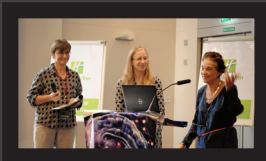


# DAY 1

Scientific Tracks  
& Abstracts

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EuroSciCon Conference on

# ADVANCED NANOTECHNOLOGY

April 18-19, 2019 | Paris, France

# DAY 1

April 18, 2019

## Sessions

Graphene | Carbon Nanotechnology | Nanomaterials  
| Cancer Nanotechnology | Nanobiotechnology |  
Nanoelectronics & Nanophotonics | Nanotechnology |  
Material Science | Others

### Session Chair

**Bernhard Münzing**

Materials Technology Co. Ltd, China

### Session Chair

**Kimihisa Yamamoto**

Tokyo Institute of Technology, Japan

### *Session Introduction*

**Title: Iodine, Toxin, & Cancer**

**Xu Chen**, University of the Rockies, USA

**Title: Evaluation of synergistic effect of CpG-ODN-7909 and protamine on transfection process mediated by calcium phosphate nanoparticles**

**Ghassaq T Al Ubaidi**, Al Nahrain University, Iraq

**Title: The Future of Nano-electronics- A Critical Analysis**

**D S Grewal**, Eternal University, Baru Sahib, Himachal Pradesh

**Title: Effects of interface spin-orbit coupling on tunnelling between normal metal and chiral p-wave superconductor**

**Hassanloo Ghamar**, University of Zanjan, Iran

**Title: The centers of premeltons signal the beginning and ends of genes**

**Henry M Sobell**, University of Rochester, USA

**Title: New architecture formation of boron and boron-metal powdered mixtures under effect of concentrated light**

**Lina L Sartinska**, Frantsevich Institute for Problems of Materials Science of NASU, Ukraine

**Title: A new efficient approach for solving the capacitated vehicle routing problem using the gravitational emulation local search algorithm**

**Ali Asghar Rahmani Hosseinabadi**, Islamic Azad University, Iran

**Title: Eco-Friendly Polymer Bionanocomposites for Green Packaging Applications**

**Ahmed M. Youssef**, National Research Centre, Egypt

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## IODINE, TOXIN, & CANCER

### Xu Chen

Ashford University, University of the Rockies, The College of St. Scholastica, Lake Superior College, University of Kansas Lawrence (USA)

**A**s developed as United States is, people's iodine intake is questionable. Iodine is more than just a building material for thyroid hormone; it is actually an anti-oxidant. The busy modern life makes people want to save time. Fast foods are convenient, energy drinks keep them awake, and power aid taste good and look good. However, all those things are preventing iodine's activity in a human body. Sodium intake is considered to lower blood pressure, but is it true? More over, because of the chemical structure of thyroid hormone, it is not gonna function right under the presence of some small molecule, or toxins. This research will explore how to avoid those small molecules to help thyroid hormone or the whole body to function right.

### Biography

Xu Chen is currently working on her doctoral degree through Ashford University. She graduated from The College of St. Scholastica with an MS in Exercise Physiology and a BA in Biology. So far, she has three publications. She was a moderator for multiple international conferences.

[xuchen3296@gmail.com](mailto:xuchen3296@gmail.com)

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## EVALUATION OF SYNERGISTIC EFFECT OF CPG-ODN-7909 AND PROTAMINE ON TRANSFECTION PROCESS MEDIATED BY CALCIUM PHOSPHATE NANOPARTICLES

**Ghassaq T Al Ubaidi<sup>1</sup>, Ahmed A Abbas<sup>1</sup>, Ali A Taha<sup>2</sup>, Qasim S Sharhan<sup>1</sup>, Israa W Ahmed<sup>1</sup> and Ilham A Jasim<sup>1</sup>**

