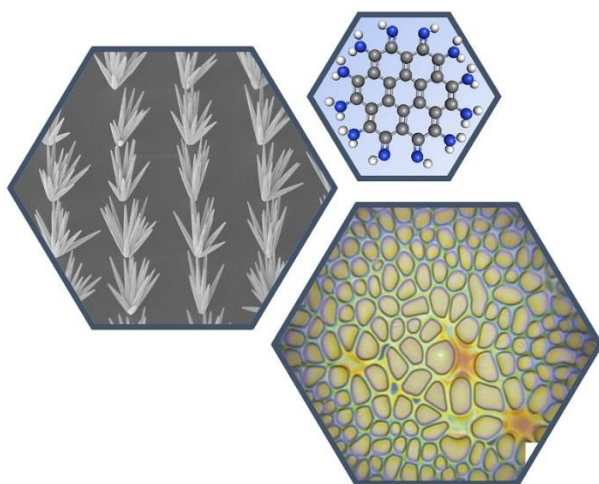


# CONFERENCE BOOKLET



# XXXV

Panhellenic Conference on  
**Solid State Physics &  
Materials Science**  
September 26-29, 2021  
Virtual Conference

## WELCOME ADDRESS

It is a great pleasure to welcome you at the 35<sup>th</sup> Panhellenic Conference on Solid State Physics and Materials Science which will be held virtually, from 26 to 29 of September 2021.

The Panhellenic Conference on Solid-State Physics and Materials Science is Hellas' foremost event in the field of Solid-State Physics and Materials Science, since it is held for the last 35 years, attracting many scientists from Hellas and abroad. This annual event brings together Greek and foreign scientists with people from industry aiming to strengthen the interactions among the scientific communities of Solid-State Physics and Materials Science. More than 200 scientists in the field of Physics, Mechanics, Materials Science, Chemistry and Biology participate every year from Hellas and Europe,

The conference addresses the following topics:

- Electronics, photonics and optoelectronics
- Structural-dynamical and mechanical properties of condensed matter
- Strongly correlated systems, magnetism & superconductivity
- Surfaces, nanomaterials and low-dimensional materials & systems
- Polymers, organic materials and biomaterials
- Ceramics, composites, minerals and metals
- Interdisciplinary solid-state physics and devices

During this year's conference 168 abstracts were submitted. The conference program consists of 90 oral presentations, in two parallel sessions and 78 poster presentations. In addition, a plenary lecture as well as 8 invited lectures are scheduled.

The conference program also includes two conference schools and an event on National Research Infrastructures.

We wish you a very productive and interesting conference.

The Conference Organizing Committee

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## PLENARY LECTURE



### **Prof. Zhong Lin Wang**

Director of the Beijing Institute of Nanoenergy and Nanosystems (PRC) and Regents' Professor and Hightower Chair at Georgia Institute of Technology (USA)

Dr. Zhong Lin Wang is the Director of the Beijing Institute of Nanoenergy and Nanosystems, and Regents' Professor and Hightower Chair at Georgia Institute of Technology. Dr. Wang pioneered the nanogenerators field for distributed energy, self-powered sensors and large-scale blue energy. He coined the fields of piezotronics and piezo-phototronics for the third generation semiconductors. Among 100,000 scientists across all fields worldwide, Wang is ranked #5 in career scientific impact, #1 in Nanoscience, and #2 in Materials Science. His google scholar citation is over 280,000 with an h-index of over 260.

Dr. Wang has received the Celsius Lecture Laureate, Uppsala University, Sweden (2020); The Albert Einstein World Award of Science (2019); Diels-Planck lecture award (2019); ENI award in Energy Frontiers (2018); The James C. McGroddy Prize in New Materials from American Physical Society (2014); and MRS Medal from Materials Research Soci. (2011). Dr. Wang was elected as a foreign member of the Chinese Academy of Sciences in 2009, member of European Academy of Sciences in 2002, academician of Academia of Sinica 2018, International fellow of Canadian Academy of Engineering 2019; Foreign member of the Korean Academy of Science and Technology 2019. Dr. Wang is the founding editor and chief editor of an international journal Nano Energy, which now has an impact factor of 16.6. Details can be found at: <http://www.nanoscience.gatech.edu>

## **The science of contact-electrification and the technology of triboelectric nanogenerators**

Contact electrification (CE) (or usually called “triboelectrification”) effect, the most fundamental effect for electricity, has been known for over 2600 years since ancient Greek time, but its scientific mechanism remains unclear. The study of triboelectrification is recently revived due to the invention of the triboelectric nanogenerators (TENGs) by using the coupling of triboelectrification and electrostatic induction effects, which is the most effective approach for converting mechanical energy into electricity for powering small sensors. TENG is playing a vitally important role in the distributed energy and self-powered systems, with applications in internet of things, environmental/infrastructural monitoring, medical science, environmental science and

security. In this talk, we first present the physics mechanism of triboelectrification for general materials. Our model is extended to liquid-solid contact electrification, reviving the classical understanding about the formation of electric double layers. Secondly, the fundamental theory of the TENGs is explored based on a group of reformulated Maxwell equations. In the Maxwell's displacement current proposed in 1861, the term  $\epsilon \partial \mathbf{E} / \partial t$  gives the birth of electromagnetic wave, which is the foundation of wireless communication, radar and later the information technology. Our study indicates that, owing to the presence of surface polarization charges present on the surfaces of the dielectric media in TENG, an additional term  $\partial \mathbf{P}_s / \partial t$  that is due to non-electric field induced polarization should be added in the Maxwell's displacement current, which is the output electric current of the TENG. Therefore, our TENGs are the applications of Maxwell's displacement current in energy and sensors. We will present the applications of the TENGs for harvesting all kind mechanical energy that is available but wasted in our daily life, such as human motion, walking, vibration, mechanical triggering, rotating tire, wind, flowing water and more. Then, we will illustrate the networks based on triboelectric TENGs for harvesting ocean water wave energy, for exploring its possibility as a sustainable large-scale blue energy. Lastly, we will show that TENGs as self-powered sensors for actively detecting the static and dynamic processes arising from mechanical agitation using the voltage and current output signals.

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## INVITED LECTURE



**Dr Athanassia Athanassiou**  
Istituto Italiano di Tecnologia (ITALY)

Athanassia Athanassiou is Principal Investigator at the Istituto Italiano di Tecnologia (IIT), Genoa, Italy. She has a degree in Physics from the University of Ioannina in Greece, an MSc from the University of Manchester and a Ph.D. in Physics from Salford University in UK. From 2000 to 2005, she was a Postdoc and Collaborating Researcher at FORTH in Crete, and in 2006 she became Senior Researcher at the National Nanotechnology Laboratory, CNR-Istituto di Nanoscienze, Lecce, Italy. In 2011, she joined IIT and nowadays her group of Smart Materials counts about 50 people that work on sustainable materials and technologies for the benefit of environmental and human health. She has published 380 articles in scientific journals, various chapters in scientific books, and has acted as scientific editor. She has 26 Italian and international patents. The last seven years her group has participated in six H2020 EU projects, in three Institutional projects, in thirty Commercial projects with national and international companies, and has founded two joint labs with industrial partners.

## The future of plastic materials: Sustainable, Smart, Functional

The almost eight billion current human inhabitants of Earth are exploiting the planet's resources at rates and intensities that surpass its production capacity but also its ability to absorb wastes and neutralize the adverse effects on the environment. Among the different wastes, the most alerting and harmful are conventional plastics and the various additives related to them as well as electronic waste (e-waste) and nanomaterials in general.

Regarding plastics, their global, yearly production has overcome the 360 million tonnes, whereas more than 8.3 billion tonnes have been produced since their discovery and introduction in the market. Only 9% of these have been recycled, which means that about 6.4 billion tonnes of non-degradable plastics have finished as waste at some part of the planet, either land or sea. This situation has brought the planet to a level of suffocation never experienced before. Recycling has been promoted as a solution to the problem although it is not really solving it, but rather delaying it. This is because less than 50% of the currently produced plastic materials are actually recyclable and even for them, every recycling process deteriorates their properties, making the addition of virgin plastic necessary to match the previous performances. On the other hand, bioplastics and biocomposites that match the performances of the conventional plastics, but have a reduced CO<sub>2</sub> footprint for their production, can be recycled, and at the end of their life can be treated in industrial or home compost plants could make the difference for the planet's health.

In this presentation, the strategies of our group for the development of sustainable, smart and functional polymeric composite materials will be explained. The research of the group is focused to the development and engineering of plastic materials based on natural polymers from sustainable resources and preferably plant residues or wastes. The polymers include polysaccharides (starch, cellulose, etc.), proteins (fibroin, keratin, etc.), polyesters (polyhydroxyalkanoates, etc.), lipids, waxes, natural rubber, etc. Bioplastics, chemically synthesized are also used in our research, like PLA, PBS, PBAT, CO<sub>2</sub>-based polymers, as long as they can be biodegraded at the end of their life. The various biopolymers or natural polymers are used combined or enriched with fillers, or fibrous substrates for the development of novel plastic materials that can substitute the conventional ones.

In the presentation, we will explain how sustainable biocomposites can address specific markets and applications. In particular, sustainable and biodegradable plastics can be used for highly safe and protective food packaging. Fibre reinforced biocomposites and multilayer packaging strategies are used for the development of sustainable and functional packaging that can prevent any interaction of the food with the external environment (i.e. oxygen) and at the same time can provide active and continuous antioxidant or antibacterial protection through controlled release. Another application of sustainable biocomposites, deals with the treatment of polluted water and with fresh water generation. In particular, we are developing porous or fibrous structures, whose building blocks comprise natural, renewable polymers and molecules, occasionally combined with inorganic particles, for optimized interactions with selected compounds of the water under treatment. We will also discuss the development of soft plastic materials based on natural polymers, like proteins originating from wool, chicken feathers or silkworm cocoons, and active principles, of specific morphology, for infections and chronic wound healing. Such smart would dressings or scaffolds have strong and prolonged antibacterial or antibiotic activity by synergistic combination of the biodegradable plastics with natural extracts, or synthetic antibiotics when needed. Finally, the employment of sustainable bioplastics and conductive fillers like graphene, carbon nanotubes, metallic particles and precursors enables the realization of reliable biodegradable and stretchable electronic elements, like flexible antennas, capacitive sensors or conductive circuits. Such sustainable electronic systems find applications in robotics (artificial skin), photovoltaics, batteries, communications and consumer electronics.



## INVITED LECTURE



**Prof. Maria Chatzinikolaïdou**

Department of Materials Science and Technology,  
University of Crete (GREECE)

Dr. Maria Chatzinikolaïdou, FBSE, is an Associate Professor of Biomaterials for Tissue Engineering at the Department of Materials Science and Technology at the University of Crete (<https://www.materials.uoc.gr/el/general/personnel/mchatzin.html>), and affiliated faculty member at Foundation for Research and Technology – Hellas (FORTH). Her research interests focus on the development of biomaterials and scaffolds for tissue engineering applications including bone, cartilage, dental, cardiovascular, and the validation of their *in vitro* and *in vivo* biocompatibility, functionality and biomechanical characteristics. She is an associate editor in *Tissue Engineering*, in *Frontiers in Bioengineering and Biotechnology*, in *BioNanoMaterials*, in *Materials*, and editorial board member in *Regenerative Biomaterials*.

## Advances in biomaterials for bone tissue engineering

### Introduction

Osteoporosis, a bone pathology with a high socio-economic impact is rapidly increasing due to an ageing population. In this study, we aim to develop medical devices to treat osteoporotic fractures in long bones and we report on the biomaterials designed, fabricated and biologically evaluated. Biomaterials for the treatment of long bone fractures are designed to act as matrices to promote cell proliferation, osteogenic differentiation, and extracellular matrix formation, facilitating the process of bone regeneration. A variety of natural and synthetic biomaterials has been developed aiming to enhance bone regeneration and treat bone defects [1]. Nano-hydroxyapatite (nano-HA) is the major mineral component of bone and part of the calcium phosphate family. Consequently, it is highly biocompatible, osteoconductive and forms strong bonds with native bone, making it an excellent candidate for use in bone tissue engineering [2]. In addition, blends of synthetic polymers have been proved very efficient for the fabrication of scaffolds favouring the formation of a bone tissue microenvironment in three dimensions [3].

### Experimental Methods

Pure nano-HA in a powder and paste form, as well as substituted nano-HA with 50% and 100% Sr, were produced by wet chemical precipitation in the NETmix® reactor (FLUIDINOVA S.A.) using calcium, strontium and phosphorous salts as starting materials. Each material was suspended to a final concentration of 0.25% v/v against both pre-osteoblastic MC3T3-E1 cells and Peripheral Blood Mononuclear Cells (PBMCs). The latter have the ability to differentiate into fully formed osteoclasts with the use of macrophage stimulating factor (M-CSF) and receptor activator of nuclear factor kappa-B ligand (RANKL).

Composite scaffolds were fabricated from blends of poly-L-lactic acid (PLLA), polycaprolactone (PCL) and poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) (90:5:5wt), PLLA/PCL/PHBV + 5%wt of nano-HA and PLLA/PCL/PHBV + 5%wt of strontium-substituted-nanoHA after their processing into 1.75 mm



diameter filaments. The filaments were processed using a Fused Deposition Modelling (FDM)-printer. Preliminary extrusion and printing tests were performed to optimize the process parameters, which were thus employed to produce cylindrical scaffolds for biological evaluation.

Cytotoxicity of the materials was investigated in pre-osteoblastic cells MC3T3-E1 using the PrestoBlue™ cell viability assay. Alkaline phosphatase (ALP) activity indicating osteoblast differentiation was determined using an enzymatic activity assay. Total soluble collagen secretion in the culture medium and calcium biomineralization were assessed in order to evaluate the formation of extracellular matrix. Gene expression of the osteogenesis-related markers ALP, Coll1-a1, osteonectin, osteopontin and osteocalcin was investigated by means of quantitative real time polymerase chain reaction (qPCR). Moreover, qPCR was performed to evaluate the osteoclastogenesis-related markers DC-STAMP, NFATC1, OSCAR and TRAP. Tissue culture treated polystyrene (TCPS) was used as control surface.

## Results

Our results demonstrate that all the nano-HA materials and composite scaffold types are not genotoxic and support a strong cell adhesion, viability and proliferation of pre-osteoblastic cells. The alkaline phosphatase (ALP) activity levels show significantly higher values for the blend containing Sr-nano-HA for all time points, while all other materials show similar levels to the control. A significant gene expression of ALP, BSP-1 and Coll-a1 was observed, while the osteoclastogenic capacity was found decreased. All materials indicate high levels of secreted collagen. The latter results in combination with the high levels of calcium deposition in all materials compositions provide solid evidence of the formation of a healthy mineralized extracellular matrix. Therefore, these results demonstrate that composite polymeric scaffolds with nano-HA and Sr-nano-HA are promising materials for bone tissue formation.

## Conclusion

The different compositions of nano-HA materials and composite polymeric scaffolds investigated displayed an excellent biocompatibility, significant cell adhesion and a high capacity of pre-osteoblastic cells for proliferation and osteogenic differentiation. These data suggest that all scaffold compositions have high osteogenic and low osteoclastogenic potential, rendering them promising for therapeutic approaches against long bone fractures or other osteoporotic pathological conditions.

## Acknowledgements

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No. 814410.

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## INVITED LECTURE



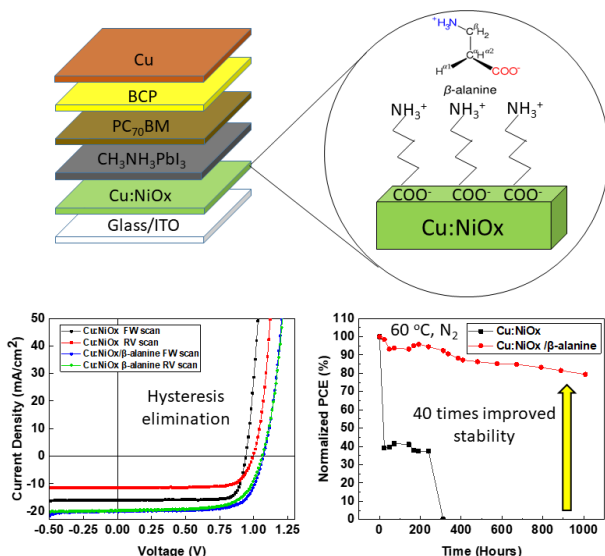
### Prof. Stelios A. Choulis

Mechanical Engineering and Materials Science and Engineering,  
Cyprus University of Technology (CYPRUS)

Stelios A. Choulis is Professor of Material Science and Engineering at the Cyprus University of Technology (2008-present). He was the Organic Photovoltaic Device group leader of Konarka Technologies (2006-2008) and research and development (R&D) engineer of the Osram Opto-Semiconductors Inc, Organic Light Emitting Diode R&D team (2004-2006). During his PhD and first post-doc research associate (PDRA) position at Advanced Technology Institute (1999-2002, University of Surrey) he investigated the optical properties of quantum electronic materials and opto-electronic devices. In 2002 he joined the center of electronic materials and devices (Imperial College London, UK) as PDRA and work on the transport and recombination dynamics properties of molecular semiconductors (2002-2004). His current research interest focuses on the development of functional materials and devices for advanced optoelectronic applications.

## High Performance Next-Generation Printed Photovoltaics

The advantages of Solution Processed Organic and Hybrid Perovskite Photovoltaics, such as their



**Figure:** alanine surface treatment process on metal-oxides hole transporting layers increasing heat lifetime photovoltaic performance <sup>3</sup>.

light weight, mechanical flexibility in addition to the small energy demand, and low-cost equipment requirements for roll-to-roll printing mass production, characterize them as a dominant candidate source for future electrical power <sup>1</sup>. The Presentation aims in covering a range of engineering and underpinning scientific issues needed to bring printed Organic & hybrid Perovskite solar cells to commercial viability in terms of efficiency, lifetime <sup>2,3</sup> and cost <sup>4</sup>. A systematic understanding of the relationship between photovoltaic materials, interfaces, ITO-free printed electrodes and device performance (efficiency and lifetime) relevant to organic and hybrid perovskite printed photovoltaics product development

targets will be presented.

**ACKNOWLEDGEMENTS:** This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862474, project RoLA-FLEX.

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## INVITED LECTURE



### **Prof. Sophia Economou**

Department of Physics,  
Virginia Tech (USA)

Prof. Economou obtained her PhD in 2006 from the University of California San Diego. After that, she spent nine years at the US Naval Research Lab, first as a National Research Council Postdoctoral Fellow, and then as Research Staff. She joined Virginia Tech in 2015 where she is currently a Professor of Physics and the Hassinger Senior Fellow of Physics at Virginia Tech. She focuses on theoretical research in quantum information science, including quantum computing, quantum communications, and quantum simulation algorithms.

## **Spin qubits for quantum computing and quantum networks**

The electron spin is one of the most natural and promising qubits for quantum computing and quantum communication networks. Silicon quantum dots have recently shown great progress toward scalable quantum computers: gates with high fidelities, the creation of large arrays of dots, and coupling to resonators for longer-distance coupling. In parallel, optically active solid-state spin systems, such as the nitrogen-vacancy or the silicon-vacancy centers in diamond, have been used to demonstrate key milestones in quantum networks. I will give an overview of the progress with these two types of systems and present our work on quantum control of both types of spin qubits for the implementation of quantum logic gates, including the creation of entanglement over short and long distances.

## INVITED LECTURE



### **Prof. Philomela Komninou**

Department of Physics,  
Aristotle University of Thessaloniki (GREECE)

Philomela Komninou is a Professor of the Department of Physics at the Aristotle University of Thessaloniki. She is Director of the Electron Microscopy and Structural Characterization Laboratory since 2013, Head of the Nanostructured Materials Microscopy Group and Vice-Director of the Postgraduate Master's program "Physics and Technology of Materials". From 2012 she is the President of the Hellenic Microscopy Society, a branch of the European Microscopy Society. She had been the National delegate in the "RESEARCH AND INNOVATION" program committee of the European Commission; Member of the National Committee for the configuration of the Greek positions of the EC FP7 Framework program for the "Development of the National Action Plan for the Mobility of Researchers" and National expert in the "PEOPLE" Program committee. She is a member of numerous national and international scientific societies. Professor Komninou specializes on the structural characterization of advanced materials and the relation of microstructure with physical properties using advanced Transmission Electron Microscopy (TEM) and quantitative high resolution TEM/STEM combined with computational modeling. She has published more than 220 scientific papers in international peer-reviewed journals, five invited chapters in international scientific books and seven invited international scientific volumes. She has presented her work in numerous international and national conferences and workshops and has coordinated and/or participated in many International and National research projects.

## INVITED LECTURE



### **Prof. Efstratios Manousakis**

Department of Physics, Florida State University (USA) and  
Department of Physics, National and Kapodistrian University of Athens  
(GREECE)

Dr. Manousakis received his Ph. D. in Theoretical Physics, in July 1985, from the University of Illinois at Urbana-Champaign (First Ross J. Martin Award for his thesis). After a Post-Doctoral Research position at the Center for Theoretical Physics at the Massachusetts Institute of Technology (1985-1987) and at the Supercomputer Computational Research Institute (1987-88), he joined the Physics Department of the Florida State University (FSU) (1988). He received the PAI Award for Excellence in Teaching and Research (1998) and the Developing Scholar Award (1990) from FSU. Presently, he is Professor of Physics at the University of Athens and he is the Donald Robson Professor of Physics and holds the title of Distinguished Research Professor at FSU. He was named Fellow of The American Physical Society in 2002, Fellow of the Institute of Physics in 2008, and Fellow of American Association for Advancement of Science in 2018. Dr Manousakis' group develops and applies computational and theoretical methods to study novel collective behavior in certain quantum many-body systems which arises because of strong correlations among the fundamental microscopic degrees of freedom. Examples of such systems are: (a) Superconductors and Strongly Correlated Electrons, (b) Superfluids, (c) Electrons in Solids and The Two-Dimensional Electron Gas, (d) Quantum Phase Transitions in Atomically-Thin Films and (e) Phase Transitions in Restricted Geometries and Finite Size Scaling (f) Role of correlations in topological materials.

