, she received her Ph.D. from Massachusetts Institute of Technology (MIT) and pursued postdoctoral work at Stanford University. She also had 3 years of industrial experience in Silicon Valley, California, and is a co-founder of LeNano Diagnostics, Inc, a company incorporated in 2016. The Tang NanoBio lab is internationally recognized for its pioneering work on hybrid nanobio-materials and devices, contributing particularly to the material, surface, and physical chemistry of carbon-based nanostructures.

# LIST OF PAPERS

The following papers were presented at the 6th International Conference on Theoretical and Applied Nanoscience and Nanotechnology (TANN'22)

## Nanomaterials, Nanodevices: Fabrication, Characterization and Application

**Titles:** [Enhancing Mechanical and Thermal Properties of NBR/Nano-Silica by Proper Loading of Organoclay](#)

**Authors:** Fatemeh Arabgol

**Titles:** [Functional Coatings for X-ray Fluorescent Nanoparticles](#)

**Authors:** G. M. Saladino, N. I. Kilic, K. Shaker, Y. Li, B. Hamawandi<sup>1</sup>, C. Vogt, B. Brodin, M. Svenda, I. Yazgan, H. M. Hertz, M. S. Toprak

**Titles:** [On The Water Dynamics Inside Carbon Nanotubes: NMR Spectroscopy And MD Simulation Techniques](#)

**Authors:** Jamal Hassan, Aris Chatzichristos, Lydia Gkoura, George Papavassiliou

**Titles:** [The Effects of Synthesis Techniques on the Photoluminescent Behaviours of the Nmpo<sub>4</sub>:Ce<sup>3+</sup> \(M=Mg, Ca, Ba, Sr\) Nanophosphors](#)

**Authors:** Leelakrishna Reddy, Balakrishna Avula, Amanda Percy Sefage, Prettier Morongoa Maleka and Martin Ntwaeaborwa

**Titles:** [Formation of NiO Thin-Film via Picosecond Laser Pulses for Energy Storage Electrode Fabrication](#)

**Authors:** Mayuresh Khot, Amirkianoosh Kiani

**Titles:** [MgFe<sub>2</sub>O<sub>4</sub>@SiO<sub>2</sub> Core-Shell Composite For The Adsorptive Removal Of Pb\(II\) And Ni\(II\) Ions](#)

**Authors:** Manmeet Kaur

**Titles:** [Study of Ion Beam Characteristics According to Coil Position of Xe Plasma FIB](#)

**Authors:** Manjin Park, Kihwan Kim, Jungseok Park, Dongyoung Jang

# LIST OF PAPERS

## Nanomaterials, Nanodevices: Fabrication, Characterization and Application

**Titles:** [Enhancement of Optical Conductivity and Band Gap of 3D Nanostructured Si Induced By Ultra-Short Laser Pulses](#)

**Authors:** Nishant Singh Jamwal, Amirkianoosh Kiani

**Titles:** [Assessment of Different Synthesis Routes of Iron Oxide Magnetic Nanoparticles for Magnetic Hyperthermia Applications](#)

**Authors:** Laura Huertas, Doris Cadavid, Omar E. Olarte, Adriana Corredor

**Titles:** [Magnetization Switching Dynamics of Cofeb/B-W Nanomagnets Driven By Spin Hall Effect](#)

**Authors:** M. Aryal, Th. Speliotis, B.C. Choi

**Titles:** [Solid Phase Reversible Immobilization \(SPRI\) Beads-Based Detection of Mycobacterium Leprae Positive Samples Using Isothermal Technique](#)

**Authors:** Nupur Garg, Farhan Jalees Ahmad, Sudeshna Kar

**Titles:** [Super-Resolution Imaging and Enhanced Spontaneous Neuritogenesis with Nanodiamond Probe](#)

**Authors:** Moon Sung Kang, Jaeheung Kim, Hyo Jung Jo, Jong Ho Lee, Jong-Chul Park, Chang-Seok Kim, Dong-Wook Han

**Titles:** [Effects of Biocompatible Substrates on the Electrical Properties of Graphene](#)

**Authors:** M. Simchi, M. Amiri, M. Berahman, E. Rezvani, I. Mirzaei, A. Simchi, M. Fardmanesh

**Titles:** [N, S-Carbon Quantum Dots Derived From Plastic Waste: Turn-Off Fluorescence Recognition of Heavy Metal Ions and a Turn-On for Histamine](#)

**Authors:** Jessica Marlene Muro Hidalgo , Iván Jonathan Bazany Rodríguez and Pandiyan Thangarasu

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# 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.**

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. 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.

This journal has been approved by the Committee on Publication Ethics (COPE). Please visit the following websites for the respected journals:  
IJTAN: <https://ijtan.avestia.com>

# TANN'23

7th International Conference of Theoretical and Applied Nanoscience and Nanotechnology (TANN'23) will be held on June 01, 2023 - June 03, 2023 in Canada.



For inquiries and to obtain further information on the congress, please visit the [website](http://2023.tannconference.com)

You can also email [info@tannconference.com](mailto:info@tannconference.com) or call us

at: +1-613-834-9999

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# ETHICS & MALPRACTICE

At International ASET Inc., we take matters that relate to ethics in publishing very seriously. We believe that the peer-review publication process is a vital building block of academia, and its integrity must be maintained at all costs, which is why every article will be peer-reviewed by several experts in the field. Under peer-review, experts in the related fields are required to provide opinions and comments on the improvements of the submissions.

We are pleased to announce that Avestia Publishing (a publisher of International ASET Inc.) has been approved by the [Committee on Publication Ethics \(COPE\)](#). We are proud of our efforts towards abiding by the guidelines of ethics, integrity, and high standards in publishing.

**Following are the ethics guidelines set by the organizers for the authors and the reviewers of the conference:**

## Scientific Committees

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: [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, 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.

## *Confidentiality*

Scientific committee member(s) and publishing staff may not disclose manuscripts or their content, directly or indirectly, to anyone other than individuals invited to review the manuscript (whether they accept or not), other reviewers of the same publications, and publishing staff.

## *Conflicts of Interest*

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.

### ***Acknowledgment of Source***

The reviewer should notify the chair(s) if they find any similarities in the paper being reviewed and any other work that has been published previously.

### ***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.

### ***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

### ***Reporting Standards***

The paper being submitted for the proceedings should be based on clear objective, discussion, and references. The findings, data, and the arguments being used in the paper should be accurate. It is author's responsibility to guarantee the authenticity of the data in the paper.

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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.

### ***Acknowledgement of Source***

Acknowledgement to other's work being used in the paper must be given at all times. Authors of the paper should give comprehensive credit where it is necessary, by citing the work, they use for supporting their own research.

### ***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.

# ETHICS & MALPRACTICE

## ***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.

## ***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 inform 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***

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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.

# CONTACT US

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