<sup>1</sup>College of Medicine, Al Nahrain University, Iraq

<sup>2</sup>University of Technology, Iraq

**B**acille Calmette-Guerin (BCG) is still the only authenticated vaccine against tuberculosis. But due to its drawbacks, a need to a new formula has emerged. Implication of "Nanovaccinology" is one of the possible alternatives. The non-viral vectors have low transfection ability. In the context, this work aims to add two adjuvants to calcium phosphate nanoparticles (CPNPs) functionalized with ESAT-6 cloned pc DNA3.1 (+) plasmid. ESAT-6 gene is specific to *Mycobacterium tuberculosis complex* (MTC) and encodes a T-cell antigen. The adjuvants in practice are Herring protamine and CpG-ODN 7909. Each has different strategies in enhancing the immune response, protamine is particulate adjuvant while CpG is an immunopotentiator substance. Nanocomplex was transfected in to after THP-1 monocytic cell line its activation to macrophage via 100ng/ml PMA. Cellular immune response, IL-12 and TNF- also ESAT-6 protein production were assayed via Sandwich ELISA technique. Results revealed that, CPNPs offer only a partial protection to the adsorbed plasmid against enzymatic degradation. Nanocomplex formula with two adjuvants resulted in significantly higher cellular immune response comparing to formula carrying one adjuvant. In conclusion, implication of CPNPs in gene delivery accompanied with two adjuvants each possess different strategy will result in partial protection to the delivered gene with upsurge cellular immune response.

### Biography

Dr. Ghassaq AlUbaidi, has completed her PhD in Medical Microbiology at age of 42, from Dep. of Microbiology/ College of Medicine/ AL-Nahrain University. The dissertation involved the application of nanomaterials in pathogens diagnosis and gene delivery. She has been working a biological researcher since 2003. Now, she is working as a researcher in the Medical research unit / College of Medicine/ AL-Nahrain University. She is a member in the British Society for Immunology (BSI) since 2017. She has published 7 articles in fields of Virology and nanomaterials. Now, she is actively involved in searching for a DNA vaccine against *M. tuberculosis*, which represent a serious health problem in Middle East and African countries.

Ghasaqtariq119@gmail.com

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## THE FUTURE OF NANO-ELECTRONICS- A CRITICAL ANALYSIS

**D S Grewal**

Emeritus, Eternal University, Baru Sahib, Himachal Pradesh

**N**anotechnology is now well embedded in scientific minds and societal needs. Its branch, nanoelectronics, has been leading and developing 'more than Moore's' predictions. The nano-material like CNTs, nanowires, quantum dots, graphene and xene, have led towards fabrication and manufacturing smarter, stronger, miniaturized, reliable quality products which are not only cheap and consume less energy but also occupy least space. Stretchable, wearable, flexible nano-products have increased their portability and security, giving a new meanings to the requirement of development of nanoelectronics. Graphene, an allotrope of carbon, is likely to become a dominant material in flexible electronics in future. Because of its superb electrical conductivity, flexibility and physical strength it will replace other carbon products in the Nano field. Nano-marketing is now over \$1 trillion globally and the major countries of the world are alive to its developmental needs. Since the development of nanotechnology needs huge funds beyond the capability of an individual research or institution there is an urgent need of setting up centrally funded, well equipped nano-laboratories spread all over making them approachable to all researcher with least cost to make it a marketable product. The major corporate houses must rise and assist nano-research and to introduce nano-products on their production lines to take the advantage of trillion dollar global market in nanomaterial and products. Nanotechnology and specially the nano-electronics can build any country's future if the research and manufacturing are encouraged by their governments and research planners. The future of mobile electronics lies in stretchable or flexible electronics. The potential applications may include wearable electronic devices, biomedical uses, compact portable devices and robotic devices.

### Biography

Dalvinder Grewal did Ph.D. in English from North Bengal University and in Management from Punjab Technical University; MSc (Tech) from Pune University, MBA from IGNOU and MA (Eng.) from Himachal Pradesh University. He has been Principal, Guru Nanak Dev Engg College, Ludhiana; Founder Principal, C.T College of Engg, Jalandhar, Chairman (Electronics), J.M.I.T Radour, Registrar, SLIET Longowal; President (HRD), Trident Group; Director Principal, BMS College of Engg, Muktsar; Group Director, G.T.B.K Group of Institutions; Adviser, Sri Sukhmani Group of Institutions, Chandigarh and Dean, R & D Desh Bhagat University, Mandi Gobindgarh. He has published 48 Books including: Fundamentals of Nanoelectronics; Introduction to Nanoelectronics; Nanotechnology, Origin and Development of Universe, Scientific Vision of Guru Nanak; He published over 300 papers and 500 articles; guided 18 PhD/M.Tech students and is on the editorial panel of 8 international journals.