## **Weyl Nodal-Ring Semimetal and Topological Superconductivity in a three-dimensional Su-Schrieffer-Heeger model**

The Su-Schrieffer-Heeger (SSH) model of polyacetylene chains is a significant chapter of the playbook of modern condensed matter physics which has also influenced other areas of physics. Here we consider a three-dimensional extension of the SSH model to describe coupled SSH chains. Our analytically soluble model reliably reproduces the features of the band structure of crystalline polyacetylene as obtained from density-functional theory. We show that when a certain inter-chain hopping is sufficiently increased, the system develops a ring of Weyl nodes with drumhead surface states. We argue that such an increase could be achieved experimentally by intercalation or extreme pressure. With the addition of a simple intra-orbital pairing term, we show that the system supports topological superconductivity with annular Majorana states localized on the



surface. In addition, our results provide a new perspective on the SSH model, demonstrating that a simple extension of this broadly-impacting model can once again provide fundamental insights on the topological behavior of condensed matter systems.

## INVITED LECTURE



**Prof. Angelos Michailides**

Yusuf Hamied Department of Chemistry,  
University of Cambridge (UK)

Angelos Michaelides obtained a PhD in Theoretical Chemistry in 2000 from The Queen's University of Belfast. Following this, he worked as a post-doctoral research associate and junior research fellow at the University of Cambridge and then at the Fritz Haber Institute, Berlin as an Alexander von Humboldt research fellow and subsequently research group leader. Between 2006 and 2020 he was at University College London where he was Director and Co-Director of the Thomas Young Centre: The London Centre for the Theory and Simulation of Materials and the founding Director of the Materials and Molecular Modelling Hub. Since 2020 he has been the 1968 Professor of Chemistry at the University of Cambridge.

### Towards molecular level understanding of water at interfaces

There are few molecules, if any, more important than water. However, remarkably little is known about how it interacts with surfaces, particularly at the molecular level. In this talk I will discuss some of our recent work on the application and development of a variety of state of the art computer simulation methods to better understand the structure and dynamics of water at surfaces. Specific topics discussed will include work carried out in collaboration with experimentalists to understand the growth and diffusion of ice clusters at metal surfaces, heterogeneous ice nucleation, and water confined within 2-dimensional membranes [1-8]. Methodological developments aimed at providing more accurate treatments of adsorption on and bonding within solids will also be covered, as well as an efficient machine learning strategy for simulating complex aqueous interfaces [9-10].

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## INVITED LECTURE



### Dr Nikos Tagmatarchis

Director, Theoretical and Physical Chemistry Institute,  
National Hellenic Research Foundation (GREECE)

Nikos Tagmatarchis is the Director of the Theoretical and Physical Chemistry Institute at the National Hellenic Research Foundation. He holds degree in chemistry (1992) and PhD in organic chemistry (1997) from the Department of Chemistry at the University of Crete. His research interests focus on the chemistry of “Carbon-based nanostructured materials and two-dimensional analogues of graphene” for energy-related applications. Dr. Tagmatarchis and his team conduct cutting-edge research to develop innovative hybrid low-dimensional nanomaterials with custom structural, electronic, photophysical, redox and electrocatalytic properties. He has long experience in this field of research, having demonstrated scientific excellence certified by more than 260 original scientific articles and his work has received more than 15,000 citations accompanied by an impact index of  $h = 51$ .

## Chemical functionalization of two-dimensional transition metal disulfides

Functionalization of two-dimensional transition metal disulfides such as  $\text{MoS}_2$  and  $\text{WS}_2$  are of paramount importance for tailoring their properties towards optoelectronic applications. Managing and controlling the electronic properties of semiconducting two-dimensional transition metal disulfides, which are governed by excitonic transitions, is mandatory for their realization in energy-related applications. To gain precise control over the optoelectronic properties, an important step is to decorate their surfaces with photo- and/or electro-active species and tuning charge-carrier density. In this contribution, I will highlight our recent findings on the covalent functionalization of two-dimensional transition metal disulfides based on reaction with 1,2-dithiolanes and 1,2-dithiolenes [1, 2]. Moreover, our developed functionalization methodologies have allowed the preparation of an array of  $\text{MoS}_2$ -based hybrids featuring electron donor and acceptor type photosensitizers [3-7], to be specific, porphyrin, phthalocyanine, carbon dot and perylene diimide derivatives. The fundamental information obtained from these studies will benefit design strategies and impact the development of additional two-dimensional transition metal dichalcogenide hybrid materials to efficiently manage and perform in electron-transfer processes, unlocking their full potential.

### Acknowledgements

Partial financial support of this work by the project “National Infrastructure in Nanotechnology, Advanced Materials and Micro - / Nanoelectronics” (MIS 5002772) which is implemented under

the Action "[Reinforcement of the Research and Innovation Infrastructure](#)", funded by the Operational Programme "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020) and co-financed by Greece and the European Union (European Regional Development Fund) is acknowledged.

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## AWARDS

The XXXV Panhellenic Conference on Solid State Physics and Materials Science and the Hellenic Society for the Science and Technology of Condensed Matter jointly present two student awards to commemorate Dr. Androula Nassiopoulou and Prof. Efstathios Polychroniadis, two outstanding scientists, who have contributed to the success of the series of Panhellenic Conferences on Solid State Physics and Materials Science.

### Androula Nassiopoulou Award for Best Student Oral presentation



(1953-2020)

Director of Research  
National Center for Scientific Research “Demokritos”  
Institute of Nanoscience and Nanotechnology

### Efstathios Polychroniadis Award for Best Student Poster presentation



(1946-2021)

Professor Emeritus  
Aristotle University of Thessaloniki  
Faculty of Sciences

*\*The abstracts submitted by the members of the Conference Organizing Committee, the members of the board of HSSTCM as well as the members of the Award Committees are excluded from the awards.*

## SPONSORS



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Οι σημαντικότερες συνεργασίες μας με κορυφαίους οίκους του εξωτερικού, για τις οποίες παρέχουμε και εξαίρετη τεχνική υποστήριξη τόσο κατά την αρχική μελέτη της υποβολής προτάσεων για τον καταλληλότερο εξοπλισμό σας, όσο και για την άριστη θέση σε λειτουργία & τη συντήρηση των μηχανημάτων μας μετά την πώληση, είναι:



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**A chat room will be available during the Poster Sessions, where the participants can discuss with representatives from the company**

## SPONSORS



Innovation-el : National Research Infrastructure network for  
Nanotechnology, Advanced Materials and Micro-Nanoelectronics.

<https://innovation-el.net/>

**Innovation-el** is the National Research Infrastructure network for Nanotechnology, Advanced Materials and Micro-Nanoelectronics. It comprises eight leading Research Institutions and Universities in Greece: INN/NCSR“Demokritos”, IESL/FORTH, ICEHT/FORTH, TPCI/NHRF, SAMPS/NTUA, DEMSE-DP/UoI, EIMicLab/PD/AUTH and EIM.

**Its mission** is to promote scientific excellence and the development of knowledge intensive products with applications in the fields of Materials-Construction, Energy-Environment, Food Safety-Agriculture, Healthcare-Medicine-Pharmaceutics and ICT-Smart System Integration providing open-access to top-notch research facilities to academic and industrial users. The ultimate goal of Innovation-el is to evolve to a unique regional habitat for Research, Development and Innovation activities throughout Southeastern Europe and the Mediterranean Area.

Innovation-el offers an **open-access** large-scale distributed research infrastructure of cutting-edge facilities that covers all fronts from materials synthesis, characterization and functionalization to micro-nanofabrication, device/system design, development, and testing. The network is complemented by multiscale computer simulations and theory and is supported by more than 200 skilled scientists of long-standing expertise and interdisciplinary experience.

## SPONSORS



Ελληνική Εταιρεία Επιστήμης  
και Τεχνολογίας της Συμπυκνωμένης Ύλης

The Hellenic Society for the Science and Technology of Condensed Matter (HSSTCM, ΕΕΕΤΣΥ in Greek) is a non profit Society of the Greek Scientists that work in the field of Condensed Matter and Materials Science. It was first established in 1981 and it is a member of FEMS (the Federation of European Materials Societies). In 2017 together with the Hellenic Metallurgical Society and FEMS, it organized, in Thessaloniki, the EUROMAT conference with more than 2300 participants. Besides the promotion of the collaboration between Greek researchers and the organization of seminars and workshops, HSSTCM supports young researchers by providing awards for the best MSc Thesis conducted in Greece. HSSTCM also supports young researchers for their participation in the Panhellenic Conference of Solid State Physics and Materials Science. This year, due to the online character of the Conference and the relatively low registration fees, HSSTCM decided to support the awards for the best oral and poster presentations by students.

For more information on the activities of HSSTCM visit [www.hsstcm.eu](http://www.hsstcm.eu), and join the discussion of its future plans in the virtual General Assembly of HSSTCM to be conducted at the end of this year's Conference:

<https://us02web.zoom.us/j/83665287910> (meeting ID: 836 6528 7910)

## GENERAL INFORMATION

The official language of the conference is English. All conference material and presentations will be in English except for the event for the National Research Infrastructure which will be in Greek.

Oral presentations will be held in two parallel sessions.

The conference will be held through the Zoom platform. Instructions on the use of Zoom will be e-mailed to all participants.

The duration of all **contributing oral presentations is 12 minutes plus 3 minutes** for discussion. The Session Chairs and the presenters should strictly keep the time to allow participants to attend lectures in both parallel sessions

All oral presentations must start according to the time schedule. In case of a canceled oral presentation a break will take place until the beginning of the next oral presentation of the session.

The posters will be accessible to the conference participants from Sunday 26, 2021.

During the poster sessions, a chat room will be available for each poster where its presenter can discuss with other participants.

**Details on how to get access on the conference platform (Oral and Poster presentations) will be sent by e-mail on Sunday 26, 2021 to the registered participants.**

## PROGRAM AT A GLANCE

	SEPTEMBER 27, 2021		SEPTEMBER 28, 2021		SEPTEMBER 29, 2021	
	MONDAY		TUESDAY		WEDNESDAY	
08:45 - 09:00	(Login to Online)		(Login to Online)		(Login to Online)	
	Opening-welcome		INVITED-3		INVITED-6	
09:00 - 10:30	PLENARY LECTURE		T1A. Electronics, photonics and optoelectronics	T1B. Surfaces, nanomaterials and low dimensional materials and systems	W1A. Ceramics, composites minerals and metals	W1B. Interdisciplinary solid state physics and devices
10:30 - 11:00	BREAK					
	INVITED-1		INVITED-4		INVITED-7	
11:00 - 13:00	M1A. Electronics, photonics and optoelectronics	M1B. Polymers, organic materials and biomaterials	T2A. Electronics, photonics and optoelectronics	T2B. Surfaces, nanomaterials and low dimensional materials and systems	W2A. Structural, dynamical and mechanical properties of condensed matter	W2B. Strongly correlated systems, magnetism and superconductivity
13:00 - 14:00	BREAK					
					INVITED-8	
14:00 - 16:00	M2A. Electronics, photonics and optoelectronics	M2B. Surfaces, nanomaterials and low dimensional materials and systems	T3A. Electronics, photonics and optoelectronics	T3B. Structural, dynamical and mechanical properties of condensed matter	W3A. Structural, dynamical and mechanical properties of condensed matter	W3B. Polymers, organic materials and biomaterials
	INVITED-2		INVITED-5		BREAK	
16:00 - 18:00	POSTER SESSION 1		POSTER SESSION 2		W4A. Electronics, photonics and optoelectronics	W4B. Strongly correlated systems, magnetism and superconductivity
					CLOSING CEREMONY	
18:00 - 21:00	Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities		Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities			

# Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities\*

\*The event will be in Greek



## Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities

Δευτέρα 27 Σεπτεμβρίου 2021, 18:00-21:00

Διαδικτυακή Εκδήλωση

Προεδρεύοντες: Δρ. Χρήστος Τσάμης (ΕΚΕΦΕ «Δ»), Καθ. Νικόλαος Σαρλής (ΕΚΠΑ)

18:00-18:05	<b>Έναρξη εργασιών</b> Δρ. Γεώργιος Νούνεσης, Διευθυντής και Πρόεδρος ΔΣ ΕΚΕΦΕ «Δημόκριτος»
18:05-18:10	<b>Σύντομος χαιρετισμός</b> Χρίστος Δήμας, Υφυπουργός Έρευνας & Τεχνολογίας (Έχει προσκληθεί)
18:10-18:20	<b>Εθνικές Ερευνητικές Υποδομές</b> Δρ. Αντώνιος Γυπάκης, Αν Προϊστάμενος του Τμήματος Σχεδιασμού & Προγραμματισμού, Διεύθυνση Σχεδιασμού και Προγραμματισμού Πολιτικών και Δράσεων Έρευνας και Καινοτομίας, ΓΓΕΚ
18:20-18:50	<b><u>Εθνικές Ερευνητικές Υποδομές - Materials and Analytical Facilities</u></b>  <b>Innovation-el</b> Εθνική Υποδομή Νανοτεχνολογίας, Προηγμένων Υλικών και Μικρο-/Νανοηλεκτρονικής Δρ. Βασίλης Κυλίκογλου, Συντονιστής Innovation-el  <b>HELLAS-CH</b> The HiPER, ELI and LASERLAB Europe Synergy & IPERION-CH.gr Καθ. Δημήτριος Χαραλαμπίδης, Συντονιστής HELLAS-CH
18:50-19:30	<b><u>Επιστημονικοί και Βιομηχανικοί Φορείς</u></b>  <b>ΣΕΒ σύνδεσμος επιχειρήσεων και βιομηχανιών</b> Δρ. Κώστας Τρούλος, Senior Advisor, Τομέας Καινοτομίας  <b>Ένωση Ελληνικών Εταιρειών Αναδυόμενων Τεχνολογιών (HETiA)</b> Δρ. Εμμανουήλ Ζερβάκης, Πρόεδρος HETiA  <b>Ελληνική Ένωση Φωτονικής (HPhos)</b> Δρ. Ηλίας Χοντζόπουλος, Πρόεδρος HPhos  <b>Hellenic Biocluster (HBio)</b> Σταματική Κρήτα, Business Development Manager
19:30-21:00	<b>Συζήτηση</b> <b><u>Εθνικές Ερευνητικές Υποδομές: Παρόν και Μέλλον</u></b> Καθ. Σπύρος Αναστασιάδης (Αναπληρωτής Συντονιστής Innovation-el) Δρ. Αντώνιος Γυπάκης (ΓΓΕΚ) Δρ. Εμμανουήλ Ζερβάκης (HETiA) Σταματική Κρήτα (HBio) Δρ. Κώστας Τρούλος (ΣΕΒ) Καθ. Δημήτριος Χαραλαμπίδης (HELLAS-CH) Δρ. Ηλίας Χοντζόπουλος (HPhos)  <i>Συντονιστής: Δρ. Βασίλης Κυλίκογλου, Δ/ντής Ινστιτούτου Νανοεπιστήμης και Νανοτεχνολογίας, ΕΚΕΦΕ «Δημόκριτος»</i>

## Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities

Τρίτη 28 Σεπτεμβρίου 2021, 18:00-20:00

Διαδικτυακή Εκδήλωση

Προεδρεύοντες: Δρ. Χρήστος Τσάμης (ΕΚΕΦΕ «Δ»), Καθ. Νικόλαος Σαρλής (ΕΚΠΑ)

18:00-19:00	<b>Innovation-el</b> Εθνική Υποδομή Νανοτεχνολογίας, Προηγμένων Υλικών και Μικρο-/Νανοηλεκτρονικής  Αναλυτική παρουσίαση της υποδομής και των υπηρεσιών που παρέχει.
19:00-20:00	<b>HELLAS-CH</b> The HiPER, ELI and LASERLAB Europe Synergy & IPERION-CH.gr  Αναλυτική παρουσίαση της υποδομής και των υπηρεσιών που παρέχει.
20:00-	Συζήτηση των ενδιαφερομένων με τους εκπροσώπους των υποδομών

## Εθνικές Ερευνητικές Υποδομές Materials and Analytical Facilities



### Innovation-el Εθνική Υποδομή Νανοτεχνολογίας, Προηγμένων Υλικών και Μικρο-/ Νανοηλεκτρονικής <https://innovation-el.net/>

Η Innovation-el είναι η Εθνική Ερευνητική Υποδομή για την Νανοτεχνολογία, τα Προηγμένα Υλικά και την Μικρο-Νανο-Ηλεκτρονική. Αποτελεί σύμπραξη οκτώ Ελληνικών Ερευνητικών Ινστιτούτων και Πανεπιστημιακών Τμημάτων: INN/ΕΚΕΦΕ “Δημόκριτος, ΙΗΔΛ/ΙΤΕ, ΙΕΧΜΗ/ΙΤΕ, ΙΘΦΧ/ΕΙΕ, ΣΕΜΦΕ/ΕΜΠ, ΤΜΕΥ-ΤΦ/ΠΙ, ΕΗΜΔΧΥ/ΤΦ/ΑΠΘ και ΕΙΜ.

Η αποστολή της Innovation-el είναι η προώθηση της επιστημονικής αριστείας και η ανάπτυξη καινοτόμων προϊόντων με εφαρμογές στους τομείς Υλικών-Κατασκευών, Ενέργειας-Περιβάλλοντος, Ασφάλειας Τροφίμων—Αγροδιατροφής, Υγείας-Ιατρικής- Φαρμάκων και ΤΠΕ-Ολοκλήρωση Συστημάτων παρέχοντας ανοικτή πρόσβαση σε υψηλού επιπέδου ερευνητικό εξοπλισμό τόσο σε ακαδημαϊκούς χρήστες όσο και στην βιομηχανία. Στρατηγικός στόχος της Innovation-el είναι η μετεξέλιξή της σε ένα περιφερειακό οικοσύστημα έρευνας, ανάπτυξης και καινοτομίας στην Ελλάδα και στην νοτιο-ανατολική Ευρώπη/Μεσόγειο.

Η Innovation-el προσφέρει ανοικτή πρόσβαση σε μεγάλης κλίμακας ερευνητικές υποδομές που καλύπτουν όλο το φάσμα από την ανάπτυξη/σύνθεση υλικών, τον πλήρη χαρακτηρισμό τους έως την μικρο-νανο-κατασκευαστική, σχεδιασμός-ανάπτυξη-δοκιμές διατάξεων & συστημάτων. Τα παραπάνω συμπληρώνονται με θεωρητικούς υπολογισμούς και μοντελοποίηση. Η Innovation-el ενσωματώνει υψηλού επιπέδου διεπιστημονική εμπειρία, απασχολώντας περισσότερους από 200 επιστήμονες



### HELLAS-CH The HiPER, ELI and LASERLAB Europe Synergy & IPERION-CH.gr <https://hellasch.iesl.forth.gr/>

Η Εθνική Ερευνητική Υποδομή HELLAS-CH έχει στόχο να προσφέρει κυρίως στην Ελληνική επιστημονική κοινότητα:

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- β) ολοκληρωμένα πολύπλευρα εργαλεία και αξιόπιστες τεχνικές για την αντιμετώπιση απαιτητικών ερευνητικών προκλήσεων της Επιστήμης της Πολιτιστικής Κληρονομιάς (Heritage Science).

#### Στόχοι του HELLAS-CH

- Αξιοποίηση σημαντικών εθνικών ερευνητικών επιτευγμάτων μέσω της διαθεσιμότητας πειραματικών υλικών και πόρων σε διακεκριμένους ερευνητές.
- Ενσωμάτωση νέων ερευνητών με ιδιαίτερα μεγάλη απήχηση στο Ίδρυμα Τεχνολογίας και Έρευνας και εξεύρεση νέων δυναμικών σε έρευνα αιχμής στην επιστήμη και τεχνολογία φωτός (Φωτονικής).
- Παροχή υψηλού επιπέδου πόρους, υποδομές και ερευνητική καθοδήγηση για την ενίσχυση την έρευνα αιχμής στα επιστημονικά πεδία της Φυσικής, Βιολογίας, Ιατρικής, Εφαρμοσμένων Μαθηματικών, Γεωφυσικής, Φωτονικής και μικρο/μάκρο-μηχανικής
- Διάχυση γνώσης σε ανεξερεύνητα πεδία της παγκόσμιας πολιτιστικής κληρονομιάς μέσω νέων εφαρμογών έρευνας και εργαλείων όπως η δορυφορική αλληλεπίδραση με υπό – θαλάσσιες αρχαιότητες και με την εφαρμογή νέων ανιχνευτών φωτός προς την κατεύθυνση αναγνώρισης και κατανόησης της ιστορίας μας.

## Επιστημονικοί και Βιομηχανικοί Φορείς



**ΣΕΒ σύνδεσμος επιχειρήσεων και βιομηχανιών**

<https://www.sev.org.gr/>

Ο ΣΕΒ υποστηρίζει και προωθεί με συνέπεια την ιδιωτική πρωτοβουλία στην Ελλάδα από το 1907. Είναι η ανεξάρτητη φωνή των επιχειρήσεων που δραστηριοποιούνται στην Ελλάδα, εκπροσωπώντας το 50% της οικονομικής δραστηριότητας στη χώρα. Ως κοινωνικός εταίρος, συμμετέχει στον εθνικό και ευρωπαϊκό κοινωνικό διάλογο με στόχο την οικονομική ανάπτυξη, την πρόοδο και την κοινωνική συνοχή. Σε αυτή την κατεύθυνση, επιδιώκει σταθερά και με συνέπεια τη συνεργασία με την κυβέρνηση, τα κόμματα, τους ευρωπαϊκούς θεσμούς και τους υπόλοιπους κοινωνικούς εταίρους για την προώθηση και υλοποίηση των κατάλληλων πολιτικών. Τα μέλη του ΣΕΒ είναι δυναμικές επιχειρήσεις και αντιπροσωπεύουν το 12% των μισθωτών του ιδιωτικού τομέα, το 41% των εταιρικών κερδών και το 27% των εσόδων από φόρους νομικών προσώπων στην Ελλάδα.

Για τον ΣΕΒ, η καινοτομία συνιστά μοχλό δημιουργίας προστιθέμενης αξίας, εξωστρεφούς επιχειρηματικότητας και βρίσκεται στον πυρήνα της επιχειρηματικής ανάπτυξης. Οραματιζόμαστε μέσα στα επόμενα χρόνια να δούμε περισσότερα startups με ταχύτατη ανάπτυξη, τις ελληνικές επιχειρήσεις να μετασχηματίζονται σε εξαγωγικές και καινοτόμες, μεγάλες ξένες εταιρίες να στήνουν κέντρα έρευνας στην Ελλάδα και τα πανεπιστήμιά μας να δημιουργούν έρευνα που μεταφράζεται σε πατέντες με οικονομικό αντίκρισμα.



**Ένωση Ελληνικών Εταιρειών Αναδυόμενων Τεχνολογιών (HETiA)**

<https://hetia.org/>

Η HETiA (πρώην ENEBH) ιδρύθηκε το 2005 και εκπροσωπεί τις εταιρίες και τα Ακαδημαϊκά ιδρύματα που αναπτύσσουν Υψηλή Τεχνολογία στον χώρο της μικροηλεκτρονικής (microelectronics), των

ενσωματωμένων συστημάτων (embedded systems) και στην τεχνολογική αλυσίδα του Διαδικτύου Πραγμάτων (Internet of Things) στην Ελλάδα και αποτελούν τις πλέον δυναμικές κι ελπιδοφόρες συνιστώσες της Ελληνικής οικονομίας. Η HETiA αριθμεί σήμερα 80 μέλη, τα 50 εκ των οποίων εκπροσωπούν τη βιομηχανία και τα 30 τα σημαντικότερα ακαδημαϊκά ιδρύματα /εργαστήρια και ερευνητικά κέντρα της χώρας. Επικεντρώνεται στην ώσμωση του επιχειρηματικού και του ακαδημαϊκού – ερευνητικού τομέα για τη δημιουργία υψηλής προστιθέμενης αξίας και την παραγωγή καινοτόμων τεχνολογιών. Τα μέλη της HETiA είναι προσανατολισμένα σε εκθετικές τεχνολογίες που βρίσκουν εφαρμογή στο χώρο των Τεχνολογιών Πληροφορικής (Information Technology), των Ημιαγωγών (Semiconductor), της Ενέργειας (Energy), της Υγείας (Healthcare), της Έξυπνης Πόλης (Smart City), του Έξυπνου Σπιτιού & Κτιρίου (Smart Home & Building), των Μεταφορών & Logistics (Smart Transportation & Logistics), της Έξυπνης Γεωργίας (Agtech), της Αυτοκινητοβιομηχανίας (Automotive), της Λιανικής (Smart Retail), του Πολιτισμού & Τουρισμού (Culture & Tourism).

Η δυναμική των μελών της HETiA απεικονίζεται στα success stories, μέσω των οποίων επιτυγχάνεται προσέλκυση επενδυτικών κεφαλαίων (Venture Capitals), εγκαθίδρυση στρατηγικών συνεργασιών με τεχνολογικούς κολοσσούς, βραβεύσεις και διακρίσεις σε διεθνείς διαγωνισμούς καινοτομίας και εκθέσεις.

Περισσότερες πληροφορίες για τη HETiA, μπορείτε να βρείτε στην ιστοσελίδα μας [www.hetia.org](http://www.hetia.org)



## Ελληνική Ένωση Φωτονικής (H-Phos)

[www.hphos.gr](http://www.hphos.gr)

Καινοτόμες επιχειρήσεις που δραστηριοποιούνται σε διάφορους τομείς της Φωτονικής, ένωσαν τις δυνάμεις τους το 2011 για τη δημιουργία του πρώτου «άτυπου» συνεργατικού σχηματισμού Φωτονικής στην Ελλάδα, το Hellenic photonics Cluster (HPhos). Το HPhos έχει ως αποστολή τη συγκέντρωση όλων των βασικών εμπλεκομένων από το χώρο της βιομηχανίας και της έρευνας στην Ελλάδα, προκειμένου να δημιουργηθεί μια δεξαμενή σκέψης (“think tank”) για την ανάπτυξη νέων ιδεών και καινοτόμων προϊόντων/υπηρεσιών. Προσφέροντας ήδη από το 2011 ένα οικοσύστημα καινοτομίας που ενθαρρύνει την εκπαίδευση και τη μεταφορά γνώσεων και εμπειρογνωμοσύνης, κατάφερε να γίνει μια κρίσιμη υποδομή υποστήριξης για τη νέα επιχειρηματικότητα και την εξωστρέφεια των ελληνικών επιχειρήσεων, προσφέροντας κανάλια δικτύωσης με αντίστοιχους συνεργατικούς σχηματισμούς, επιχειρήσεις και επενδυτικά κεφάλαια.

Έτσι στις αρχές του 2015, ιδρύθηκε η Ελληνική Ένωση Φωτονικής ΑΣΤΙΚΗ ΜΗ ΚΕΡΔΟΣΚΟΠΙΚΗ ΕΤΑΙΡΕΙΑ, με διακριτικό τίτλο στα αγγλικά Hellenic Photonics Cluster(H-Phos), ως ανεξάρτητη εταιρική νομική οντότητα. Το HPhos αποτελείται από ένα βασικό πυρήνα επιχειρήσεων με υψηλή ένταση γνώσης και συνεργαζόμενους ερευνητικούς οργανισμούς, εστιάζοντας στη βιομηχανική παραγωγή και τον αυτοματισμό, τις τηλεπικοινωνίες, την άμυνα, την ασφάλεια, την πολιτιστική κληρονομιά, τα τρόφιμα, την υγεία, το περιβάλλον, και την εξοικονόμηση ενέργειας.

Το HPhos συνδέεται άμεσα με τη σχετική ευρωπαϊκή πλατφόρμα Photonics21, που λειτουργεί στο πλαίσιο της αναγνώρισης της φωτονικής ως Key Enabling Technology, και δίνει έμφαση στην οικοδόμηση μιας ισχυρής συνεργασίας σε όλο το εύρος της αλυσίδας αξίας, επιχειρώντας να συσπειρώσει τις επιχειρήσεις που σχετίζονται άμεσα με τις τεχνολογίες φωτονικής καθώς και τις εταιρείες που

δραστηριοποιούνται στον τομέα της ρομποτικής, του βιομηχανικού αυτοματισμού, της ολοκλήρωσης συστημάτων, της μεταλλουργίας ακριβείας, των μικροκατεργασιών κ.ά.



Το Hellenic BioCluster (HBio) είναι ο πρώτος και μεγαλύτερος Συνεργατικός Σχηματισμός Καινοτομίας στην Ελλάδα στον τομέα της υγείας και της βιοτεχνολογίας. Δημιουργήθηκε το 2006 με πρωτοβουλία του Ιδρύματος Τεχνολογίας και Έρευνας (ΙΤΕ) και του δικτύου διάχυσης τεχνολογίας ΠΡΑΞΗ και αποτελεί πλέον το μεγαλύτερο cluster επιστημών και τεχνολογιών υγείας στην Ελλάδα. Το HBio ήρθε να καλύψει ένα σημαντικό κενό που υπήρχε στην ελληνική βιο- φαρμακευτική επιχειρηματικότητα και εδώ και 15 χρόνια συνδέει περισσότερους από 70 βιομηχανικούς και ακαδημαϊκούς εταίρους με στόχο τη στήριξη και την προώθηση της καινοτομίας αλλά και την έμπρακτη συνδρομή της επιστήμης στην κοινωνία και την οικονομία. Συμμετέχει ενεργά σε δημόσιες διαβουλεύσεις και στη χάραξη πολιτικής για φλέγοντα θέματα, τόσο στη χώρα μας όσο και στην Ευρωπαϊκή Ένωση. Προκειμένου να ανταποκριθεί στις δύσκολες απαιτήσεις της σύγχρονης εποχής, το HBio έχει δημιουργήσει ένα ισχυρό οικοσύστημα, το οποίο περιλαμβάνει τα μεγαλύτερα ερευνητικά κέντρα στην Ελλάδα, κορυφαία πανεπιστήμια, εταίρους από τη φαρμακευτική και βιοτεχνολογική βιομηχανία με σημαντική πολυετή παρουσία στην αγορά αλλά και καινοτόμες μικρομεσαίες επιχειρήσεις συμπεριλαμβανομένων πολλών τεχνοβλαστών και νεοφυών επιχειρήσεων. Το HBio ενισχύει το οικοσύστημα διευκολύνοντας τη δικτύωση και τις συνέργειες μεταξύ των μελών του και στηρίζει ουσιαστικά τις μικρές και μεσαίες καινοτόμες επιχειρήσεις και τους ερευνητικούς οργανισμούς από το στάδιο εύρεσης χρηματοδότησης έως το στάδιο διάχυσης της τεχνολογίας. Επίσης, ενισχύει την εξωστρέφεια και την επιχειρηματικότητα συμμετέχοντας σε εθνικές και διεθνείς δράσεις και συνεισφέρει στην επαγγελματική ανάπτυξη των μελών του μέσα από ένα ευρύ φάσμα δραστηριοτήτων και προγραμμάτων, προωθώντας έτσι την ανταλλαγή και την εφαρμογή βέλτιστων πρακτικών στους τομείς της υγείας, της βιοτεχνολογίας αλλά και της επιχειρηματικότητας. Στόχος του HBio είναι η ανάπτυξη του μεγαλύτερου δικτύου εταίρων του τομέα της βιοεπιστήμης στην Ελλάδα, στοχεύοντας στην περαιτέρω ανάπτυξή τους, στην ενίσχυση των δυνατοτήτων τους, στην καινοτομία και στην εξωστρέφειά τους.



# CONFERENCE SCHOOLS

# School on Theoretical/Computational Condensed Matter Physics and Materials Science

Sunday 26<sup>th</sup> September 2021

12:00      **Opening**  
**Prof. Leonidas Tsetseris**  
National Technical University of Athens

12:00 -13:45      **Machine learning potentials for complex aqueous systems made simple**  
**Dr. Christoph Schran**  
Yusuf Hamied Department of Chemistry, University of Cambridge (UK)

13:45-15:00      Lunch Break

15:00-16:45      **Quantum information processing with solid-state qubits**  
**Prof. Sophia Economou**  
Department of Physics, Virginia Tech (USA)

16:45-17:00      Coffee Break

17:00-18:45      **Role of electron interactions and topological superconductivity in Weyl-type materials**  
**Prof. Efstratios Manousakis**  
Department of Physics, Florida State University (USA) and Department of Physics, National and Kapodistrian University of Athens (GREECE)

18:45      **Closing**  
**Prof. Leonidas Tsetseris**  
National Technical University of Athens

## SCHOOL SPEAKERS



### **Prof. Sophia Economou**

Department of Physics,  
Virginia Tech (USA)

Prof. Economou obtained her PhD in 2006 from the University of California San Diego. After that, she spent nine years at the US Naval Research Lab, first as a National Research Council Postdoctoral Fellow, and then as Research Staff. She joined Virginia Tech in 2015 where she is currently a Professor of Physics and the Hassinger Senior Fellow of Physics at Virginia Tech. She focuses on theoretical research in quantum information science, including quantum computing, quantum communications, and quantum simulation algorithms.



### **Prof. Efstratios Manousakis**

Department of Physics,  
Florida State University (USA) and  
Department of Physics,  
National and Kapodistrian University of Athens (GREECE)

Dr. Manousakis received his Ph. D. in Theoretical Physics, in July 1985, from the University of Illinois at Urbana-Champaign (First Ross J. Martin Award for his thesis). After a Post-Doctoral Research position at the Center for Theoretical Physics at the Massachusetts Institute of Technology (1985-1987) and at the Supercomputer Computational Research Institute (1987-88), he joined the Physics Department of the Florida State University (FSU) (1988). He received the PAI Award for Excellence in Teaching and Research (1998) and the Developing Scholar Award (1990) from FSU. Presently, he is Professor of Physics at the University of Athens and he is the Donald Robson Professor of Physics and holds the title of Distinguished Research Professor at FSU. He was named Fellow of The American Physical Society in 2002, Fellow of the Institute of Physics in 2008, and Fellow of American Association for Advancement of Science in 2018. Dr Manousakis' group develops and applies computational and theoretical methods to study novel collective behavior in certain quantum many-body systems which arises because of strong correlations among the fundamental microscopic degrees of freedom. Examples of such systems are: (a) Superconductors and Strongly Correlated Electrons, (b) Superfluids, (c) Electrons in Solids and The Two-Dimensional Electron Gas, (d) Quantum Phase Transitions in Atomically-Thin Films and (e) Phase Transitions in Restricted Geometries and Finite Size Scaling (f) Role of correlations in topological materials.



## Christoph Schran

Yusuf Hamied Department of Chemistry,  
University of Cambridge (UK)

Christoph Schran received his PhD in chemistry from the Ruhr-Universität Bochum, Germany in 2019 where he worked with Dominik Marx on hydrogen bonded systems solvated by superfluid helium. During this time, he visited the École Normale Supérieure, Paris, and was a visiting graduate student in the Markland group at Stanford University. For his postdoctoral work, he moved to the University of Cambridge working with Angelos Michaelides as a fellow of the 'Alexander von Humboldt' foundation. His research interests include the understanding of hydrogen bonded systems and their modelling by machine learning techniques.

## SCHOOL LECTURES

### Machine learning potentials for complex aqueous systems made simple

Simulation techniques based on accurate and efficient representations of potential energy surfaces are urgently needed for the understanding of complex materials such as solid-liquid interfaces. In this lecture, the principles of modern machine learning potentials will be outlined, explaining how the structure-energy relation required for molecular simulations can be represented by different approaches both based on neural networks or kernel based methods. Further emphasis will be on the efficient development and validation of such models. Finally, example applications of machine learning potentials for the understanding of complex materials will be presented to ultimately guide material design. Such machine learning models provide a straightforward and uncomplicated but accurate extension of simulation time and length scales for complex systems.

### Quantum information processing with solid-state qubits

I will give a broad introduction to quantum information processing and focus on implementations with solid-state systems. Specifically, I will discuss spin-based quantum computing with quantum dots and optically active solid-state spin systems for quantum networks. I will present the physical mechanisms and control techniques for the implementation of quantum operations as well as the challenges that limit quantum information applications. I will also highlight interesting recent experiments from some of the leading groups in the field.

### Role of electron interactions and topological superconductivity in Weyl-type materials

During the last two or three decades topology is becoming a powerful tool to characterize the electronic properties of materials. Most of the effort has been invested looking from a single-particle point of view, namely, without including the role of electron correlations. Here, we will

first review the concepts of the topological insulator and of Dirac and Weyl materials of various types. Next, we will give theoretical examples of Weyl semimetals and of Weyl nodal-ring semimetals. The nature of the surface states will be discussed. We will then discuss examples of electron interactions which lead to non-topological and topological superconductivity in such Weyl systems, including the formation of Majorana and Bogoliubov-Weyl surface states. Finally, we will also give examples where the effect of strong Coulomb correlations is to destroy the Weyl behavior.

## School on Materials Characterization Techniques

### School on Materials Characterization Techniques Sunday 26<sup>th</sup> September 2021

11:00

#### Opening

**Assoc. Prof. Athanassios Kontos**

National Technical University of Athens

11:00- 12:45

#### Electron Microscopy

**Dr Nikolaos Boukos**

of Nanoscience and Nanotechnology, NCSR “Demokritos”

**Dr Elias Sakellis**

Institute of Nanoscience and Nanotechnology, NCSR “Demokritos”

12:45-13:45

Lunch Break

13:45-15:30

#### Optical Spectroscopy

**Assoc. Prof. Athanassios Kontos**

School of Applied Mathematical and Physics Science, National Technical University of Athens

**Prof. Ioannis Raptis**

School of Applied Mathematical and Physics Science, National Technical University of Athens

15:30-16:00

Coffee Break

16:00-17:45

#### Materials characterization using surface sensitive techniques

**Prof. Stella Kennou**

Department of Chemical Engineering, University of Patras

18:00

#### Closing

**Assoc. Prof. Athanassios Kontos**

National Technical University of Athens

## SCHOOL SPEAKERS



### Dr Nikolaos Boukos

Institute of Nanoscience and Nanotechnology,  
NCSR “Demokritos” (GREECE)

**Nikos Boukos** is Director of Research in the Electron Microscopy and Nanomaterials Laboratory, Institute of Nanoscience and Nanotechnology, National Center for Scientific Research “Demokritos”. He obtained his Physics degree (1985) and PhD (1992) from Aristotle University of Thessaloniki. His research interests include application of Transmission and Scanning Electron Microscopy (TEM, S/TEM, SEM) and relevant analytical techniques such as Electron Energy Loss Spectroscopy (EELS) and Energy Dispersive X-ray Spectroscopy (EDS) for the study and optimization of a wide range of materials and nanostructures. He is also involved in the growth, characterization and properties of ZnO nanostructures. He has published more than 220 scientific articles, acquiring more than 5500 citations (h factor 38).



### Assoc. Prof. Athanassios Kontos

School of Applied Mathematical and Physics Science,  
National Technical University of Athens (GREECE)

**KONTOS Athanassios, G.** Assoc. Prof., Phys. Dep. School of Applied Mathematical and Physical Sciences, NTUA, and Collaborative Researcher in the INN, NCSR ‘Demokritos’. Diploma in Physics (1989, Un. of Athens) and Ph.D. in Physics (1994, University of Warwick, UK)

His Research Interests include Dye sensitized and perovskite solar cells, materials properties as well as optimization of device efficiency and stability - photocatalysis and superhydrophilicity of TiO<sub>2</sub> materials - CO<sub>2</sub> capture and conversion. Synthesis of TiO<sub>2</sub> (nanoparticles, nanotubes, dyes sensitized, quantum dots) and related modification (anion doping, functionalization with metals and carbonaceous materials). Structural (Raman spectroscopy), electronic (photoluminescence), optical (UV-vis.) and morphological (SEM, AFM) characterization of semiconducting nanomaterials and films, including perovskite halides.

Email: [akontos@mail.ntua.gr](mailto:akontos@mail.ntua.gr) Website: [users.ntua.gr/akontos/](http://users.ntua.gr/akontos/) Phone: +30-210-772-3014





### Prof. Stella Kennou

Department of Chemical Engineering,  
University of Patras (GREECE)

**Stella Kennou** is a professor at the Chemical Engineering Department, Surface Science Laboratory, of the University of Patras, Greece. Her Research interests are in Solid State Surface Physics and Chemistry using surface science experimental techniques (XPS, UPS, AES, ELS, LEED, TDS, SEXAFS, Work Function measurements), Spectroscopic characterization of solid surfaces and interfaces of materials, thin metallic film / semiconductor interfaces, organic/ inorganic and organic/organic electronic structure interfaces for organic electronic applications, Interaction of metals and gases on metallic and semiconducting surfaces. Also in Surface characterization of the atomic and electronic structure of carbon based materials, high  $\gamma$ -k oxides thin films and rare earth metal oxide thin films prepared with various methods for microelectronic device applications by surface science experimental techniques. She has co-authored over 180 peer reviewed publications in qualified international journals.



### Prof. Ioannis Raptis

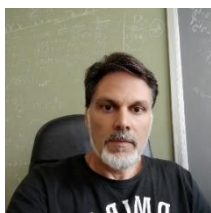
School of Applied Mathematical and Physics Science,  
National Technical University of Athens (GREECE)

**RAPTIS Yannis S.**, Professor, Phys. Dep., School of Applied Mathematical and Physical Sciences, NTUA

Diploma in Physics (1981, Un. of Athens), Ph.D. in Physics (1988, NTUA) **Research Area:** Optical Spectroscopy of Condensed Matter

His Research Interests include Spectroscopic study (Raman, Luminescence) mainly of semiconducting materials of the groups IV (Si, Ge, SiC), III-V (GaAs, InP, InSb, AlSb, GaP) and II-VI (CdTe, CdZnTe), in bulk and in low-dimensional forms, in variable Temperature and Pressure conditions, a-Si and nc-Si under laser-annealing conditions.

E-mail: [yraptis@central.ntua.gr](mailto:yraptis@central.ntua.gr), Website: [users.ntua.gr/yraptis/](https://users.ntua.gr/yraptis/) Phone: +30-210-772-3044



### Dr Elias Sakellis

Institute of Nanoscience and Nanotechnology,  
NCSR "Demokritos" (GREECE)

**Dr. Elias Sakellis** received his Ph.D. degree from the Department of Physics, University of Athens. Since then he works as associate researcher at the Institute of Nanoscience and Nanotechnology

of the National Center for Scientific Research DEMOKRITOS, Athens, Greece and at the Condensed Matter Physics Section of the department of Physics of the University of Athens. His current research interests include electron microscopy, synthesis of nano-structured materials with E-beam PVD, chemical and electrochemical methods as well as the study of their structural, electrical and optical properties. He is the author of more than 60 research papers with more than 600 citations. He has extended experience in electrical measurements of various materials, as well as, an expertise in structural, crystallographical and electronic configuration characterization of nanostructures -including nanoparticles- with scanning electron microscopy (SEM), transmission electron microscopy (TEM) and X-Ray Diffraction (XRD).

## SCHOOL LECTURES

### Electron Microscopy

During the last decades Electron Microscopy has proven itself to be the “workhorse” of materials characterization. It is a direct imaging technique allowing us to study materials and nanostructures at the micro-, nano- or even the atom- scale. Scanning Electron Microscopy (SEM) use an electron beam to scan the surface of a material, while in Transmission Electron Microscopy (TEM) the electron beam is transmitted through a thin part of the material allowing us to study its interior. These techniques enable us to study the morphology, structure and chemical composition of materials and nanostructures in order to develop new ones and optimize their properties.

### Optical Spectroscopy

**Interaction of Electromagnetic Radiation with charge carriers– Optical Characterization of bulk and low dimensional materials (A.G. Kontos)**

This presentation will focus on general concepts of optical spectroscopy: Dielectric Functions – Refractive Index – Absorption Coefficient, Direct – Indirect Energy Band Gap, Direct – Indirect Excitonic Absorption, Piezo-Birefringence as well as description/examples of relevant spectroscopic techniques applied to low-dimensional materials: Photoreflectance and Electoreflectance, Ellipsometry, Photoluminescence spectroscopy and Transient Absorption and photoluminescence spectroscopies.

**Interaction of Electromagnetic Radiation with collective excitations - Infrared and Raman spectroscopies in the study of Materials and Devices (Y.S. Raptis)**

This presentation will present the fundamental of vibrating spectroscopies: infrared and Raman with classical and quantum description as well as Selection Rules in Raman due to symmetry, Raman scattering and polarization properties, Resonance Raman effect and Experimental Techniques – Spectrometers. Many examples of characterization on carbon materials, semiconductors, heterostructures and devices will be presented, too.