dalvinder45@rediffmail.com

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# EFFECTS OF INTERFACE SPIN-ORBIT COUPLING ON TUNNELLING BETWEEN NORMAL METAL AND CHIRAL P-WAVE SUPERCONDUCTOR

**Hassanloo Ghamar and Mohammad Khani Ramin**

University of Zanjan, Iran

**W**e consider a two dimensional electron gas/p-wave superconductor ballistic junction and study the conductance in presence of Rashba spin-orbit coupling both at the interface and in the normal. Solving Bogoliubov-de Gennes equation and using Blonder-Tinkham-Klapwijk formalism, we obtain transmission and reflection coefficients and hence calculate the conductance in terms of RSOC and the height of barrier. Results show that the conductance peaks are shifted to a nonzero bias by interface RSOC. We also show that the RSOC of the normal cannot change the location of the conductance peaks.

## Biography

Ghamar Hassanloo is pursuing her Master's in condensed matter physics. She received BS and MS in Physics from Zanjan University. She is serving as a teacher now.

[gh.hassanloo@alumni.znu.ac.ir](mailto:gh.hassanloo@alumni.znu.ac.ir)

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## ASIAN WOMEN CANCER PSYCHOLOGY

**Xu Chen**

University of the Rockies (USA)

**A** support system is a very important factor for a cancer patient. It is an even more important aspect among Asian women cancer patients than other ethnicities. China is the only country that women suicide rate is higher than that of men. The reason for that is domestic violence. This paper is about how a woman cancer patient can build her own support system. When they experience domestic violence, who they should turn to, whether and how to work to make her job a wellness program. Also, where she should choose to live. Cancer treatment is more than chemo and radiation. It is about an all-around program to make the patient feel overall good.

### Biography

Xu Chen has a Bachelors' Art degree in Biology from The College of St. Scholastica from Northern Minnesota. Also, she obtained a Master's of Science in Exercise Science from the same school. She is currently enrolled in Ashford University majoring in Wellness Psychology. Due to her love to art, Xu Chen is currently a performing artist in Boston area. She chose this humanity topic because she would like to talk for the oppressed and depressed, no matter what gender or ethnicity.

xuchen3296@gmail.com

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## THE CENTERS OF PREMELTONS SIGNAL THE BEGINNING AND ENDS OF GENES

**Henry M Sobell**

University of Rochester, USA

**P**remeltons are examples of emergent structures (i.e. structural solitons) that arise spontaneously in DNA due to the presence of nonlinear excitations in its structure. There are two types of Premeltons: B-B (or A-A) premeltons form at specific DNA-regions to nucleate site-specific DNA melting. These are stationary and being globally nontopological, undergo breather motions that allow drugs and dyes to intercalate into DNA. B-A (or A-B) premeltons, on the other hand, are mobile, and being globally topological, act as phase-boundaries transforming B- into A- DNA during the structural phase-transition. They are not expected to undergo breather-motions. A key feature of both types of Premeltons is the presence of an intermediate structural form in their central regions (proposed as being a transition state intermediate in DNA melting and in the B- to A- transition), which differs from either A- or B-DNA, Called beta-DNA. Both are metastable and hyper-flexible and contains an alternating sugar-puckering pattern along the polymer-backbone combined with the partial-unstacking (in its lower energy-forms) of every other base-pair. Beta-DNA is connected to either B- or to A- DNA on either side by boundaries possessing a gradation of nonlinear structural-change, these being called the kink and the antikink regions. The presence of premeltons in DNA leads to a unifying theory to understand much of DNA physical chemistry and molecular biology. In particular, Premeltons are predicted to define the 5' and 3' ends of genes in naked DNA and DNA in active chromatin, this having important implications for understanding physical aspects of the initiation, elongation and termination of RNA synthesis during transcription. For these and other reasons, the model will be of broader interest to the general audience working in these areas. The model explains a wide variety of data and carries a number of experimental predictions within it. It is already tested and will be described in my talk.