### Materials characterization using surface sensitive techniques

Solid surfaces and interfaces are important in a number of modern technological applications from microelectronics to nanomaterials and heterogeneous catalysis. The quantitative and qualitative chemical composition of the first atomic layers, the crystal structure of solid surfaces, as well as the study of different interfacial electronic structures which are strongly related with material behavior can be determined by using a number of surface sensitive experimental techniques. Interfaces of semiconducting and insulating oxides are widely used in microelectronic applications, especially as gate oxide layers and in photovoltaic devices, to prevent electron-hole recombination. Interfaces are affecting the leakage currents and the gate capacitance in MOSFET arrays, as well as the electron and hole diffusion in solar cells. The principle of operation as well as the experimental apparatus of the most used experimental techniques like the photoelectron spectroscopies, will be presented. Some characteristic examples will be also discussed.

# DETAILED PROGRAM

## MONDAY SEPTEMBER 27, 2021

08:45 - 09:00	(Login Online)	
09:00 - 09:30	Opening-welcome	
09:30 - 10:30	<b>PLENARY LECTURE</b> <b>The science of contact-electrification and the technology of triboelectric nanogenerators</b> <b>Zhong Lin Wang</b> Beijing Institute of Nanoenergy and Nanosystems (PRC) and Georgia Institute of Technology (USA)	
10:30 - 11:00	BREAK	
11:00 - 11:30	<b>INVITED LECTURE</b> <b>The future of plastic materials: Sustainable, Smart, Functional</b> <b>Athanassia Athanassiou</b> Istituto Italiano di Tecnologia (ITALY)	
	<b>Session M1A. Electronics, photonics and optoelectronics</b> Session Chair: S. Gardelis	<b>Session M1B. Polymers, organic materials and biomaterials</b> Session Chair: C. Krontiras
11:30 - 11:45	<b>M1A.1 Designing 2D materials with pre-selected adsorption properties: the case of transition metal dichalcogenides and alkali atoms</b> M. Dou and <u>M. Fyta</u> <i>Institute for Computational Physics, University of Stuttgart, Allmandring 3, 70569 Stuttgart, Germany</i>	<b>M1B.1 Polysaccharide-protein alternating multilayers at the solid/water interface with potential in biomedical sciences</b> <u>A. Papagiannopoulos</u> <i>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, 11635 Athens, Greece.</i>
11:45 - 12:00	<b>M1A.2 Where does Graphene stand as an electrode for TENG devices?</b> <u>K. Bhorkar</u> <sup>1, a, c</sup> , N. Samartzis <sup>2 a, b</sup> , S. Yannopoulos <sup>3 a</sup> <i>a Foundation for Research and Technology Hellas – Institute of Chemical Engineering Sciences (FORTH/ICE-HT), P.O. Box 1414, GR-26504, Rio-Patras, Greece</i> <i>b Department of Physics, University of Patras, GR-26504, Rio-Patras, Greece</i> <i>c Univ Rennes, CNRS, ISCR - UMR 6226, F-35000 Rennes, France</i>	<b>M1B.2 How structural variability affects hole transfer in B-DNA: A Combination of MD, RT-TDDFT and TB</b> <u>M. Mantela</u> <sup>a</sup> , A. Morphis <sup>a</sup> , K. Lambropoulos <sup>a</sup> , C. Simserides <sup>a</sup> , R. Di Felice <sup>b, c</sup> <i>a. National and Kapodistrian University of Athens, Department of Physics, Panepistimiopolis, Zografos, 15784 Athens, Greece</i> <i>b. Department of Physics and Astronomy and Department of Quantitative and Computational Biology, University of Southern California, Los Angeles, California, 90089, United States</i> <i>c. CNR-NANO Modena, 41125 Modena, Italy</i>

12:00 - 12:15	<b>M1A.3 Probing valley population imbalance in transition metal dichalcogenides via temperature dependent second harmonic generation</b> <u>L. Mouchliadis<sup>a</sup></u> , S. Psilodimitrakopoulos <sup>a</sup> , G. Maragkakis <sup>a,b</sup> , I. Demeridou <sup>a,b</sup> , G. Kourmoulakis <sup>a,c</sup> , A. Lemonis <sup>a</sup> , G. Kioseoglou <sup>a,c</sup> , and E. Stratakis <sup>a,b</sup> <sup>a</sup> Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas, Greece <sup>b</sup> Physics Department, University of Crete, Greece <sup>c</sup> Department of Materials Science and Technology, University of Crete, Greece	<b>M1B.3 Reticular Chemistry and the Development of High Surface Area Mesoporous Rare-Earth MOFs</b> <u>G.K.Angeli</u> , C.Tsangarakis, P.N. Trikalitis Department of Chemistry, University of Crete, Voutes 71003 Heraklion, Greece.
12:15 - 12:30	<b>M1A.4 Tuning the valley polarization in WS<sub>2</sub> monolayers via control of active defect sites induced by photochlorination</b> <u>I. Demeridou<sup>a,b</sup></u> , A. Papadopoulos <sup>a,c</sup> , G. Kourmoulakis <sup>a,c</sup> , L. Mouchliadis <sup>a</sup> , E. Stratakis <sup>a,b</sup> , and G. Kioseoglou <sup>a,c</sup> <sup>a</sup> Institute of Electronic Structure and Laser, Foundation for Research and Technology - Hellas, Heraklion, 71110, Crete, Greece <sup>b</sup> Department of Physics, University of Crete, Heraklion, 71003, Crete, Greece <sup>c</sup> Department of Materials Science and Technology, University of Crete, Heraklion, 71003 Crete	<b>M1B.4 Computational Study of Ionic Liquids as Carbon Capture Media</b> K. Karanasiou <sup>a,b</sup> , M. Panou <sup>a,b</sup> , <u>N. Vergadou<sup>a</sup></u> <sup>a</sup> Molecular Thermodynamics and Modelling of Materials Laboratory, Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", Ag. Paraskevi GR-15310, Greece <sup>b</sup> Department of Chemical Engineering, National Technical University of Athens, Zografou GR-15780, Greece
12:30 - 12:45	<b>M1A.5 Tuning the valley optoelectronic properties of monolayer WS<sub>2</sub> under different dielectric environments</b> <u>G. Kourmoulakis<sup>a,b</sup></u> , A. Michail <sup>c,d</sup> , D. Anestopoulos <sup>d</sup> , J. Parthenios <sup>d</sup> , K. Papagelis <sup>d,e</sup> , E. Stratakis <sup>a</sup> , and G. Kioseoglou <sup>a,b</sup> <sup>a</sup> FORTH/IESL, Heraklion, 71110, Crete, Greece <sup>b</sup> Department of Materials Science and Technology, University of Crete, Heraklion, 71003 Crete, Greece <sup>c</sup> Department of Physics, University of Patras, Patras, 26504, Greece <sup>d</sup> FORTH/ICE-HT, Stadiou str Platani, Patras 26504 Greece <sup>e</sup> School of Physics, Department of Solid State Physics, Aristotle University of Thessaloniki, Thessaloniki, 54124, Greece	<b>M1B.5 Mechanical and Viscoelastic Properties of Polymer Nanocomposites via Simulations Across Scales: The role of Interphases</b> H. Reda <sup>a</sup> , A.F. Behbahani <sup>b</sup> , <u>V. Harmandaris<sup>a,b,c</sup></u> <sup>a</sup> Computation-based Science and Technology Research Center, The Cyprus Institute, 2121 Nicosia, Cyprus <sup>b</sup> Institute of Applied and Computational Mathematics – FORTH, GR-71110 Heraklion, Crete, Greece. <sup>c</sup> Department of Mathematics and Applied Mathematics, University of Crete, GR-71409
12:45 - 13:00	<b>M1A.6 Resistance switching characteristics of aluminum rich AlN thin films deposited by Molecular Beam Epitaxy on Si and SiN<sub>x</sub> substrates</b> <u>A. E. Mavropoulis</u> , N. Vasileiadis, D. Anthis, V. Ioannou-Souglideris, P. Normand, E. Iliopoulos <sup>a,b</sup> , and P. Dimitrakis Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", P.O.Box 60037, 15310 Ag. Paraskevi, Greece <sup>a</sup> Department of Physics, University of Crete, 71003 Heraklion-Crete, Greece <sup>b</sup> Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology-Hellas (FORTH), 71110 Heraklion-Crete, Greece	<b>M1B.6 Crystallization temperature dependence of the physical properties of Poly(L-lactic acid)/titanium dioxide bionanocomposites</b> <u>A.A. Barmdaki<sup>a</sup></u> , E.E. Zavvou <sup>a</sup> , E. Mystiridou <sup>b</sup> , I. Iliopoulos <sup>c</sup> , P.K. Karahaliou <sup>a</sup> , S.N. Georga <sup>a</sup> and C.A. Krontiras <sup>a</sup> <sup>a</sup> Department of Physics, University of Patras, 26504 Patras, Greece <sup>b</sup> Department of Materials Science, University of Patras, 26504 Patras, Greece <sup>c</sup> Department of Geology, University of Patras, 26504 Patras, Greece
13:00 – 14:00	<b>BREAK (LUNCH)</b>	
	<b>Session M2A. Electronics, photonics and optoelectronics</b> Session Chair: S. Kennou	<b>Session M2B. Surfaces, nanomaterials, and low-dimensional materials and systems</b>

		Session Chair: A. Kontos
<b>14:00 - 14:15</b>	<b>M2A.1 A novel approach for the realization of a photodetector with linear voltage output vs light intensity</b> <u>E. Hourdakis</u> , A. Kaidatzis and D. Niarchos <i>NCSR Demokritos, Institute of Nanoscience and Nanotechnology, Patriarchou Grigoriou and Neapoleos 27, 15341, Aghia Paraskevi, Athens, Greece</i>	<b>M2B.1 Hf<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub>-based ferroelectric memories</b> <u>C. Zacharakis</u> <sup>1,2</sup> , N. Siannas <sup>1,2</sup> , P. Tsipas <sup>1</sup> , S. Chaitoglou <sup>1</sup> , A. Dimoulas <sup>1</sup> <sup>1</sup> National Centre for Scientific Research "Demokritos", Athens, Greece <sup>2</sup> Physics Department, National and Kapodistrian University of Athens, Greece
<b>14:15 - 14:30</b>	<b>M2A.2 Photo detector based on ordered and screen printable Multi-Wall Carbon Nanotubes</b> <u>V. Lionas</u> <sup>a,b</sup> , G. Pilatos <sup>a</sup> , Th. Speliotis <sup>a</sup> , N. Glezos <sup>a</sup> , A. Kyriakis <sup>c</sup> , D. Velessiotis <sup>a</sup> <sup>a</sup> Institute of Nanoscience and Nanotechnology, National Center for Scientific Research Demokritos, Agia Paraskevi Attikis, P.O.Box 60037, 153 10 Athens, Greece, <sup>b</sup> Physics Department, University of Patras, 265 00 Patras, Greece <sup>c</sup> Institute of Nuclear and Particle Physics, National Center for Scientific Research Demokritos, Agia Paraskevi Attikis, P.O.Box 60037, 153 10 Athens, Greece	<b>M2B.2 Demonstration of strain sensors with memory effect</b> <u>C. Papakonstantinopoulos</u> <sup>a</sup> , P. Bousoulas <sup>a</sup> , D. Tsoukalas <sup>a</sup> <sup>a</sup> School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Iroon Polytechniou 9, 15772 Zografou Greece
<b>14:30 - 14:45</b>	<b>M2A.3 Graphene-Based Metasurfaces for Efficient Third Harmonic Generation</b> <u>A.Theodosi</u> <sup>a,b</sup> , O. Tsilipakos <sup>b</sup> , C. M. Soukoulis <sup>b,c</sup> , E. N. Economou <sup>b,d</sup> , M. Kafesaki <sup>a,b</sup> <sup>a</sup> . Department of Materials Science and Technology, University of Crete, Heraklion GR-70013, Greece <sup>b</sup> . Institute of Electronic Structure and Laser, FORTH, Heraklion, Crete GR-70013, Greece <sup>c</sup> . Ames Laboratory—U.S. DOE and Department of Physics and Astronomy, Iowa State University Ames, Iowa 50011, USA <sup>d</sup> . Department of Physics, University of Crete, Heraklion GR-70013, Greece	<b>M2B.3 Molecularly Pillared Graphene with Dithiolene and Diamine Linking Groups</b> <u>E. Papasouli</u> <sup>a</sup> , R. Lingas <sup>a</sup> , I. Skarmoutsos <sup>a,b</sup> , E. Klontzas <sup>b</sup> , E. N. Koukaras <sup>a*</sup> <sup>a</sup> Department of Chemistry, Laboratory of Quantum and Computational Chemistry, Aristotle University of Thessaloniki, GR-541 24 Thessaloniki, Greece <sup>b</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, GR-116 35 Athens, Greece
<b>14:45 - 15:00</b>	<b>M2A.4 Isotype ZnO/n-Si photodetector with broadband wavelength-selective operation and variable polarity</b> <u>G. Chatzigiannakis</u> <sup>a,b</sup> , A. Jaros <sup>c</sup> , R. Leturc <sup>d</sup> , J. Jungclaus <sup>c</sup> , T. Voss <sup>c</sup> , S.Gardelis <sup>b</sup> , M. Kandyla <sup>a</sup> <sup>a</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, 11635 Athens, Greece <sup>b</sup> Department of Physics, National and Kapodistrian University of Athens, Panepistimiopolis Zografos, 15784 Athens, Greece <sup>c</sup> Institute of Semiconductor Technology, Braunschweig University of Technology, Hans-Sommer Strasse 66, 38106 Braunschweig, Germany <sup>d</sup> Materials Research and Technology Department, Luxembourg Institute of Science and Technology, 41 Rue du Brill, L-4422 Belvaux, Luxembourg	<b>M2B.4 SF<sub>6</sub> Capture and Separation of SF<sub>6</sub>-N<sub>2</sub> Fluid Mixtures Using Porous Carbon Nanotube Networks and Pillared Graphene Materials</b> <u>I. Skarmoutsos</u> <sup>a,b</sup> , E. N. Koukaras <sup>b</sup> , C. Galiotis <sup>c</sup> , G.E. Froudakis <sup>d</sup> , E. Klontzas <sup>a</sup> <sup>a</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, Vass. Constantinou 48, GR-116 35, Athens, Greece <sup>b</sup> Department of Chemistry, Laboratory of Quantum and Computational Chemistry, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece <sup>c</sup> Department of Chemical Engineering, University of Patras, GR-26504 Patras, Greece <sup>d</sup> Department of Chemistry, University of Crete, Voutes, Heraklion, 71003 Crete, Greece



<b>15:00 - 15:15</b>	<p><b>M2A.5 Composite MoS<sub>2</sub>-TiO<sub>2</sub> photonic crystals for photocatalytic applications</b> S. Loukopoulou<sup>a</sup>, E. Sakellis<sup>b</sup>, F. Katsaros<sup>b</sup>, Z. Sideratou<sup>b</sup>, V. Likodimos<sup>a</sup> <sup>a</sup> Section of Condensed Matter Physics, Department of Physics, National and Kapodistrian University of Athens, University Campus, 15 784, Greece <sup>b</sup> Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", 15341 Agia Paraskevi, Athens, Greece</p>	<p><b>M2B.5 Perpendicular magnetic tunnel junctions based on CoFeB and MnIr/CoFe with exchange bias</b> O. Manos<sup>a</sup>, P. Bougiatioti<sup>b</sup>, D. Dyck<sup>c</sup>, T. Hübner<sup>c</sup>, J. Schmalhorst<sup>c</sup> and G. Reiss<sup>c</sup> <sup>a</sup>Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Aghia Paraskevi, Attiki, Athens 15310, Greece <sup>b</sup>Paul Scherrer Institut, CH-5232 Villigen, Switzerland <sup>c</sup>Center for Spinelectronic Materials and Devices, Department of Physics, Bielefeld University, Universitätsstraße 25, 33615 Bielefeld, Germany</p>
<b>15:15 - 15:30</b>	<p><b>M2A.6 Machine learning for the identification and classification of various gases by smart sensors</b> K. Andrikos<sup>a,b</sup>, P. P. Filippatos<sup>a</sup>, C. Petaroudis<sup>a</sup>, I. A. Klampanos<sup>b</sup>, G. Paliouras<sup>b</sup> and D. Davazoglou<sup>a</sup> NCSR "Demokritos", <sup>a</sup>Institute of Nanoscience and Nanotechnology, <sup>b</sup>Institute of Informatics and Telecommunications, POB 60228, 15310 Agia Paraskevi, Attiki, Greece</p>	<p><b>M2B.6 The influence of difference solvothermal growth conditions in the microstructure of coated ZnO nanoparticles</b> I. M. Oikonomou<sup>1</sup>, M.E. Karageorgou<sup>2</sup>, K. Giannousi<sup>2</sup>, C. Dendrinou-Samara<sup>2</sup>, P. Komninou<sup>1</sup> <sup>1</sup> Electron Microscopy Laboratory, Department of Physics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece <sup>2</sup> Laboratory of Inorganic Chemistry, Department of Chemistry, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece</p>
<b>15:30 - 16:00</b>	<p style="text-align: center;"><b>INVITED LECTURE</b> <b>Spin qubits for quantum computing and quantum networks</b> <b>Sophia Economou</b> Department of Physics, Virginia Tech (USA)</p>	
<b>16:00 – 18:00</b>	<p style="text-align: center;"><b>POSTER SESSION 1</b> <b>Session Chair: P. Dimitrakis</b></p>	
<b>P1.1</b>	<p><b>Averaging method and coherence applied to Rabi oscillations in a two-level system</b> L. Chalkopiadis, C. Simserides National and Kapodistrian University of Athens, Department of Physics, Panepistimiopolis, 15784 Zografos, Athens, Greece</p>	
<b>P1.2</b>	<p><b>Quantized Conductance Properties in SiO<sub>2</sub>-based Conductive Bridge Random Access Memory with embedded MoS<sub>2</sub></b> S. Kitsios, P. Bousoulas, M. Kainourgaki, M. Tsigourakos, D. Tsoukalas School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Iroon Polytechniou 9, 15772, Greece</p>	
<b>P1.3</b>	<p><b>Heteroaggregation Approach for depositing Spin Crossover Nanoparticles onto Silica Coated Gold Nanorods: A Nonlinear Optical Study</b> E. Zygouri<sup>a</sup>, P. Gkolfi<sup>a</sup>, V. Tangoulis<sup>a</sup>, A. Stathis<sup>b,c</sup>, I. Dalamaras<sup>b,c</sup>, S. Couris<sup>b,c</sup> <sup>a</sup> Department of Chemistry, Laboratory of Inorganic Chemistry, University of Patras, 26504, Patras <sup>b</sup> University of Patras, Department of Physics, 26504 Patras, Greece <sup>c</sup> Institute of Chemical Engineering Sciences (ICE-HT), Foundation for Research and Technology-Hellas (FORTH), P.O. Box 1414, Patras 26504.</p>	
<b>P1.4</b>	<p><b>Nanostructured electrochromic WO<sub>3</sub> films grown by spray pyrolysis</b> K. Mouratis<sup>1,4</sup>, I. V. Tudose<sup>1,5,6</sup>, C. Romanitan<sup>2</sup>, M. Popescu<sup>2</sup>, G. Simistiras<sup>1,3</sup>, S. Couris<sup>4</sup>, M. P. Sucheai<sup>1,2</sup> and E. Koudoumas<sup>1,3</sup> <sup>1</sup> Center of Materials Technology and Photonics, School of Engineering, Hellenic Mediterranean University, 71410 Heraklion, Crete, Greece</p>	

	<p><sup>2</sup> National Institute for Research and Development in Microtechnologies - IMT Bucharest, 126A, Erou Iancu Nicolae Street, 077190, Voluntari-Bucharest, ROMANIA</p> <p><sup>3</sup> Department of Electrical and Computer Engineering, School of Engineering, Hellenic Mediterranean University, 71410 Heraklion, Crete, Greece</p> <p><sup>4</sup> Physics Department, University of Patras, 26500 Patras, Greece</p> <p><sup>5</sup> Chemistry Department, University of Crete, Heraklion, Greece</p> <p><sup>6</sup> IESL-FORTH, Heraklion, Crete, Greece</p>
<b>P1.5</b>	<p><b>Room Temperature and Low-Power operation CuSCN-based Gas Sensors</b></p> <p>E. Gagaoudakis<sup>a</sup>, M. Moschogiannaki<sup>a,b</sup>, V. Kampitakis<sup>a,c</sup>, A. Sfakianou<sup>a,c</sup>, George Deligeorgis<sup>a</sup>, T. Anthopoulos<sup>d</sup>, L. Tsetseris<sup>e</sup>, G. Kiriakidis<sup>a</sup>, V. Binas<sup>a,c</sup></p> <p><sup>a</sup>Institute of Electronic Structure &amp; Laser, Foundation for Research and Technology, Herakleion, Greece</p> <p><sup>b</sup>Department of Materials Science and Technology, University of Crete, Herakleion, Greece</p> <p><sup>c</sup>Department of Physics, University of Crete, Herakleion, Greece</p> <p><sup>d</sup>Physical Science and Engineering Division, King Abdullah University of Science and Technology, Saudi Arabia</p> <p><sup>e</sup>Department of Physics, National Technical University of Athens, GR-15780 Athens, Greece</p>
<b>P1.6</b>	<p><b>First-principles calculations for Mn-doped ZnO</b></p> <p>A. Douloumis<sup>1</sup>, N. R. E. Vrihlias<sup>1,2</sup>, N. Katsarakis<sup>2,3</sup>, G. Kopidakis<sup>1,2</sup> and I. N. Remediakis<sup>1,2</sup></p> <p><sup>1</sup> Dept. of Materials Science and Technology, University of Crete, Greece</p> <p><sup>2</sup> Inst. for Electronic Structure and Laser, Found. for Res. and Techn. - Hellas</p> <p><sup>3</sup> Center of Materials Technology and Photonics, Hellenic Mediterranean University, Greece</p>
<b>P1.7</b>	<p><b>Synthesis, characterization and nonlinear optical response of polyelectrolyte-stabilized copper hydroxide and copper oxide colloidal nanohybrids</b></p> <p>M. Stavrou<sup>a,b</sup>, G. Papaparaskeva<sup>c</sup>, A. Stathis<sup>a,b</sup>, A. Stylianou<sup>d</sup>, Rodica Turcu<sup>e</sup>, T. Krasia-Christoforou<sup>c</sup>, S. Couris<sup>a,b</sup></p> <p><sup>a</sup>University of Patras, Department of Physics, 26504 Patras, Greece</p> <p>Institute of Chemical Engineering</p> <p><sup>b</sup>Sciences (ICE-HT), Foundation for Research and Technology-Hellas (FORTH), P.O. Box 1414, Patras 26504,</p> <p><sup>c</sup>University of Cyprus, Department of Mechanical and Manufacturing Engineering, 75, Kallipoleos Avenue, P. O. Box 20537, 1678, Nicosia, Cyprus</p> <p><sup>d</sup>European University Cyprus, School of Sciences, 6 Diogenis Str., 2404 Engomi, P.O. Box. 22006, 1516, Nicosia-Cyprus</p> <p><sup>e</sup>National Institute for Research and Development of Isotopic and Molecular Technologies, 67-103 Donat Str., 400293 Cluj-Napoca, Romania</p>
<b>P1.8</b>	<p><b>Nanosized Structurally - Related Mn Supertetrahedral T4 Aggregates</b></p> <p>K. Skordis<sup>a</sup>, A. Anastassiades<sup>a</sup>, A. D. Fournet<sup>b</sup>, L. Yanhua<sup>c</sup>, W. Wernsdorfer<sup>c</sup>, G. Christou<sup>b</sup>, V. Nastopoulos<sup>d</sup>, S. P. Perlepes<sup>d</sup>, C. Papatriantafyllopoulou<sup>e</sup> and A. J. Tasiopoulos<sup>a</sup></p> <p><sup>a</sup> Department of Chemistry, University of Cyprus, 1678 Nicosia, Cyprus.</p> <p><sup>b</sup> Department of Chemistry, University of Florida, Gainesville, Florida 32611-7200, United States.</p> <p><sup>c</sup> Institute of Nanotechnology (INT), Karlsruhe Institute of Technology, Hermann-von-Helmholz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany.</p> <p><sup>d</sup> Department of Chemistry, University of Patras, Patras 26504, Greece.</p> <p><sup>e</sup> Synthesis and Solid-State Pharmaceutical Centre (SSPC), School of Chemistry, College of Science and Engineering, National University of Ireland Galway, University Road, H91 TK33, Galway, Ireland.</p>
<b>P1.9</b>	<p><b>Manipulating the preferred orientation of (CH<sub>3</sub>)<sub>3</sub>SPbI<sub>3</sub> hybrid perovskite</b></p> <p>G.K. Manolis<sup>a</sup>, A. Kaltzoglou<sup>b</sup>, P. Falaras<sup>a</sup></p> <p><sup>a</sup> Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", 15310, Agia Paraskevi Attikis, Athens, Greece</p> <p><sup>b</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, 11635, Athens, Greece</p>

<b>P1.10</b>	<b>Enhanced photoluminescence of lead halide perovskite films through surface functionalization with SCN<sup>-</sup>-containing ionic liquids</b> <u>L. Theofylaktos<sup>a,b</sup></u> , E. Christopoulos <sup>a</sup> , P. Falaras <sup>a</sup> , T. Stergiopoulos <sup>a,b,*</sup> <sup>a</sup> Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", 15310 Ag. Paraskevi, Athens, Greece <sup>b</sup> Aristotle University of Thessaloniki, Laboratory of Physical Chemistry, Department of Chemistry, 54124, Thessaloniki, Greece
<b>P1.11</b>	<b>Ultrafast NLO properties of 2D silicon nanosheets</b> <u>A. Stathis<sup>a,b</sup></u> , M. Stavrou <sup>a,b</sup> , I. Papadakis <sup>a,b</sup> , Josef Mock <sup>c</sup> , Marc J. Klobner <sup>d</sup> , Markus Becherer <sup>c</sup> , Alina Lyuleeva-Husemann <sup>c</sup> , S. Couris <sup>a,b</sup> <sup>a</sup> Department of Physics, University of Patras, 26504 Patras, Greece <sup>b</sup> Institute of Chemical Engineering Sciences (ICE-HT), Foundation for Research and Technology-Hellas (FORTH), P.O. Box 1414, Patras 26504, Greece <sup>c</sup> Chair of Nano and Quantum Sensors, Technical University of Munich, 80333 Munich, Germany <sup>d</sup> WACKER Chair of Macromolecular Chemistry, Technical University of Munich, 80333, Munich
<b>P1.12</b>	<b>Hybrid GaAs nanowire/perovskite diode devices</b> <u>E. Darivianaki<sup>a</sup></u> , M. Androulidaki <sup>b</sup> , K. Tsagaraki <sup>b</sup> , M. Kayambaki <sup>b</sup> , G. Stavriniadis <sup>b</sup> , G. Konstantinidis <sup>b</sup> , E. Dimakis <sup>c</sup> , N. T. Pelekanos <sup>a,b</sup> , C. C. Stoumpos <sup>a</sup> <sup>a</sup> Department of Materials Science and Technology, University of Crete, Heraklion, 71003, Greece <sup>b</sup> Microelectronics Research Group, IESL-FORTH, Heraklion, 71110, Greece <sup>c</sup> Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany.
<b>P1.13</b>	<b>Modification of surface roughness with plasma etching and its influence on the performance of triboelectric generators</b> S. Arvaniti, <u>A. Segkos</u> , A. Bardakas, A. Zeniou, E. Gogolides, C. Tsamis NCSR "Demokritos", Institute of Nanoscience and Nanotechnology, 15310 Aghia Paraskevi, Athens, Greece
<b>P1.14</b>	<b>PRESERVATION of biominerals: impact of laboratory extraction methods on the physicochemical characteristics of SiO<sub>2</sub>-rich phytoliths</b> <u>N.C. Andriopoulou<sup>a</sup></u> and G.E. Christidis <sup>a</sup> <sup>a</sup> School of Mineral Resources Engineering, Technical University of Crete, 73100 Chania, Greece
<b>P1.15</b>	<b>Nanomagnetic bioceramic nanocomposites: Fabrication, features and applications.</b> <u>A. Athanasiadou<sup>a,d,*</sup></u> , K. Kazeli <sup>a,b,d</sup> , A. Makridis <sup>a,d</sup> , E. Kontonasaki <sup>c</sup> , E. Lymperaki <sup>b</sup> , T. Samaras <sup>a,d</sup> , M. Angelakeris <sup>a,d</sup> <sup>a</sup> School of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece <sup>b</sup> International Hellenic University, Thessaloniki, Greece <sup>c</sup> Department of Prosthodontics, School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece <sup>d</sup> MagnaCharta Center for Interdisciplinary Research and Innovation (CIRI-AUTH), 57001 Thessaloniki Greece
<b>P1.16</b>	<b>Isorecticular Design of Two Novel Metal Organic Frameworks and Their Single-Crystal-to-Single-Crystal Solvent Exchange Properties</b> <u>A. Kourtellis<sup>a</sup></u> , M. S. Markoulides <sup>a</sup> , N. Chronakis <sup>a</sup> , S. J. Teat <sup>b</sup> , J. C. Plakatouras <sup>c</sup> , A. J. Tasiopoulos <sup>a</sup> <sup>a</sup> Department of Chemistry, University of Cyprus, Nicosia 1678, Cyprus <sup>b</sup> Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, California 94720, USA <sup>c</sup> Department of Chemistry, University of Ioannina, 451 10 Ioannina, Greece.
<b>P1.17</b>	<b>Implementation of supermolecular building layer (SBL) approach for the construction of a highly stable pillared layered platform with tunable metrics and functionalities</b> K. G. Froudas, G. K. Angeli, C. Tsangarakis, P. N. Trikalitis Department of Chemistry, University of Crete, Voutes, Heraklion 71003, Greece,.
<b>P1.18</b>	<b>New Metalated Analogues of the Zirconium-Porphyrinic Metal-Organic Framework PCN-224 and Their Single-Crystal-to-Single-Crystal Transformation and Gas Sensing Properties</b> <u>R. P. Machattos<sup>a</sup></u> , N. Panagiotou <sup>a</sup> , F. G. Moscoso <sup>b</sup> , A. Sousaraei <sup>b</sup> , J. M. Pedrosa <sup>b</sup> , A. J. Tasiopoulos <sup>a</sup> <sup>a</sup> Department of Chemistry, University of Cyprus, 1678, Nicosia, Cyprus <sup>b</sup> Departamento de Sistemas Físicos Químicos y Naturales, Universidad Pablo de Olavide, Ctra. Utrera Km. 1, Sevilla 41013, Spain

<b>P1.19</b>	<b>New 3D-MOFs Based on the Hexanuclear <math>[Y_6(\mu_3-OH)_8]^{10+}</math> Secondary Building Unit and their Single-Crystal-to-Single-Crystal Metalation Capability</b> <u>L.K. Komodiki<sup>1</sup></u> , N. Panagiotou <sup>1</sup> , José M. Pedrosa <sup>2</sup> , A.J. Tasiopoulos <sup>1*</sup> <sup>1</sup> Department of Chemistry, University of Cyprus, 1678, Nicosia, Cyprus <sup>2</sup> Departamento de Sistemas Físicos Químicos y Naturales, Universidad Pablo de Olavide, Ctra. Utrera Km. 1, Sevilla 41013, Spain
<b>P1.20</b>	<b>Molecular Dynamics Simulation of Poly(vinylidene fluoride)</b> <u>M.N. Panou<sup>1,2</sup></u> , A. Argyropoulou <sup>1,2</sup> , N. Vergadou <sup>1</sup> <sup>1</sup> Molecular Thermodynamics and Modelling of Materials Laboratory, Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", Ag. Paraskevi GR-15310, Greece <sup>2</sup> Department of Chemical Engineering, National and Technical University of Athens, Zografou GR-15780, Greece
<b>P1.21</b>	<b>Multifunctional nanoparticles based on PEO-polyacetal diblock copolymers for drug delivery</b> <u>T. Manouras</u> , M. Vamvakaki Institute of Electronic Structure and Laser, Foundation for Research and Technology – Hellas, 700 13 Heraklion, Crete, Greece Department of Materials Science and Technology, University of Crete, 700 13 Heraklion, Crete, Greece
<b>P1.22</b>	<b>Infant milk conductivity measurements using a portable liquid impedence sensor</b> P. Mandylas <sup>a</sup> , A.E. Mavropoulis <sup>a</sup> , N. Vasileiadis <sup>a</sup> , N. Kehagias <sup>a</sup> , P. Normand <sup>a</sup> , D. Gialas <sup>b</sup> , D. Zarras <sup>c</sup> and P. Dimitrakis <sup>a</sup> <sup>a</sup> Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", P.O. Box 60037, 153 10 Ag. Paraskevi, Greece <sup>b</sup> Bebe Jou Hellas, Lavriou Ave. 123, 19002, Paiania, Greece <sup>c</sup> EMETRON Analytics, Apostolou Pavlou 9, 141 22 Iraklio, Greece
<b>P1.23</b>	<b>Growth of breast cancer cells on patterned surfaces</b> A. Papadimitropoulou <sup>a,b</sup> , Z. Chakim <sup>b</sup> , M. Kanidi <sup>a</sup> , C. Charalampous <sup>b</sup> , G. Tsekenis <sup>a,b</sup> , <u>M. Kandyla<sup>a</sup></u> <sup>a</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vasileos Constantinou Ave., 11635 Athens, Greece <sup>b</sup> Biomedical Research Foundation of the Academy of Athens, 4 Soranou Ephessiou St., 115 27 Athens, Greece
<b>P1.24</b>	<b>Different approaches of Optically Stimulated Luminescence dose response on aged dental zirconia reinforced lithium silicate</b> <u>I. K. Sfampa<sup>a</sup></u> , L. Malletzidou <sup>b</sup> , M. Karagiannakidou <sup>a</sup> , G. Kitis <sup>a</sup> <sup>a</sup> Nuclear and Elementary Physics Laboratory, <sup>b</sup> Laboratory of Advanced Materials and Devices, School of Physics, Faculty of Sciences, Aristotle University of Thessaloniki, GR-54124, Thessaloniki, Greece
<b>P1.25</b>	<b>Thermoluminescence investigation of in-vitro aged dental zirconia reinforced lithium silicate for personal dosimetry applications</b> <u>M. Karagiannakidou<sup>a</sup></u> , I. K. Sfampa <sup>a</sup> , L. Malletzidou <sup>b</sup> , M. Karampiperi <sup>c</sup> , E. Kontonasaki <sup>d</sup> , G. Kitis <sup>a</sup> <sup>a</sup> Nuclear and Elementary Physics Laboratory, <sup>b</sup> Advanced Materials and Devices Laboratory, School of Physics, Faculty of Sciences, Aristotle University of Thessaloniki, GR-54124, Thessaloniki, Greece <sup>c</sup> Laboratory of Archaeometry and Physicochemical Measurements, R.C. 'Athena', P.O. Box 159, Kimmeria University Campus, 67100, Xanthi, Greece <sup>d</sup> Laboratory of Prosthodontics, Department of Dentistry, School of Health Sciences, Aristotle University of Thessaloniki, GR-54124, Thessaloniki, Greece
<b>P1.26</b>	<b>Influence of the crystal polymorphism on the thermal, optical and dielectric properties of cold-crystallized poly(L-lactic acid)</b> <u>E.E. Zavvou<sup>a</sup></u> , A.A. Barmdaki <sup>a</sup> , I. Iliopoulos <sup>b</sup> , P.K. Karahaliou <sup>a</sup> , S.N. Georga <sup>a</sup> and C.A. Krontiras <sup>a</sup> <sup>a</sup> Department of Physics, University of Patras, 26504 Patras, Greece <sup>b</sup> Department of Geology, University of Patras, 26504 Patras, Greece
<b>P1.27</b>	<b>Isothermal crystallization of Poly(L-lactic acid)/titanium dioxide bionanocomposites monitored by time-dependent Broadband Dielectric Spectroscopy</b> A. Giannakopoulou, A. Psarelis, <u>A.A. Barmdaki</u> , E.E. Zavvou, P.K. Karahaliou, S.N. Georga and C.A. Krontiras Department of Physics, University of Patras, 26504 Patras, Greece

<b>P1.28</b>	<b>Examining the fitting of Luminescence dose response curves from scientific literature with Lambert-W function using Python</b> <u>G. Kioselaki<sup>a</sup>, K. Prevezanou<sup>a</sup>, P. Konstantinidis<sup>a</sup>, E. Tsoutsoumanos<sup>b,c</sup>, G. S. Polymeris<sup>c</sup>, V. Pagonis<sup>d</sup>, G. Kitis<sup>a</sup></u> <sup>a</sup> Nuclear and Elementary Particle Physics Laboratory, Physics Department, Aristotle University of Thessaloniki, GR-54214, Thessaloniki, Greece <sup>b</sup> Condensed Matter Physics Laboratory, Department of Physics, University of Thessaly, GR-35100, Lamia, Greece <sup>c</sup> Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", GR-15310, Ag. Paraskevi, Greece <sup>d</sup> McDaniel College, Physics Department, MD-21157, Westminster, USA
<b>P1.29</b>	<b>General Order Kinetics (GOK) vs One Trap One Recombination model (OTOR); Kinetic order – Retrapping ratio correlation in simulated LM-OSL curves using Deconvolution, Peak Shape Methods and Machine Learning</b> <u>E. Tsoutsoumanos<sup>a,b</sup>, G.S. Polymeris<sup>b</sup>, P. Konstantinidis<sup>c</sup>, T. Karakasidis<sup>a</sup>, G. Kitis<sup>c</sup></u> <sup>a</sup> Condensed Matter Physics Laboratory, Department of Physics, University of Thessaly, GR-35100, Lamia, Greece <sup>b</sup> Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", GR-15310, Ag. Paraskevi, Greece <sup>c</sup> Nuclear and Elementary Particle Physics Laboratory, Physics Department, Aristotle University of Thessaloniki, GR-54214, Thessaloniki, Greece
<b>P1.30</b>	<b>Dynamics of the low frequency dielectric relaxation of hydrated magnesium carbonate rock (leukolite) at elevated temperature and pressure</b> <u>A. N. Papathanassiou<sup>a</sup>, E. Sakellis<sup>a,b</sup></u> <sup>a</sup> National and Kapodistrian University of Athens, Department of Physics, Section of Condensed Matter Physics, 15784 Zografos, Greece <sup>b</sup> NCSR Demokritos, INN, Aghia Paraskevi, Greece
<b>P1.31</b>	<b>Effect of the firing temperature on the luminescence properties of quartz.</b> <u>M. Karampiperi<sup>a</sup>, N. C. Tsirliganis<sup>a</sup>, N. A. Kazakis<sup>a</sup></u> <sup>a</sup> Laboratory of Archaeometry and Physicochemical Measurements, R.C. 'Athena', P.O. Box 159, Kimmeria University Campus, 67100, Xanthi, Greece
<b>P1.32</b>	<b>Activation energy calculation using PID, Initial Rise and Peak Shape Methods in a BeO yielding double main TL dosimetric peaks</b> <u>Konstantinidis, P.<sup>1*</sup>, Tsoutsoumanos, E.<sup>2</sup>, Polymeris, G.S.<sup>3</sup>, Kitis, G.<sup>1</sup></u> <sup>1</sup> Aristotle University of Thessaloniki, Physics Department, Nuclear Physics and Elementary Particles Physics Section, 54124-Thessaloniki, Greece <sup>2</sup> Department of Physics, University of Thessaly, GR-35100, Lamia, Greece <sup>3</sup> NCSR "Demokritos", Institute of Nanoscience and Nanotechnology Demokritos, Ag. Paraskevi, 15310 Athens, Greece
<b>P1.33</b>	<b>Implementation of expressions based on Lambert-W function for deconvolution of stimulated luminescence curves using Python</b> <u>K. Prevezanou<sup>a</sup>, G. Kioselaki<sup>a</sup>, E. Tsoutsoumanos<sup>b</sup>, G.S. Polymeris<sup>c</sup>, P. Konstantinidis<sup>a</sup>, V. Pagonis<sup>d</sup> and G. Kitis<sup>a</sup></u> <sup>a</sup> Nuclear and Elementary Particle Physics Laboratory, Physics Department, Aristotle University of Thessaloniki, GR-54214, Thessaloniki, Greece <sup>b</sup> Department of Physics, University of Thessaly, GR-35100, Lamia, Greece <sup>c</sup> Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", GR-15310, Ag. Paraskevi, Greece <sup>d</sup> McDaniel College, Physics Department, MD-21157, Westminster, USA
<b>P1.34</b>	<b>Growth, Magnetic Anisotropy and Exchange Bias of Ultrathin NiCo/NiCoO Multilayers</b> <u>D. I. Anyfantis<sup>a</sup>, N. Kanistras<sup>a</sup>, C. Ballani<sup>b</sup>, A. Barnasas<sup>a</sup>, V. Kapaklis<sup>d</sup>, G. Schmidt<sup>b,c</sup>, E. Th. Papaioannou<sup>b</sup> and P. Pouloupoulos<sup>a</sup></u> <sup>a</sup> Department of Materials Science, School of Natural Sciences University of Patras, 26504 Rio, Patras, Greece <sup>b</sup> Martin-Luther University Halle-Wittenberg Von-Danckelmann-Platz 3, 06120 Halle, Germany <sup>c</sup> Interdisziplinäres Zentrum für Materialwissenschaften, Martin-Luther-Universität Halle-Wittenberg, D-06120 Halle, Germany <sup>d</sup> Department of Physics and Astronomy, Uppsala University, Box 516, SE-751 20 Uppsala, Sweden
<b>P1.35</b>	<b>Monte Carlo simulations of Heisenberg model with 1, 2, 3 and 4 neighbors for fcc lattice and with many neighbors for (Ga,Mn)N: dilute magnetic doping of fcc and hcp cation lattices.</b> <u>P. Bilia<sup>a</sup> and C. Simserides<sup>a</sup></u> <sup>a</sup> Department of Physics, National and Kapodistrian University of Athens, Panepistimiopolis, Zografos, GR-15784, Athens, Greece



P1.36	<b>Acoustic and Optical excitation in Ru/Cr/Co and Ru/Co multilayers</b> P. Ntetsika <sup>1</sup> , G. Mitrikas <sup>2</sup> , G. Litsardakis <sup>3</sup> , I. Panagiotopoulos <sup>1,4</sup> <sup>1</sup> Department of Materials Science and Engineering, University of Ioannina, Ioannina 45110, Greece <sup>2</sup> Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research-Demokritos, Athens, Greece <sup>3</sup> Laboratory of Materials for Electrotechnics, Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece. <sup>4</sup> Institute of Materials Science and Computing, University Research Center of Ioannina (URCI), 45110 Ioannina, Greece
P1.37	<b>Magnetic Particle Hyperthermia: Methodologies to mitigate side effects</b> G. Pefanis <sup>1,2</sup> , N. Maniotis <sup>1,2</sup> , A.R. Tsiapla <sup>1,2</sup> , T. Samaras <sup>1,2</sup> and M. Angelakeris <sup>1,2</sup> <sup>1</sup> School of Physics, Faculty of Sciences, Aristotle University, 54124 Thessaloniki, Greece <sup>2</sup> MagnaCharta, Center for Interdisciplinary Research and Innovation (CIRI-AUTH), 57001 Thessaloniki Greece
P1.38	<b>Techniques to improve the efficiency of magnetic particle hyperthermia therapy</b> A.R. Tsiapla <sup>a,b</sup> , A. Makridis <sup>a,b</sup> , T. Samaras <sup>a,b</sup> , O. Kalogirou <sup>a,b</sup> , M. Angelakeris <sup>a,b</sup> <sup>a</sup> School of Physics, Faculty of Sciences, Aristotle University of Thessaloniki, 54124, Greece <sup>b</sup> Center for Interdisciplinary Research and Innovation (CIRIAUTH), MagnaCharta, Thessaloniki, Greece
P1.39	<b>Multifunctional magnetic bioceramic scaffolds for tissue engineering.</b> K. Kazeli <sup>a,b,d*</sup> , E. Kontonasaki <sup>c</sup> , E. Lymperaki <sup>b</sup> , M. Angelakeris <sup>a,d</sup> <sup>a</sup> School of Physics Aristotle University of Thessaloniki, Thessaloniki, Greece <sup>b</sup> International Hellenic University, Thessaloniki, Greece <sup>c</sup> Department of Prosthodontics, School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece <sup>d</sup> MagnaCharta Center for Interdisciplinary Research and Innovation (CIRI-AUTH), 57001 Thessaloniki Greece
P1.40	<b>3D Printing of Polymer-Bonded Magnets</b> D. Trygionaris <sup>a</sup> , A. Makridis <sup>a</sup> , N. Okkalidis <sup>b</sup> , K. Kazeli <sup>a</sup> , N. Maniotis <sup>a</sup> , M. Angelakeris <sup>a</sup> <sup>a</sup> Magnetic Nanostructure Characterization: Technology and Applications (MagnaCharta) Center for Interdisciplinary Research and Innovation (CIRI-AUTH) 57001 Thessaloniki, Greece <sup>b</sup> Morphé, Praxitelous 1, Thessaloniki, 54641, Greece
P1.41	<b>Optimizing the perovskite-based emissive layer for near infrared light emitting diodes</b> M. Tountas, K.-K. Armadorou, A. Verykios, A. Soultati, M. Vasilopoulou Institute of Nanoscience and Nanotechnology, National centre for Scientific Research DEMOKRITOS, Athens, Greece
P1.42	<b>Gas sensors based on self-assembled nanoparticles for environmental pollutants detection</b> E. Skotadis <sup>a</sup> , E. Aslanidis <sup>a</sup> , C. Papakonstantinopoulos <sup>a</sup> , N. Kalatzis <sup>b</sup> , F. Chatzipapadopoulos <sup>b</sup> , N. Marianos <sup>b</sup> , D. Tsoukalas <sup>a</sup> <sup>a</sup> National Technical University of Athens, Zografou, 15780, Greece <sup>b</sup> NEUROPUBLIC S.A. Piraeus, 18545, Greece,
18:00 – 21:00	<b>Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities</b>