### Biography

Henry M Sobell has completed his studies at Brooklyn Technical High School (1948-1952), Columbia College (1952-1956), and the University of Virginia School of Medicine (1956-1960). Instead of practicing clinical medicine, he then went to the Massachusetts Institute of Technology (MIT) to join Professor Alexander Rich in the Department of Biology (1960-1965), where, as a Helen Hay Whitney Postdoctoral Fellow, he learned the technique of single crystal X-ray analysis. He then joined the Chemistry Department at the University of Rochester, having been subsequently jointly appointed to both the Chemistry and Molecular Biophysics departments (the latter at the University of Rochester School of Medicine and Dentistry), became a Full Tenured Professor in both departments (1965-1993). He is now retired.

[sobell@localnet.com](mailto:sobell@localnet.com)



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## NEW ARCHITECTURE FORMATION OF BORON AND BORON-METAL POWDERED MIXTURES UNDER EFFECT OF CONCENTRATED LIGHT

Lina L Sartinska<sup>1</sup>, Yevgen Voinich<sup>1</sup>, Izabella Timofeeva<sup>1</sup>, Tarik Eren<sup>2</sup>, Anatoly Efimov<sup>3</sup>, Olena Fecenko<sup>4</sup>, Vladislav Kavelin<sup>4</sup> and Gennady Frolov<sup>1</sup>

<sup>1</sup>Frantsevich Institute for Problems of Materials Science of NASU, Ukraine

<sup>2</sup>Yildiz Technical University, Turkey

<sup>3</sup>Los Alamos National Laboratory, USA

<sup>4</sup>Institute of Physics-NASU, Ukraine

**H**igh-flux optical furnace presents a one of cleanest energy sources available for the Nanotechnology. Concentrated light heating of an optical furnace has number of advantages such as high heating and cooling rates, versatility and ability to adjust temperature profile along each axis, maximum operating temperatures and environmental adaptability. Moreover, this technique is appropriate for both conducting and non-conducting materials. Transformation of boron nitride and boron powders and mixture of 25 wt. % in Al, Cu, Fe, Ni in flow of nitrogen was considered. The effect of temperature distribution and temperature gradients within an experimental camera on architecture, phase composition and other properties of obtained powdered materials was demonstrated. The presence of catalyst promotes formation of nanostructures. Formation of new architecture of nanostructures can be explained in framework of "gaseous model" which was based on an evolution of the bubble during heating in an optical furnace. Burst of these bubbles results in graphene-like structures formation. The stepwise transformation of bubbles of appropriate chemical composition leads to nanotubes formation because of their pulling by heated gases upwards. Fullerene-like particles can also have complicated "fish-eye" ("core shell") structure in the result of segregation of transparent BN shell with H<sub>3</sub>BO<sub>3</sub> layer on the surface around crystalline InN. Nano powder was prepared in an optical furnace under concentrated light heating has complicated gradient or layered structure. According Raman, AES and FTIR study the surface of all powders is composed of BN. XRD disclosed pure amorphous boron inside particle. Gradient transformation of pure boron to BN in the framework of one particle as well as layered nanostructure was observed by TEM study.

### Biography

Lina L. Sartinska has completed her PhD from Frantsevich Institute for Problems of Materials Science, National Academy of Sciences of Ukraine and Postdoctoral Studies from the same Institute. She is a Senior Researcher of Frantsevich Institute for Problems of Materials Science, NASU and has published more than 60 papers in reputed journals. She won Young Investigator Award, Institute for Problems of Materials Science, NASU, Japan Science Foundation Scholarship (Toyohashi University of Technology, Toyohashi, Japan), NATO Scholarship (New University of Lisbon, Portugal), Royal Society Scholarship, (Institute for Materials Research, University of Leeds, UK). She is Member of Organizing Committee of 4 and 6th International Conference "Nanotechnology", Tbilisi, Georgia. She has participated in a joint USA-Ukrainian CRDF project, joint Belarus-Ukrainian project and project of Science and Technology Center of Ukraine. She was a Manager of a joint Turkey-Ukrainian project and joint project supported by DLR (Germany) and MON (Ukraine).

lisart@ukr.net

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## A NEW EFFICIENT APPROACH FOR SOLVING THE CAPACITATED VEHICLE ROUTING PROBLEM USING THE GRAVITATIONAL EMULATION LOCAL SEARCH ALGORITHM