## TUESDAY SEPTEMBER 28, 2021

09:00 - 09:30	<b>INVITED LECTURE</b> <b>Advances in biomaterials for bone tissue engineering</b> <b>Maria Chatzinikolaïdou</b> Department of Materials Science and Technology, University of Crete (GREECE)	
	<b>Session T1A. Electronics, photonics and optoelectronics</b> Session Chair: E. Lidorikis	<b>Session T1B. Surfaces, nanomaterials, and low-dimensional materials and systems</b> Session Chair: L. Tsetseris
09:30 - 09:45	<b>T1A.1 Slow transient dependence of photoluminescence in CsPbBr<sub>3</sub> single crystals</b> I. Varveris <sup>1</sup> , <u>A.G. Kontos</u> <sup>1,2</sup> , M. Karnachoriti <sup>1</sup> , D. Y. Chung <sup>3</sup> , W. Lin <sup>3</sup> , M.G. Kanatzidis <sup>3,4</sup> and Y.S. Raptis <sup>1</sup> <sup>1</sup> Department of Physics, SAMPS, National Technical University of Athens, 15780, Athens, Greece <sup>2</sup> Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", 15341, Agia Paraskevi Attikis, Greece <sup>3</sup> Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, United States <sup>4</sup> Department of Chemistry, Northwestern University, Evanston, Illinois 60208, United States	<b>T1B.1 Quantum confinement effects on the phonon-induced bandgap renormalization of graphene quantum dots</b> <u>M. Zacharias</u> , P. C. Kelires Department of Mechanical and Materials Science Engineering, Cyprus University of Technology, P.O. Box 50329, 3603 Limassol, Cyprus
09:45 - 10:00	<b>T1A.2 Lithium-based two-terminal biorealistic artificial synapses</b> <u>P. S. Ioannou</u> <sup>a</sup> , E. Kyriakides <sup>a</sup> , O. Schneegans <sup>b</sup> and J. Giapintzakis <sup>a</sup> <sup>a</sup> Complex Functional Materials Laboratory, Department of Mechanical and Manufacturing Engineering, University of Cyprus, 75 Kallipoleos Ave., 1678, Nicosia, Cyprus <sup>b</sup> Laboratoire de Génie Electrique et Electronique de Paris, Centrale Supélec, CNRS, Université Paris-Saclay, Sorbonne Université, 11 rue Joliot-Curie, 91192, Gif-sur-Yvette, France	<b>T1B.2 Comparison between optical and electron diffraction imaging of Twist-angle in 2D transition metal dichalcogenide bilayers</b> <u>S. Psilodimitrakopoulos</u> <sup>a</sup> , A. Orekhov <sup>b,c</sup> , L. Mouchliadis <sup>a,e</sup> , D. Jannis <sup>b,c</sup> , G.M. Maragkakis <sup>a,c</sup> , G. Kourmoulakis <sup>a,e</sup> , N. Gauquelin <sup>b,c</sup> , G. Kioseoglou <sup>a,e</sup> , J. Verbeeck <sup>b,c</sup> , E. Stratakis <sup>a,d,e</sup> <sup>a</sup> Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas, Heraklion Crete 71110, Greece. <sup>b</sup> Electron Microscopy for Materials Science (EMAT) University of Antwerp 2020 Antwerp, Belgium. <sup>c</sup> NANOLab Center of Excellence, University of Antwerp, Belgium. <sup>d</sup> Department of Physics, University of Crete, Heraklion Crete 71003, Greece. <sup>e</sup> Department of Materials Science and Technology, University of Crete, Heraklion Crete 71003, Greece
10:00 - 10:15	<b>T1A.3 Doping and co-doping of NiO with nitrogen and niobium for transparent optoelectronic applications</b>	<b>T1B.3 Type-I, II and III topological Dirac semimetals in 1T transition metal ditelluride family</b>



	<p><u>C. Aivalioti</u><sup>a</sup>, A. Papadakis<sup>b</sup>, E. Aperathitis<sup>c</sup>, M. Androulidaki<sup>c</sup>, M. Kayambaki<sup>c</sup>, K. Tsagaraki<sup>c</sup>, A. Kostopoulos<sup>c</sup>, E. Manidakis<sup>a</sup>, C.C. Stoumpos<sup>a</sup>, N.T. Pelekanos<sup>a,c</sup>, G. Crăciun<sup>e</sup>, C. Romanitan<sup>e</sup>, M. Modreanu<sup>d</sup></p> <p><sup>a</sup>Department of Materials Science and Technology, University of Crete, P.O. Box 2208, 71003 Heraklion, Crete, Greece</p> <p><sup>b</sup>Physics Department, University of Crete, Heraklion, Crete, Greece</p> <p><sup>c</sup>Microelectronics Research Group, Institute of Electronic Structure &amp; Laser, Foundation for Research and Technology FORTH-Hellas, P.O. Box 1385, Heraklion 70013, Crete, Greece</p> <p><sup>d</sup>Tyndall National Institute-University College Cork, Lee Maltings, Dyke Parade, Cork, T12 R5CP, Ireland</p> <p><sup>e</sup>National Institute for Research and Development in Microtechnologies -IMT, Bucharest, Romania</p>	<p><u>S. Fragkos</u><sup>a,b</sup>, P. Tsipas<sup>a</sup>, E. Xenogiannopoulou<sup>a</sup>, Y. Panayiotatos<sup>b</sup>, A. Dimoulas<sup>a</sup></p> <p><sup>a</sup>Institute of Nanoscience and Nanotechnology, National Center for Scientific Research 'DEMOKRITOS', GR-15310, Athens, Greece.</p> <p><sup>b</sup>Department of Mechanical Engineering, University of West Attica, 12244, Athens, Greece.</p>
10:15 - 10:30	<p><b>T1A.4 Thermochromic Vanadium dioxide (VO<sub>2</sub>) Films, grown by Hydrothermal synthesis</b></p> <p><u>E. Gagaoudakis</u><sup>a</sup>, L. Zouridi<sup>a,b</sup>, E. Mantsiou<sup>a,c</sup>, D. Dragani<sup>a,c</sup>, E. Aperathitis<sup>a</sup>, G. Kiriakidis<sup>a</sup>, V. Binas<sup>a,c</sup></p> <p><sup>a</sup>Institute of Electronic Structure &amp; Laser, Foundation for Research and Technology, Heraklion, Greece</p> <p><sup>b</sup>Department of Materials Science and Technology, University of Crete, Heraklion, Greece</p> <p><sup>c</sup>Department of Physics, University of Crete, Heraklion, Greece</p>	<p><b>T1B.4 Relaxation of excess thermal energy in triangular in-plane heterostructures of two-dimensional TMDs</b></p> <p><u>G. Kalosakas</u><sup>a</sup>, N. Kanistras<sup>a</sup>, A.P. Sgouros<sup>b</sup>, M.M. Sigalas<sup>a</sup></p> <p><sup>a</sup>Materials Science Department, University of Patras, GR-26504, Rio, Greece</p> <p><sup>b</sup>School of Chemical Engineering, National Technical University of Athens, GR-15780, Athens, Greece</p>
10:30 – 11:00	<b>BREAK</b>	
11:00 – 11:30	<p><b>INVITED LECTURE</b></p> <p><b>Chemical functionalization of two-dimensional transition metal disulfides</b></p> <p><b>Nikos Tagmatarchis</b></p> <p>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation (GREECE)</p>	
	<p><b>Session T2A. Electronics, photonics and optoelectronics</b></p> <p>Session Chair: S. Choulis</p>	<p><b>Session T2B. Surfaces, nanomaterials, and low-dimensional materials and systems</b></p> <p>Session Chair: N. Tagmatarchis</p>
11:30 - 11:45	<p><b>T2A.1 Structural Transformations in Cs<sub>2</sub>SnI<sub>6</sub> Defect Perovskite under High Pressure</b></p> <p><u>M. Karnachoriti</u><sup>1</sup>, A.G. Kontos<sup>1,2,*</sup>, G. Bounos<sup>2</sup>, C.C. Stoumpos<sup>3,4</sup>, L. Tsetseris<sup>1</sup>, A. Kaltzoglou<sup>2,5</sup>, X. Guo<sup>6</sup>, X. Lü<sup>7</sup>, P. Falaras<sup>2</sup>, M.G. Kanatzidis<sup>3</sup> and Y.S. Raptis<sup>1</sup></p> <p><sup>1</sup>Department of Physics, National Technical University of Athens, 15780, Athens, Greece, <sup>2</sup>Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", 15341, Agia Paraskevi Attikis, Greece, <sup>3</sup>Department of Chemistry, Northwestern</p>	<p><b>T2B.1 Graphene quantum dot-TiO<sub>2</sub> photonic crystal photocatalysts</b></p> <p><u>M.-A. Apostolaki</u><sup>a</sup>, A. Toumazatou<sup>a</sup>, M. Antoniadou<sup>b</sup>, E. Sakellis<sup>b</sup>, E. Xenogiannopoulou<sup>b</sup>, S. Gardelis<sup>a</sup>, N. Boukos<sup>b</sup>, P. Falaras<sup>b</sup>, A. Dimoulas<sup>b</sup>, V. Likodimos<sup>a</sup></p> <p><sup>a</sup>Section of Condensed Matter Physics, Department of Physics, National and Kapodistrian University of Athens, Panepistimiopolis Zografou, GR-15784 Athens, Greece</p>

	<p>University, Evanston, Illinois 60208, United States, <sup>4</sup>Department of Materials Science and Technology, University of Crete, 70013 Heraklion, Crete, Greece, <sup>5</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 11635 Athens, Greece, <sup>6</sup>Department of Chemistry and Alexandra Navrotsky Institute for Experimental Thermodynamics, Washington State University, Pullman, WA 99164, United States, <sup>7</sup>Center for High Pressure Science and Technology Advanced Research, Shanghai 201203, China</p>	<p><sup>b</sup> Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", Agia Paraskevi, 15341 Athens, Greece</p>
11:45 - 12:00	<p><b>T2A.2 Hirshfeld surface analysis and graph-theoretical considerations in the study of halide perovskite compounds and their structure-property relations</b> V. Raptis<sup>1</sup>, P. Falaras<sup>2</sup> and A. Kaltzoglou<sup>1</sup> <sup>1</sup>Theoretical &amp; Physical Chemistry Institute, National Hellenic Research Foundation, Athens, Greece. <sup>2</sup>Institute of Nanoscience &amp; Nanotechnology, National Center for Scientific Research "Demokritos", Agia Paraskevi, Athens, Greece.</p>	<p><b>T2B.2 Atomistic modelling on the detection of gas-phase radicals by functionalized silicon nanowires</b> D. Kaltsas and L. Tsetseris Department of Physics, National Technical University of Athens Herion Polytechniou 9 Zographou Campus, 15780, Athens, Greece</p>
12:00 - 12:15	<p><b>T2A.3 Optimization of pulsed laser deposition growth parameters for the sequential fabrication of Cu(In,Ga)Se<sub>2</sub>-based thin-film solar cells</b> E. Kyriakides<sup>a</sup>, P. Ioannou<sup>a</sup>, C. Nicolaou<sup>a</sup>, V. Paraskeva<sup>b</sup>, M. Hadjipanayi<sup>b</sup>, G. Georgiou<sup>b</sup>, P. Papagiorgis<sup>c</sup>, G. Itskos<sup>c</sup>, and J. Giapintzakis<sup>a</sup> <sup>a</sup> Complex Functional Materials Laboratory, Department of Mechanical and Manufacturing Engineering, University of Cyprus, 75 Kallipoleos Ave., 1678, Nicosia, Cyprus <sup>b</sup> PV Technology Laboratory, FOSS Research Centre for Sustainable Energy, Department of Electrical and Computer Engineering, University of Cyprus, 75 Kallipoleos Ave., 1678, Nicosia, Cyprus <sup>c</sup> Experimental Condensed Matter Physics Laboratory, Department of Physics, University of Cyprus, 1678, Nicosia, Cyprus</p>	<p><b>T2B.3 Phonon properties of 2D hexagonal Boron Nitride by molecular dynamics simulations</b> M. Poulos<sup>a</sup>, E. N. Koukaras<sup>b,c</sup> and K. Papagelis<sup>a,c</sup> <sup>a</sup> Department of Physics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece <sup>b</sup> Department of Chemistry, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece <sup>c</sup> Institute of Chemical Engineering Sciences, Foundation of Research and Technology-Hellas (FORTH/ICE-HT), Patras 26504, Greece</p>
12:15 - 12:30	<p><b>T2A.4 MAPbI<sub>3</sub> on GaAs: a hetero-interface with strong passivation effect</b> E. G. Manidakis<sup>1,2</sup>, N.G. Chatzarakis<sup>1,2</sup>, K.Tsagaraki<sup>2</sup>, C.C. Stoumpos<sup>1</sup>, N. T. Pelekanos<sup>1,2</sup> <sup>1</sup>Department of Materials Science and Technology, University of Crete, Heraklion, 71003, Greece <sup>2</sup>Microelectronics Research Group, IESL-FORTH, Heraklion, 71110, Greece</p>	<p><b>T2B.4 Highly Stable 2-D Zr MOFs with exceptional UO<sub>2</sub><sup>2+</sup> sorption capability</b> N. Panagiotou<sup>1</sup>, I. Liatsou<sup>1</sup>, A. Pournara<sup>2</sup>, G.K. Angeli<sup>3</sup>, R.M. Giappa<sup>3</sup>, E. Tylianakis<sup>3</sup>, M. J. Manos<sup>2</sup>, G. E. Froudakis<sup>3</sup>, P.N. Trikalitis<sup>3</sup>, I. Pashalidis<sup>1</sup>, A. J. Tasiopoulos<sup>1</sup> <sup>1</sup>Department of Chemistry, University of Cyprus, 1678, Nicosia, atasio@ucy.ac.cy <sup>2</sup>Department of Chemistry, University of Ioannina, 45110, Ioannina, Greece <sup>3</sup>Department of Chemistry, University of Crete, Voutes 71003, Heraklion, Greece</p>
12:30 - 12:45	<p><b>T2A.5 Photonic Hall effect in hybrid Mie—exciton systems</b> P. E. Stamatopoulou<sup>a</sup>, V. Yannopapas<sup>b</sup>, N. Asger Mortensen<sup>a,c</sup>, C. Tserkezis<sup>a</sup> <sup>a</sup> Center for Nano Optics, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark</p>	<p><b>T2B.5 Near-infrared and XRD investigation of N-methylformamide intercalation in kaolinite</b> F.T. Andreou<sup>a</sup>, E. Siranidi<sup>a</sup>, G.D. Chrysikos<sup>a</sup>, Z. Ciesielska<sup>b</sup>, M. Szczerba<sup>b</sup>, A. Derkowski<sup>b</sup></p>

	<p><sup>b</sup>Department of Physics, National Technical University of Athens, GR-15780 Athens, Greece</p> <p><sup>c</sup>Danish Institute for Advanced Study, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark</p>	<p><sup>a</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vas. Constantinou Avenue 11635, Athens, Greece</p> <p><sup>b</sup>Institute of Geological Sciences, Polish Academy of Sciences, Research Centre in Cracow, Senacka 1, 31-002 Kraków, Poland</p>
12:45 - 13:00	<p><b>T2A.6 Si Nanowires/Ag nanostructures fabricated by a single step MACE process for improved detection by SERS and Photoluminescence</b></p> <p><u>I. Kochylas</u><sup>1,2</sup>, V. Likodimos<sup>1</sup>, S. Gardelis<sup>1</sup>, P. Falaras<sup>2</sup> and A. G. Nassiopoulou<sup>2</sup></p> <p><sup>1</sup> National and Kapodistrian University of Athens, Department of Physics, Section of Condensed Matter Physics, Panepistimiopolis, 15784, Greece</p> <p><sup>2</sup> NCSR Demokritos, Institute of Nanoscience and Nanotechnology (INN), 15341 Agia Paraskevi, Athens, Greece</p>	<p><b>T2B.6 The slip length as a material property: calculations at the nanoscale with machine learning tools</b></p> <p>F. Sofos, T.E. Karakasidis</p> <p>Physics Department, University of Thessaly, 35100 Lamia, Greece</p>
13:00 – 14:00	<b>BREAK (LUNCH)</b>	
	<p><b>Session T3A. Electronics, photonics and optoelectronics</b></p> <p>Session Chair: S. Gardelis</p>	<p><b>Session T3B. Structural, dynamical, and mechanical properties of condensed matter</b></p> <p>Session Chair: P. Komninou</p>
14:00 - 14:15	<p><b>T3A.1 Chiral sensing via non-Hermitian optical systems</b></p> <p><u>I. Katsantonis</u><sup>a,b</sup> and M. Kafesaki<sup>a,b</sup></p> <p><sup>a</sup>Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas, 70013 Heraklion, Crete, Greece</p> <p><sup>b</sup>Department of Materials Science and Technology, University of Crete, 70013 Heraklion, Crete, Greece</p>	<p><b>T3B.1 Magnetic Navigation of Nanoparticles for Drug Delivery inside a Carotid Artery Under the Cardiac Cycle</b></p> <p>E. Karvelas<sup>a,d</sup>, <u>C. Liosis</u><sup>b</sup>, T. Karakasidis<sup>c</sup>, I. Sarris<sup>a</sup></p> <p><sup>a</sup> Department of Mechanical Engineering, University of West Attica, 12243 Athens, Greece</p> <p><sup>b</sup> Department of Civil Engineering, University of Thessaly, 38334 Volos, Greece</p> <p><sup>c</sup> Condensed Matter Physics Lab, Department of Physics, University of Thessaly, 38334 Volos, Greece</p> <p><sup>d</sup> Department of Physics, University of Thessaly, 35100 Lamia, Greece</p>
14:15 - 14:30	<p><b>T3A.2 Complete measurement of chirality using achiral isotropic metasurfaces</b></p> <p><u>S. Droulias</u><sup>a,b</sup></p> <p><sup>a</sup> Institute of Electronic Structure and Laser, FORTH, 71110, Heraklion, Crete, Greece</p> <p><sup>b</sup> Department of Digital Systems, University of Piraeus, Piraeus 18534, Greece</p>	<p><b>T3B.2 Synthesis and Properties of n-type (Zr,Ti)<sub>1-x</sub>Hf<sub>x</sub>NiSn Half Heusler alloys via Mechanical Alloying</b></p> <p><u>G. Mesaritis</u><sup>1</sup>, A. Delimitis<sup>2</sup>, Y. Gelbstein<sup>3</sup>, Th. Kyratsi<sup>1</sup></p> <p><sup>1</sup> Department of Mechanical and Manufacturing Engineering, University of Cyprus, 1678 Nicosia, Cyprus</p> <p><sup>2</sup> Department of Mechanical and structural Engineering and Materials Science, University of Stavanger, PO Box 8600, Forus, N 4036 Stavanger Norway</p> <p><sup>3</sup> Department of Materials Engineering, Ben-Gurion University of the Negev, POB 653 Beer Sheva 84105, Israel</p>
14:30 - 14:45	<p><b>T3A.3 Ultrathin dynamically tunable black phosphorus polarization state converters</b></p>	<p><b>T3B.3 Synthesis and Characterization of Novel Magnetic Fe-Rh/Nanodiamond Hybrid Nanostructures</b></p>

	<p><b>N. Matthaiakakis<sup>1</sup>, S. Droulias<sup>2,3</sup>, G. Kakarantzas<sup>1</sup></b>  <sup>1</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, NHRF, 48 Vassileos Constantinou Ave., 11635 Athens, Greece  <sup>2</sup>Institute of Electronic Structure and Laser, FORTH, 71110, Heraklion, Crete, Greece  <sup>3</sup>Department of Digital Systems, University of Piraeus, Piraeus 18534, Greece</p>	<p><b>P. Ziogas<sup>1</sup>, A.B. Bourlinos<sup>1</sup>, P. Chatzopoulou<sup>2</sup>, G. Dimitrakopoulos<sup>2</sup>, A. Markou<sup>3</sup>, A.P. Douvalis<sup>1,4</sup></b>  <sup>1</sup>Physics Department, University of Ioannina, 45110 Ioannina, Greece.  <sup>2</sup>Physics Department, Aristotle University of Thessaloniki, 54124 Thessaloniki,, Greece.  <sup>3</sup>Max Planck Institute for Chemical Physics of Solids, 01187 Dresden, Germany.  <sup>4</sup>Institute of Materials Science and Computing, University Research Center of Ioannina (URCI), 45110 Ioannina, Greece</p>
<b>14:45 - 15:00</b>	<p><b>T3A.4 Curie Transition in PVDF-TrFE Copolymers as a Function of Temperature and Pressure</b>  <b>A. Pipertzis<sup>a</sup>, K. Asadi<sup>d</sup>, G. Floudas<sup>a,b,c</sup></b>  <sup>a</sup>Department of Physics, University of Ioannina, P. O. Box 1186, 451 10 Ioannina, Greece.  <sup>b</sup>University of Bath, Department of Physics, Bath BA2 7AY, United Kingdom.  <sup>c</sup>University Research Center of Ioannina (URCI) – Institute of Materials Science and Computing, 451 10 Ioannina, Greece.  <sup>d</sup>Max-Planck Institute for Polymer Research, 55128 Mainz, Germany</p>	<p><b>T3B.4 Development of Tantalum-based semiconductors with functional NiO deposition by an One-Step FSP synthesis.</b>  <b>P. Psathas<sup>a</sup>, K. Moularas<sup>a</sup>, Y. Deligiannakis<sup>a,b</sup></b>  <sup>a</sup> Laboratory of Physical Chemistry of Materials and Environment Department of Physics, University of Ioannina GR45110, Ioannina, Greece  <sup>b</sup> Institute of Environment &amp; Sustainable Development, University Research Center of Ioannina (URCI), University of Ioannina, GR45110, Ioannina, Greece,</p>
<b>15:00 - 15:15</b>	<p><b>T3A.5 Second harmonic generation imaging in two-dimensional SnS probes in-plane anisotropy</b>  <b>G.M. Maragkakis<sup>a,b</sup>, S. Psilodimitrakopoulos<sup>a</sup>, L. Mouchliadis<sup>a</sup>, A.S. Sarkar<sup>a</sup>, A. Lemonis<sup>a</sup>, G. Kioseoglou<sup>a,c</sup>, and E. Stratakis<sup>a,b</sup></b>  <sup>a</sup> Institute of Electronic Structure and Laser, Foundation for Research and Technology - Hellas, Heraklion, 71110, Crete, Greece  <sup>b</sup> Department of Physics, University of Crete, Heraklion, 71003, Crete, Greece  <sup>c</sup> Department of Materials Science and Technology, University of Crete, Heraklion, 71003 Crete, Greece</p>	<p><b>T3B.5 Ultrafast Dynamics in Solids with Mid-IR laser femtosecond pulses and laser induced periodic surface structures</b>  <b>G.D. Tsibidis<sup>a</sup>, S. Maragkaki<sup>a</sup>, E. Stratakis<sup>a,b</sup></b>  <sup>a</sup> Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), N. Plastira 100, Vassilika Vouton, 70013, Heraklion, Crete, Greece  <sup>b</sup> Department of Physics, University of Crete, 71003 Heraklion, Greece</p>
<b>15:15 - 15:30</b>	<p><b>T3A.6 Polarization effects on divergence control and yield enhancement in two-color high-harmonic generation</b>  <b>A. Zeltsi</b>  Advanced Research Center for Nanolithography, Science Park 106, 1098 XG Amsterdam, The Netherlands</p>	<p><b>T3B.6 Post neutron irradiation annealing effects in tungsten single crystal</b>  <b>D. Papadakis<sup>1,2</sup>, K. Mergia<sup>1</sup>, S. Dellis<sup>1</sup>, E. Manios<sup>1</sup> and S. Messoloras<sup>1</sup></b>  <sup>1</sup> Institute of Nuclear and Radiological Sciences and Technology, Energy and Safety, NCSR Demokritos, Athens, 15310, Greece  <sup>2</sup> Department of Physics, School of Sciences, University of Athens, Athens, 15772, Greece</p>
<b>15:30 – 16:00</b>	<p style="text-align: center;"><b>INVITED LECTURE</b>  <b>Weyl Nodal-Ring Semimetal and Topological Superconductivity in a three-dimensional Su-Schrieffer-Heeger model</b>  <b>Efstathios Manousakis</b>  Department of Physics, Florida State University (USA) and  Department of Physics, National and Kapodistrian University of Athens (GREECE)</p>	

16:00 – 18:00	<b>POSTER SESSION 2</b> <b>Session Chair: M. Kandyla</b>
<b>P2.1</b>	<b>Band Gap Measurements of Nano-Meter Sized Rutile Thin Films</b> <u>A. Barnasas</u> <sup>1</sup> , N. C. Diamantopoulos <sup>1</sup> , C. S. Garoufalis <sup>1</sup> , D. I. Anyfantis <sup>1</sup> , N. Bouropoulos <sup>1,2</sup> , P. Pouloupoulos <sup>1</sup> , and S. Baskoutas <sup>1,3</sup> <sup>1</sup> Materials Science Department, University of Patras, 26504 Patras, Greece <sup>2</sup> Foundation for Research and Technology Hellas, Institute of Chemical Engineering and High Temperature Chemical Processes, 26504 Patras, Greece <sup>3</sup> Institut für Physikalische Chemie, Universität Hamburg, Grindelallee 117, 20146 Hamburg, Germany
<b>P2.2</b>	<b>Hybride perovskites from two dimensional to three dimensional</b> <u>G. Mousdis</u> <sup>a</sup> , M. Girtan <sup>b</sup> <sup>a</sup> National Hellenic Research Foundation, Theoretical and Physical Chemistry, Athens, Greece. <sup>b</sup> Photonics Laboratory, (LPhiA) E.A. 4464, SFR Matrix, Université d'Angers, Faculté des Sciences, 2 Bd Lavoisier, 49000 Angers, France; mihaela.girtan@univ-angers.fr
<b>P2.3</b>	<b>In-situ study of the poly(3-hexylthiophene)/MoS<sub>2</sub> interface by photoelectron spectroscopies</b> <u>C. Drivas</u> <sup>a</sup> , F. Iacovella <sup>b</sup> , G. Deligeorgis <sup>b</sup> , S. Kennou <sup>a</sup> <sup>a</sup> Surface Science Lab, Department of Chemical Engineering, University of Patras, Rion Patras 26504, Greece <sup>b</sup> Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology-Hellas (FORTH), Heraklion 71110, Greece
<b>P2.4</b>	<b>Spin Crossover Nanoparticles: Intelligent Contrast Agents for Magnetic Resonance Imaging</b> <u>P. Gkolfi</u> <sup>a</sup> , D. Tsivaka <sup>b</sup> , I. Tsougos <sup>b</sup> , K. Vassiou <sup>b</sup> , O. Malina <sup>c</sup> , M. Polaskova <sup>c,d</sup> , and V. Tangoulis <sup>a</sup> <sup>a</sup> Department of Chemistry, Laboratory of Inorganic Chemistry, University of Patras, 26504, Patras, Greece <sup>b</sup> Department of Medical Physics, University Hospital of Larissa, University of Thessaly, Biopolis, GR-41110 Larissa, Greece <sup>c</sup> Regional Centre of Advanced Technologies and Materials, Departments of Physical Chemistry and Experimental Physics, Faculty of Science, Palacký University Olomouc, Šlechtitelů 27, 783 71 Olomouc, Czech Republic <sup>d</sup> Department of Experimental Physics, Faculty of Science, Palacký University Olomouc, 17. Listopadu 1192/12, 771 46 Olomouc, Czech Republic
<b>P2.5</b>	<b>Fe/Fe<sub>3</sub>C magnetic nanohybrids: Synthesis, features and applications.</b> <u>M. Tsompanoglou</u> <sup>a,b</sup> , E. Myrovali <sup>a,b</sup> , A. Makridis <sup>a,b</sup> , M. Angelakeris <sup>a,b</sup> , H. Gyulasaryan <sup>c</sup> , G. Chilingaryan <sup>c</sup> , N. Sisakyan <sup>c</sup> , A. Manukyan <sup>c</sup> , E. Papadopoulou <sup>d</sup> , N. Tetos <sup>d</sup> , M. Spasova <sup>d</sup> , M. Farle <sup>d</sup> <sup>a</sup> School of Physics, Faculty of Sciences, Aristotle University, 54124 Thessaloniki, Greece <sup>b</sup> MagnaCharta, Center for Interdisciplinary Research and Innovation (CIRI-AUTH), 57001 Thessaloniki, Greece <sup>c</sup> Institute for Physical Research of National Academy of Sciences, Ashtarak, Armenia <sup>d</sup> Faculty of Physics and Center of Nanointegration (CENIDE), University of Duisburg-Essen, Germany
<b>P2.6</b>	<b>3D Carbon based electrodes for biological electro synthesis (BES) as a biological pathway to convert CO<sub>2</sub> to CH<sub>4</sub>.</b> <u>L. Koutsokeras</u> <sup>a</sup> , M. Constantinou <sup>a</sup> , S. Georgiou <sup>b</sup> , E. Symeou <sup>c</sup> , Th. Kyratsi <sup>c</sup> , I. Vyrides <sup>b</sup> , G. Constantinides <sup>a</sup> <sup>a</sup> Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, 3603, Limassol, Cyprus <sup>b</sup> Department of Chemical Engineering, Cyprus University of Technology, 3603, Limassol, Cyprus <sup>c</sup> Department of Mechanical and Manufacturing Engineering, University of Cyprus, 1678, Nicosia, Cyprus
<b>P2.7</b>	<b>Simultaneous voltametric determination of ascorbic acid, dopamine and uric acid on graphite paste/SiO<sub>2</sub> films</b> <u>M. Tsikrika</u> <sup>a</sup> , E. Deskoulidis <sup>a</sup> , E. A. Economou <sup>a</sup> , I. Tsanai <sup>a</sup> , E Topoglidis <sup>a,*</sup> <sup>a</sup> Department of Materials Science, University of Patras, Rion 26504, Greece



<b>P2.8</b>	<b>Effect of thermal exfoliation of g-C<sub>3</sub>N<sub>4</sub> on the physicochemical properties, adsorption capacity and NO<sub>x</sub> removal under indoor LED irradiation</b> <u>S. Stefa</u> <sup>a,b</sup> , M. Griniezaki <sup>a</sup> , E. Skliri <sup>a</sup> , E. Gagaoudakis <sup>a</sup> , G. Kiriakidis <sup>a</sup> , M. Konsolakis <sup>b</sup> , V. Binas <sup>a,c*</sup> <sup>a</sup> <i>Institute of Electronic Structure and Laser (IESL), FORTH, P.O. Box 1527, Vasilika Vouton, GR-71110 Heraklion, Greece;</i> <sup>b</sup> <i>Industrial, Energy and Environmental Systems Lab (IEESL), School of Production Engineering and Management, Technical University of Crete, GR-73100 Chania, Greece;</i> <sup>c</sup> <i>Department of Physics, University of Crete, Heraklion, Greece</i>
<b>P2.9</b>	<b>Microwave-assisted synthesis of functional CdS/MoS<sub>x</sub> based hybrids for efficient photocatalytic reduction of nitroarenes</b> N. Karamoschos, E. Paraschoudi, F. Bairamis, I. Konstantinou, D. Tasis <i>Department of Chemistry, University of Ioannina, 45110 Ioannina, Greece</i>
<b>P2.10</b>	<b>Synthesis of two dimensional WS<sub>2</sub></b> <u>N. Balakeras</u> <sup>a,b</sup> , A. Michail <sup>a,c</sup> , J. Parthenios <sup>a</sup> , K. Papagelis <sup>a,b</sup> <sup>a</sup> <i>Institute of Chemical Engineering Sciences, FORTH ICE/HT, Patras 26504, Greece</i> <sup>b</sup> <i>School of Physics, Department of Solid-State Physics, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece</i> <sup>c</sup> <i>Department of Physics, University of Patras, Patras 26504, Greece</i>
<b>P2.11</b>	<b>Metal (Mo, Ca)-doped BiVO<sub>4</sub> inverse opal photonic catalysts</b> <u>M. Pylarinou</u> <sup>a</sup> , E. Sakellis <sup>b</sup> , V. Likodimos <sup>a*</sup> <sup>a</sup> <i>Section of Condensed Matter Physics, Department of Physics, National and Kapodistrian University of Athens, University Campus, 15 784, Greece</i> <sup>b</sup> <i>Institute of Nanoscience and Nanotechnology, National Center for Scientific Research "Demokritos", 15341 Agia Paraskevi, Athens, Greece</i>
<b>P2.12</b>	<b>COMPARATIVE Experimental and Theoretical Work on the LSPRs of Noble AgPd NPs</b> <u>M. Tsarmpopoulou</u> <sup>a</sup> , D. Ntemogiannis <sup>a</sup> , A. G. Chronis <sup>a</sup> , D.I. Anyfantis <sup>a</sup> , A. Barnasas <sup>a</sup> , S. Grammatikopoulos <sup>b</sup> , M.M. Sigalas <sup>a</sup> , P. Poulopoulos <sup>a</sup> <sup>a</sup> <i>Materials Science Department, University of Patras, 26504 Patras, Greece;</i> <sup>b</sup> <i>Department of Mechanical Engineering, University of Peloponnese, M. Alexandrou 1, Patras, 26334, Greece</i>
<b>P2.13</b>	<b>Fabrication of Na-doped ZnO nanostructured films for CO<sub>2</sub> sensing at room temperature</b> <u>M. Stramarkou</u> <sup>a,b</sup> , A. Bardakas <sup>a</sup> , A. Segkos <sup>a</sup> , M. Krokida <sup>b</sup> , C. Tsamis <sup>a</sup> <sup>a</sup> <i>Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research (NCSR) "Demokritos", Athens, Greece</i> <sup>b</sup> <i>Laboratory of Process Analysis and Design, School of Chemical Engineering, National Technical University of Athens (NTUA), Athens, Greece</i>
<b>P2.14</b>	<b>Experimental setup for magnetoresistance analysis of magnetic tunnel junctions and spin valves</b> <u>O. Manos</u> <sup>a</sup> , C. Anagnostopoulou <sup>b</sup> , E. Hourdakis <sup>a</sup> , and A. Kaidatzis <sup>a</sup> <sup>a</sup> <i>Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Aghia Paraskevi, Attikis, 15310 Athens, Greece</i> <sup>b</sup> <i>School of Mining and Metallurgical Engineering, National Technical University of Athens, Zografou Campus, GR-15773 Zografou, Greece</i>
<b>P2.15</b>	<b>Carbon-doped MnAl thin films for spintronics</b> <u>O. Manos</u> <sup>a</sup> , A.E. Hafarov <sup>b</sup> , D.I. Trubchaninova <sup>b</sup> , D. Niarchos <sup>a</sup> , I.A. Vladymyrskiy <sup>b</sup> and A. Kaidatzis <sup>a</sup> <sup>a</sup> <i>Institute of Nanoscience and Nanotechnology, N.C.S.R. "Demokritos", 15310, Aghia Paraskevi, Greece</i> <sup>b</sup> <i>Metal Physics Department, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Prospect Peremogy 37, 03056 Kyiv, Ukraine</i>
<b>P2.16</b>	<b>Multiscale modeling of Hydrogen Sulfide Capture Using Functionalized Metal-Organic Frameworks</b> M. Tsanai <sup>a</sup> , E. Klontzas <sup>b</sup> , E. Tylanakis <sup>c</sup> , G. E. Froudakis <sup>d</sup> <sup>a</sup> <i>Groningen Biomolecular Sciences and Biotechnology Institute and Zernike Institute for Advanced Materials, University of Groningen, 9747AG Groningen, The Netherlands</i> <sup>b</sup> <i>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vas. Constantinou Ave., 11635 Athens, Greece</i> <sup>c</sup> <i>Department of Material Science and Technology, University of Crete, Voutes Campus, GR-70013 Heraklion Crete, Greece.</i> <sup>d</sup> <i>Department of Chemistry, University of Crete, Voutes Campus, GR-70013 Heraklion Crete, Greece.</i>

<b>P2.17</b>	<b>Hybrid metrology of multiscale surfaces using the Fourier stitching method</b> <u>E. Stai</u> <sup>a, b</sup> , V. Constantoudis <sup>a, c</sup> , P. Sarkiris <sup>a, d</sup> , E. Gogolides <sup>a, c</sup> <i>(a) Institute of Nanoscience and Nanotechnology, NCSR Demokritos, , Athens, 15341, Greece</i> <i>(b) Department of Physics, National and Kapodistrian University of Athens, Athens, 15752, Greece</i> <i>(c) Nanometrisis p.c. , Athens, 15341, Greece</i> <i>(d) School of Mechanical Engineering, National Technical University of Athens, Athens, 15780, Greece</i>
<b>P2.18</b>	<b>Computational study of 5- Fluorouracil interaction with Zeolite Imidazole Frameworks (ZIFs)</b> <u>M. Vlachos</u> <sup>a</sup> , G. Froudakis <sup>a</sup> , M. Tylanakis <sup>b</sup> , M. Klontzas <sup>c</sup> <i><sup>a</sup> Dept. of Chemistry, University of Crete, Voutes, Greece</i> <i><sup>b</sup> Dept. of Materials Science and Technology, University of Crete, Voutes, Greece</i> <i><sup>c</sup> National Hellenic Research Foundation, Leof. V. Konstantinou 48, Athens</i>
<b>P2.19</b>	<b>Electronic and Geometric Aspects of Copper Growth on a Stepped Nickel Surface</b> <u>S. Tsatsos</u> and G. Kyriakou, <i>Department of Chemical Engineering, University of Patras, Rion Patras 26504, Greece</i>
<b>P2.20</b>	<b>Switching of sensing response for MoS<sub>2</sub>-based humidity sensor</b> <u>M. Kainourgiaki</u> <sup>a</sup> , M. Tsigkourakos <sup>a</sup> , E. Skotadis <sup>a</sup> , E. Aslanidis <sup>a</sup> , S. Kitsios <sup>a</sup> , D. Tsoukalas <sup>a</sup> <i><sup>a</sup>Department of Applied Physics, National Technical University of Athens, Heroon Polytechniou 9, 15780, Athens, Greece</i>
<b>P2.21</b>	<b>Synthesis and characterization of 3D graphene-based materials with diamine crosslinking.</b> <u>M. Douka</u> <sup>a</sup> , D. Andreou <sup>a</sup> , I. N. Lykakis <sup>a</sup> , E. Klontzas <sup>b</sup> , E. N. Koukaras <sup>c</sup> <i><sup>a</sup> Department of Chemistry, Aristotle University of Thessaloniki, GR-541 24 Thessaloniki, Greece.</i> <i><sup>b</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, GR-116 35 Athens, Greece.</i> <i><sup>c</sup>Department of Chemistry, Laboratory of Quantum and Computational Chemistry, Aristotle University of Thessaloniki, GR-541 24 Thessaloniki, Greece</i>
<b>P2.22</b>	<b>Strongly confined, highly uniform and ultra-thin all-inorganic lead halide nanoplatelets: Low temperature synthesis and Photoluminescence evolution upon dilution and time</b> <u>S. Kiouekli</u> <sup>a, b</sup> , K. Brintakis <sup>a</sup> , A. Kostopoulou <sup>a</sup> , E. Stratakis <sup>a</sup> <i><sup>a</sup>Institute of Electronic Structure and Laser, Foundation for Research and Technology-Hellas, Vassilika Vouton, 71110, Heraklion, Greece</i> <i><sup>b</sup>Department of Materials Science and Technology, University of Crete, Vassilika Vouton, 71003 Heraklion, Greece</i>
<b>P2.23</b>	<b>Characterization of solid-state detectors for proton beam dosimetry using Monte Carlo simulation techniques</b> <u>M. Karampiperi</u> <sup>a, b</sup> , T. E. Cocolios <sup>b</sup> , L. F. Nascimento <sup>a</sup> <i><sup>a</sup>Research in Dosimetric Applications (RDA), Belgian Nuclear Research Centre (SCK-CEN), Belgium</i> <i><sup>b</sup>Instituut voor Kern- en Stralingsfysica (IKS), KU Leuven, Belgium</i>
<b>P2.24</b>	<b>Role of the Loading of Ionic Liquid [EMIM]<sup>+</sup> [BF<sub>4</sub>]<sup>-</sup> in the Separation of CO<sub>2</sub>/CH<sub>4</sub> in 3D Carbon Nanotube Networks.</b> <u>I. Skarmoutsos</u> <sup>a, b</sup> , <u>R. Lingas</u> <sup>a</sup> , E. N. Koukaras <sup>a</sup> , E. Klontzas <sup>b</sup> <i><sup>a</sup>Department of Chemistry, Laboratory of Quantum and Computational Chemistry, Aristotle University of Thessaloniki, GR-541 24 Thessaloniki, Greece</i> <i><sup>b</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, GR-116 35 Athens, Greece</i>
<b>P2.25</b>	<b>Laser-mediated Explosive Synthesis and Transfer of graphene and graphene nanohybrids for energy storage applications</b> <u>N. Samartzis</u> <sup>a, b</sup> , K. Bhorkar <sup>a, c</sup> , M. Athanasiou <sup>a</sup> , V. Dracopoulos <sup>a</sup> , T. Ioannides <sup>a</sup> , S. N. Yannopoulos <sup>a</sup> <i><sup>a</sup>Foundation of Research and Technology Hellas-Institute of Chemical Engineering Sciences (FORTH/ICE-HT), P.O. Box 1414, GR-26504, Rio-Patras, Greece</i> <i><sup>b</sup>Department of Physics, University of Patras, GR-26504, Rio-Patras, Greece</i> <i><sup>c</sup>Univ Rennes, CNRS, ISCR – UMR 6226, F-35000 Rennes, France</i>