**Ali Asghar Rahmani Hosseinabadi<sup>1</sup> and Fatemeh Hasanpour<sup>2</sup>**<sup>1</sup>Islamic Azad University Ayatollah Amoli Branch, Iran<sup>2</sup>Islamic Azad University Tehran Branch, Iran

**C**apacitated vehicle routing problem (CVRP) is one of the most famous specialized forms of the VRP, which has attracted considerable attention from scientists and researchers. Therefore, many accurate, heuristic and meta-heuristic methods have been introduced to solve this problem in recent decades. In this paper, a new meta-heuristic optimization algorithm is introduced to solve the CVRP, which is based on the law of gravity and group interactions. The proposed algorithm uses two of the four basic parameters of velocity and gravitational force in physics based on the concepts of random search and searching agents, which are a collection of masses that interact with each other based on Newtonian gravity and the laws of motion. The introduced method was quantitatively compared with the State-of-the-Art algorithms in terms of execution time and number of optimal solutions achieved in four well-known benchmark problems. Our experiments illustrated that the proposed method could be a very efficient method in solving CVRP and the results are comparable with the results using state-of-the-art computational methods. Moreover, in some cases our method could produce solutions with less number of required vehicles compared to the best known solution (bks) in a very efficient manner, which is another advantage of the proposed algorithm.

### Biography

Ali Asghar Rahmani Hosseinabadi has received his PhD in Software Engineering from Iranica University, Mazandaran, Iran in 2017. He is the Author of more than 100 research papers in refereed journals and International Conferences. His research interests are in VRP, TSP, WSN and Scheduling. He is the Member of several Editorial Boards, Member of several national and international journals and conferences.

[a.r.hosseinabadi@iaubeh.ac.ir](mailto:a.r.hosseinabadi@iaubeh.ac.ir)

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## ECO-FRIENDLY POLYMER BIONANOCOMPOSITES FOR GREEN PACKAGING APPLICATIONS

**Ahmed M. Youssef<sup>1</sup>, Hesham Moustafa<sup>2</sup>**<sup>1</sup>National Research Centre, Egypt<sup>2</sup>National Institute of Standards, Egypt

**C**urrently, renewable and biodegradable bionanocomposites materials have drawn much attention as promising green materials in different domains of application such as intelligent food packaging, biomedical and drug delivery, bio-membranes as well as in industrial composting applications for the final end product use. The present review deals with the advances in the preparation methods and technical applications of these biocomposites. Different biomass materials obtained from renewable resources such as nanocellulose, and date stones in nanoform developed to be used as smart reinforcing agent in biodegradable biopolymers for improving their overall properties. However, some drawbacks are associated with the use of lignocellulosic materials as reinforcing agent, especially their high humidity absorption, poor wettability, and incompatible with most biopolymers. Thus, novel processing techniques and different aspects have been proposed for producing high performance lignocellulosic reinforced materials with better properties. On the other hand, facial and green modification of organoclay by antibacterial natural rosin and stearic acid to obtain toxicity-free expanded organoclay that can be used as compatibilizing and reinforcing material for different incompatible biopolymers such as chitosan, carboxy methyl cellulose (CMC) and polylactic acid (PLA) polycabrolactone are deeply investigated. Therefore, many chemical and physical properties for these materials are discussed in detail. Ultimately, the future vision on the challenges and the environmental issues towards CO<sub>2</sub> emission which associated to the risk assessment of these bionanomaterials are also discussed.

### Biography

Prof. Youssef has completed his PhD at the age of 29 years from Ain Shams University and postdoctoral studies from Arkansas University, USA and Grenoble INP-France, He so far won the Ford Foundation Scholarship (2004) for PhD, the AU-TWAS Young Scientist National Awards in field of Basic Sciences, Technology and Innovation (2013), Unilever award for the best applied article (2015), and the NRC Award of Encouragement in Applied Chemistry (2015). Moreover, He awarded the State Award for Advanced Technological Sciences, which serves the basic sciences (2016) and NRC award for Pioneer Award in applied chemistry (2016). He has obtained the Privileges of the First Class of the Presidency (2017). He has published more than 80 papers in reputed journals with 21 H-Index and 995 citations on Scopus site. He serves as a reviewer for several key journals. He has coupled research experience with industrial work with National and International Counterparts.

amyoussef27@yahoo.com