P2.26	<p><b>The effect of irradiation temperature on Cr depletion in Fe+ ion irradiated Fe-10at%Cr alloys</b>  <u>S. Pantousa</u><sup>1,2</sup>, K. Mergia<sup>1</sup>, A. Ionescu<sup>3</sup>, S. Dellis<sup>1</sup>, E. Manios<sup>1</sup>, C. Kinane<sup>4</sup>, S. Langridge<sup>4</sup>, A. Caruana<sup>4</sup>, E. Tsompopoulou<sup>1</sup>, C. H. Marrows<sup>5</sup>, U. Kentsch<sup>6</sup>, C. Cabet<sup>7</sup>, and S. Messoloras<sup>1</sup>  <sup>1</sup> Institute of Nuclear and Radiological Sciences and Technology, Energy and Safety, NCSR "Demokritos", Athens, 15341, Greece  <sup>2</sup> Department of Physics, School of Sciences, University of Athens, Athens, 15772, Greece  <sup>3</sup> Cavendish Laboratory, University of Cambridge, J J Thomson Avenue 19, Cambridge CB3 0HE, United Kingdom  <sup>4</sup> ISIS neutron and muon source, Rutherford Appleton Laboratory, United Kingdom  <sup>5</sup> School of Physics and Astronomy, University of Leeds, Leeds LS2 9JT, United Kingdom  <sup>6</sup> Ion Beam Center, Helmholtz-Zentrum Dresden-Rossendorf, Germany  <sup>7</sup> DEN, Service de Recherches de Métallurgie Physique, CEA, Université Paris-Saclay, F-91191 Gif-sur-Yvette, France</p>
P2.27	<p><b>Interfacial strain phenomena in ultra-thin InGaN/GaN quantum wells</b>  <u>I. G. Vasileiadis</u><sup>a</sup>, A. Gkotiakos<sup>a</sup>, L. Lymperakis<sup>b</sup>, Th. Karakostas<sup>a</sup>, Ph. Komninou<sup>a</sup>, and G. P. Dimitrakopoulos<sup>a</sup>  <sup>a</sup> Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece  <sup>b</sup> Max-Planck Institut für Eisenforschung GmbH, Düsseldorf, Germany</p>
P2.28	<p><b>Incorporation of Semiconductor Quantum Dots and Perovskite for High Efficiency Perovskite Solar Cells</b>  <u>L. Givalou</u>, E. Christopoulos and P. Falaras  <i>Institute of Nanoscience and Nanotechnology, NCSR Demokritos, 15341, Agia Paraskevi Attikis, Athens, Greece.</i></p>
P2.29	<p><b>Effect of Si Doping on the Stability and Efficiency of Graphene Oxide as an Anode Material for Aqueous Zn-ion Batteries</b>  <u>C. Floraki</u><sup>1*</sup>, K. Anagnostou<sup>1</sup>, A. Kostopoulou<sup>2</sup>, K. Brintakis<sup>2</sup>, E. Stratakis<sup>2</sup>, E. Kymakis<sup>1,3</sup>, D. Vernardou<sup>1,3</sup>  <sup>1</sup>Department of Electrical and Computer Engineering, School of Engineering, Hellenic Mediterranean University, 71410 Heraklion, Greece  <sup>2</sup>Institute of Electronic Structure and Laser, Foundation for Research &amp; Technology- Hellas, P.O. Box 1527, Vassilika Vouton, 71110 Heraklion, Greece  <sup>3</sup>Institute of Emerging Technologies, Hellenic Mediterranean University Center, 71410 Heraklion, Greece</p>
P2.30	<p><b>Network former mixing effects in alkali germanotellurite glasses by vibrational spectroscopy</b>  <u>N.S. Tagiara</u><sup>a</sup>, K.I. Chatzipanagis<sup>a</sup>, H. Bradtmüller<sup>b,c</sup>, A.C.M. Rodrigues<sup>c</sup>, D. Möncke<sup>d</sup>, E.I. Kamitsos<sup>a</sup>  <sup>a</sup>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Ave., 116 35 Athens, Greece.  <sup>b</sup>Institut für Physikalische Chemie, WWU Münster, Münster, Germany.  <sup>c</sup>Federal University of São Carlos, Department of Materials Engineering, CP 676, 13565-905 São Carlos, SP, Brazil.  <sup>d</sup>Inamori School of Engineering at the New York State College of Ceramics, Alfred University, 1 Saxon Drive, Alfred 14802, New York, USA.</p>
P2.31	<p><b>Study of high order Raman spectrum of two dimensional WS<sub>2</sub> under mechanical strain.</b>  <u>K. Filintoglou</u><sup>a,b</sup>, A. Michail<sup>c,d</sup>, N. N. Lathiotakis<sup>e</sup>, J. Parthenios<sup>d</sup>, and K. Papagelis<sup>a,d</sup>  <sup>a</sup>School of Physics Department of Solid State Physics, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece  <sup>b</sup>HENANOTEC, Komnion 17, Thessaloniki 54624, Greece  <sup>c</sup>Department of Physics, University of Patras, Patras 26504, Greece  <sup>d</sup>FORTH/ICE-HT, Institute of Chemical Engineering Sciences, Rio Patras 26504, Greece  <sup>e</sup>NHRF/TPCI, Theoretical and Physical Chemistry Institute, Athens 11635, Greece</p>
P2.32	<p><b>Machine learning application to CO<sub>2</sub> foam rheology</b>  <u>J. Iskandarov</u><sup>1,2</sup>, G. Fanourgakis<sup>3</sup>, W. Alameri<sup>4</sup>, G. Froudakis<sup>3</sup>, G. Karanikolos<sup>1,2</sup>  <sup>1</sup>Department of Chemical Engineering, Khalifa University, Abu Dhabi, UAE  <sup>2</sup>Research and Innovation Center for CO<sub>2</sub> and H<sub>2</sub> (RICH), Khalifa University, Abu Dhabi, UAE  <sup>3</sup>Department of Chemistry, University of Crete, Heraklion, Greece</p>

	<sup>4</sup> <i>Department of Petroleum Engineering, Khalifa University, Abu Dhabi, UAE</i>
<b>P2.33</b>	<b>Statistics of topological defects in nanostructures based on the Kibble- Zurek Mechanism</b> <u>V.Vachtsevanos<sup>[1],[2]</sup></u> , <u>H.Polatoglou<sup>[1]</sup></u> <i>[1] Physics Department, AUTH</i> <i>[2] Economics Department, AUTH</i>
<b>P2.34</b>	<b>Giant Broadband (450-2300 nm) Optical Limiting of some Graphenes by Defect Engineering</b> <u>M. Stavrou<sup>a,b</sup></u> , <u>I.Papadakis<sup>a,b</sup></u> , <u>S. Bawari<sup>c</sup></u> , <u>T.N. Narayanan<sup>c</sup></u> , <u>S. Couris<sup>a,b</sup></u> <i><sup>a</sup>Department of Physics, University of Patras, 26504 Patras, Greece</i> <i><sup>b</sup>Institute of Chemical Engineering Sciences (ICE-HT), Foundation for Research and Technology-Hellas (FORTH), P.O. Box 1414, Patras 26504, Greece</i> <i><sup>c</sup>Tata Institute of Fundamental Research – Hyderabad, Hyderabad 500046, India</i>
<b>P2.35</b>	<b>Effects of selective laser melting process parameters on the density and microstructure of 316L stainless steel</b> <u>A. Evangelou<sup>a</sup></u> , <u>R. Stylianou<sup>a</sup></u> , <u>A. Loizou<sup>a</sup></u> , <u>G. Constantinides<sup>b</sup></u> , <u>T. Kyratsi<sup>a</sup></u> <i><sup>a</sup> Department of Mechanical and Manufacturing Engineering, University of Cyprus, Nicosia, Cyprus</i> <i><sup>b</sup> Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Limassol, Cyprus</i>
<b>P2.36</b>	<b>Deterministic and stochastic hierarchical surfaces of multifunctional materials: Mathematical modelling and characterization</b> <u>G. Papavieros<sup>a,b,c</sup></u> , <u>T. Kyttari<sup>a</sup></u> , <u>V. Constantoudis<sup>a,b</sup></u> , <u>E. Gogolides<sup>a,b</sup></u> <i><sup>a</sup>Institute of Nanoscience and Nanotechnology NCSR Demokritos, Agia Paraskevi, 15341, Greece</i> <i><sup>b</sup>Nanometrisis P.C, Agia Paraskevi, 15341, Greece</i> <i><sup>c</sup> Physics Department, Aristotle University of Thessaloniki, Thessaloniki, 4124, Greece</i>
<b>18:00 – 21:00</b>	<b>Εθνικές Ερευνητικές Υποδομές: Materials and Analytical Facilities</b>

## WEDNESDAY SEPTEMBER 29, 2021

09:00 - 09:30	<p align="center"><b>INVITED LECTURE</b></p> <p align="center"><b>High Performance Next-Generation Printed Photovoltaics</b></p> <p align="center"><b>Stelios A. Choulis</b></p> <p align="center">Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology (Cyprus)</p>	
	<p align="center"><b>Session W1A. Ceramics, composites, minerals and metals</b></p> <p align="center">Session Chair: G. Vekinis</p>	<p align="center"><b>Session W1B. Interdisciplinary solid state physics and devices</b></p> <p align="center">Session Chair: E. Hourdakis</p>
09:30 - 09:45	<p><b>W1A.1 Thermoelectric performance optimization of low Hf-concentration p-type (Hf,Zr,Ti)Co(Sb,Sn) half-Heusler solid solutions fabricated via mechanical alloying</b></p> <p><u>I. Ioannou</u><sup>1</sup>, A. Delimitis<sup>2</sup>, Y. Gelbstein<sup>3</sup>, T. Kyratsi<sup>1</sup></p> <p><sup>1</sup>Department of Mechanical and Manufacturing Engineering, University of Cyprus</p> <p><sup>2</sup>Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, Stavanger, Norway</p> <p><sup>3</sup>Department of Materials Engineering, Ben-Gurion University of the Negev</p>	<p><b>W1B.1. Integration of Neodymium and Critical Metals for innovative applications and technologies: A Financial perspective</b></p> <p><u>E. Tsoutsoumanos</u><sup>a,b,c</sup>, S. Papadamou<sup>b,d</sup>, T. Karakasidis<sup>a,b</sup></p> <p><sup>a</sup>Condensed Matter Physics Laboratory, Department of Physics, University of Thessaly, GR-35100, Lamia, Greece</p> <p><sup>b</sup>Postgraduate Program in "Econophysics – Financial Forecasting", University of Thessaly, GR-38333, Volos, Greece</p> <p><sup>c</sup>Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", GR-15310, Ag. Paraskevi (Athens), Greece</p> <p><sup>d</sup>Department of Economics, University of Thessaly, GR-38333, Volos, Greece</p>
09:45 - 10:00	<p><b>W1A.2 Selective laser melting of metal matrix composites made of stainless steel 316L and SiO<sub>2</sub>: from powder processing to consolidation</b></p> <p><u>R. Stylianou</u><sup>a</sup>, A. Evangelou<sup>a</sup>, A. Loizou<sup>a</sup>, G. Constantinides<sup>b</sup>, T. Kyratsi<sup>a</sup></p> <p><sup>a</sup>Department of Mechanical and Manufacturing Engineering, University of Cyprus, Panepistimiou 1, 2109 Nicosia, Cyprus</p> <p><sup>b</sup>Department of Mechanical Engineering and Materials Science Engineering, Cyprus University of Technology, 3036 Limassol, Cyprus</p>	<p><b>W1B.2 Carbon and Metal-Based Monolithic Dye Sensitized Solar Cells</b></p> <p><u>G. Syrrukostas</u><sup>a</sup>, A. Antonelou<sup>a</sup>, G. Leftheriotis<sup>b</sup>, S.N. Yannopoulos<sup>a</sup></p> <p><sup>a</sup>Foundation of Research and Technology Hellas, Institute of Chemical Engineering Sciences, (FORTH/ICE-HT), GR 26504, Rio-Patras, Greece</p> <p><sup>b</sup>Department of Physics, University of Patras, GR 26504, Rio-Patras, Greece</p>
10:00 - 10:15	<p><b>W1A.3 Nitride precipitation kinetics in irradiated Fe: experiment and simulation</b></p> <p><u>A.Theodorou</u><sup>1,2</sup>, Z. Kotsina<sup>3</sup>, M. Axiotis<sup>3</sup>, G. Apostolopoulos<sup>2</sup>, C. C. Fu<sup>4</sup></p> <p><sup>1</sup>Section of Solid State Physics, Department of Physics, National and Kapodistrian University of Athens, Panepistimiopolis, GR-15784, Zografos</p> <p><sup>2</sup>Institute of Nuclear and Radiological Science and Technology, Energy and Safety NCSR "Demokritos", 15310 Aghia Paraskevi Attikis, Greece</p> <p><sup>3</sup>Tandem Acceleration Laboratory, Institute of Nuclear Physics, NCSR "Demokritos", 15310 Aghia Paraskevi Attikis, Greece</p> <p><sup>4</sup>Université Paris-Saclay, CEA, Service de Recherches de Métallurgie Physique, 91191 Gif-sur-Yvette, France</p>	<p><b>W1B.3 Highly sensitive ozone and hydrogen sensors based on perovskite microcrystals directly grown on electrodes</b></p> <p><u>A. Argyrou</u><sup>a,b</sup>, K. Brintakis<sup>a</sup>, A. Kostopoulou<sup>a</sup>, E. Gagaoudakis<sup>a,c</sup>, E. Stratakis<sup>a,c</sup></p> <p><sup>a</sup>Foundation for Research and Technology, Institute of Electronic Structure and Laser, Ultrafast Laser Micro and Nano Processing Group</p> <p><sup>b</sup>University of Crete, Department of Chemistry</p> <p><sup>c</sup>University of Crete, Department of Physics</p>

<b>10:15 - 10:30</b>	<b>W1A.4 Conversion of an industrial solid waste to a magnetic material for wireless charging devices of electric vehicles</b> <u>S. Papaioannou<sup>a</sup></u> , V. Tsakaloudi <sup>a</sup> , G. Kogias <sup>a</sup> , A. Evdou <sup>a</sup> , V. Zaspalis <sup>a,b</sup> <sup>a</sup> Laboratory of Inorganic Materials, Centre for Research and Technology Hellas CERTH, 57001 Themi-Thessaloniki, Greece <sup>b</sup> Laboratory of Materials Technology, School of Engineering, Dept. of Chemical Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece	<b>W1B.4 Process quality control of silicon sensors for the Phase-2 upgrade of the CMS Outer Tracker for the HL-LHC</b> <u>P. Assiouras</u> , I. Kazas, A. Kyriakis, D. Loukas Institute of Nuclear and Particle Physics (INPP), NCSR Demokritos panagiotis.assiouras@cern.ch
<b>10:30 – 11:00</b>	<b>BREAK</b>	
<b>11:00 – 11:30</b>	<b>INVITED LECTURE</b> <b>Towards molecular level understanding of water at interfaces</b> <b>Angelos Michailides</b> Yusuf Hamied Department of Chemistry, University of Cambridge (UK)	
	<b>Session W2A. Structural, dynamical and mechanical properties of condensed matter</b> Session Chair: N. Boukos	<b>Session W2B. Strongly correlated systems, magnetism and superconductivity</b> Session Chair: E. Liarokapis
<b>11:30 - 11:45</b>	<b>W2A.1 Construction of a machine learning dichalcogenide interatomic potential focusing on Van der Waals interactions</b> <u>D. Kalpetis<sup>a</sup></u> , G. Nikoulis <sup>a</sup> , E. Diouslous <sup>a</sup> , J. Kioseoglou <sup>a</sup> , <sup>a</sup> Department of Physics Aristotle University of Thessaloniki GR-54124 Thessaloniki Greece	<b>W2B.1 Magnetic skyrmions in ultrathin film Pd/Fe/Ir(111): an ab-initio study</b> <u>A. Kosma<sup>a</sup></u> , P. Rüßmann <sup>b</sup> , S. Blügel <sup>b</sup> , and P. Mavropoulos <sup>a</sup> <sup>a</sup> Department of Physics, National and Kapodistrian University of Athens, Panepistimioupolis 15784, Athens, Greece <sup>b</sup> Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, 52425 Jülich, Germany
<b>11:45 - 12:00</b>	<b>W2A.2 Two-step current-temperature-induced electrical and optical modifications in VO<sub>2</sub> films around the Metal-Insulator Transition</b> <u>D. K. Manousou</u> , S. Gardelis, M. Calamiotou, V. Likodimos, E. Syskakis <sup>†</sup> Section of Condensed Matter Physics, Department of Physics, National and Kapodistrian University of Athens, Panepistimioupolis, 15784, Zografos, Athens, Greece	<b>W2B.2 Topological textures in chiral magnets</b> <u>S. Komineas<sup>a</sup></u> , N. Papanicolaou <sup>b</sup> , N. Sisodia <sup>c</sup> , P.K. Muduli <sup>c</sup> <sup>a</sup> Department of Mathematics and Applied Mathematics, University of Crete, 71003 Heraklion, Crete, Greece <sup>b</sup> Department of Physics, University of Crete, 71003 Heraklion, Crete, Greece <sup>c</sup> Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India
<b>12:00 - 12:15</b>	<b>W2A.3 Temperature dependent resonant Raman scattering in 2D – TMDCs</b> <u>A. Michail<sup>a,b</sup></u> , E. Katsarou <sup>c</sup> , D. Sitaridis <sup>c</sup> , L. Seremetis <sup>a,b</sup> , N. N. Lathiotakis <sup>d</sup> , J. Parthenios <sup>a</sup> and K. Papagelis <sup>a,c</sup> <sup>a</sup> Institute of Chemical Engineering Sciences, FORTH ICE/HT, Patras 26504, Greece <sup>b</sup> Department of Physics, University of Patras, Patras 26504, Greece <sup>c</sup> School of Physics, Department of Solid-State Physics, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece <sup>d</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, Athens 11635, Greece	<b>W2B.3 Electronic density inversion method to obtain the corresponding Kohn Sham potential</b> <u>S. Bousiadi<sup>1,2</sup></u> , N. Lathiotakis <sup>2</sup> , N. Gidopoulos <sup>3</sup> <sup>1</sup> Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, Vass. Constantinou 48, 116 35 Athens, Greece <sup>2</sup> Section of Condensed Matter Physics, National and Kapodistrian University of Athens, Panepistimioupolis, GR-157 84 Athens, Greece <sup>3</sup> Department of Physics, Durham University, South Road, Durham DH1 3LE, United Kingdom

<b>12:15 - 12:30</b>	<p><b>W2A.4 Hot Electron Harvesting in Plasmonic Nanoaggregates</b>  <u>C. Moularas<sup>a</sup></u>, C. Dimitriou<sup>a</sup>, Y. Georgiou<sup>b</sup>, N. Boukos<sup>c</sup>, Y. Deligiannakis<sup>a,d</sup>  <sup>a</sup> <i>Laboratory of Physical Chemistry of Materials &amp; Environment, Department of Physics, University of Ioannina, Greece</i>  <sup>b</sup> <i>Institute of Chemical Engineering Sciences, Foundation for Research and Technology – Hellas, Greece</i>  <sup>c</sup> <i>Institute of Nanoscience and Nanotechnology (INN), National Centre for Scientific Research “Demokritos”, Greece</i>  <sup>d</sup> <i>Institute of Environment and Sustainable Development, University Research Center of Ioannina (URCI), University of Ioannina, 45110 Ioannina, Greece</i></p>	<p><b>W2B.4 Tiny effects at large scale</b>  <u>D. Bessas</u>  <i>European Synchrotron Radiation Facility, Grenoble, France</i></p>
<b>12:30 - 12:45</b>	<p><b>W2A.5 Titanium based Alloys for hard tissue Implant Applications</b>  Y. Fortouna <sup>a</sup>, J.J. Gutierrez-Moreno <sup>b</sup>, M. Calin <sup>c</sup>, <u>Ch.E. Lekka <sup>a</sup></u>  <sup>a</sup> <i>Department of Materials Science and Engineering, University of Ioannina, Ioannina 45110 Greece</i>  <sup>b</sup> <i>BSC – Barcelona Supercomputing Center, Barcelona, Spain,</i>  <sup>c</sup> <i>Institute of Complex Materials, IFW Dresden, Helmholtzstraße 20, 01069 Dresden, Germany</i></p>	<p><b>W2B.5 The pressure-induced valence transition of Sm in the (Sm<sub>1/3</sub>Ca<sub>2/3</sub>)<sub>2.75</sub>C<sub>60</sub> fulleride studied by Raman spectroscopy</b>  <u>A.G.V. Terzidou<sup>a</sup></u>, D. Nakos<sup>a</sup>, S. Ves<sup>a</sup>, D. Christofilos<sup>b</sup>, T. Nakagawa<sup>c</sup>, N. Yoshikane<sup>d</sup>, K. Matsui<sup>d</sup>, K. Prassides<sup>d</sup>, J. Arvantidis<sup>a</sup>  <sup>a</sup> <i>Physics Department, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece</i>  <sup>b</sup> <i>School of Chemical Engineering &amp; Laboratory of Physics, Faculty of Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece</i>  <sup>c</sup> <i>Center for High-Pressure Science &amp; Technology Advanced Research, 100094 Beijing, P.R. China</i>  <sup>d</sup> <i>Department of Materials Science, Graduate School of Engineering, Osaka Prefecture University, Osaka 599-8531, Japan</i></p>
<b>12:45 - 13:00</b>	<p><b>W2A.6 Threading dislocation properties in high mobility (0001)InN/GaN epilayers grown by molecular beam epitaxy</b>  <u>P. Chatzopoulou<sup>a</sup></u>, A. Adikimenakis<sup>b</sup>, Th. Kehagias<sup>a</sup>, A. Georgakilas<sup>b,c</sup>, Ph. Komninou<sup>a</sup> and G. P. Dimitrakopoulos<sup>a</sup>  <sup>a</sup> <i>Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece,</i> <sup>b</sup> <i>Microelectronics Research Group (MRG), IESL, FORTH, Heraklion Crete, Greece</i> <sup>c</sup> <i>Department of Physics, University of Crete, Heraklion, Greece</i></p>	<p><b>W2B.6 Experimental Protocol for Accurate Measurement of 3D Printed Magnetic Scaffolds’ Thermal Efficiency</b>  <u>A. Makridis<sup>a</sup></u>, P. Kyriazopoulos<sup>a</sup>, K. Kazeli<sup>a</sup>, M. Angelakeris<sup>a</sup>  <sup>a</sup> <i>Magnetic Nanostructure Characterization: Technology and Applications (MagnaCharta), Center for Interdisciplinary Research and Innovation (CIRI-AUTH) 57001 Thessaloniki, Greece</i></p>
<b>13:00 – 14:00</b>	<b>BREAK (LUNCH)</b>	
<b>14:00 – 14:30</b>	<p><b>INVITED LECTURE</b>  <b>Advanced Materials nanostructures studied by Transmission Electron Microscopy</b>  <b>Philomela Komninou</b>  Department of Physics, Aristotle University of Thessaloniki (GREECE)</p>	
	<p><b>Session W3A. Structural, dynamical and mechanical properties of condensed matter</b>  Session Chair: A. Kontos</p>	<p><b>Session W3B. Polymers, organic materials and biomaterials</b>  Session Chair: M. Kandyla</p>

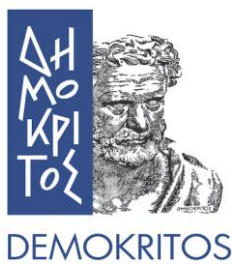


14:30 - 14:45	<p><b>W3A.1 Interface and Interphase in Polymer Nanocomposites through Molecular Dynamics Simulations</b>  <u>A.J. Power</u><sup>a</sup>, I.N. Remediakis<sup>b,c</sup> and V. Harmandaris<sup>a,d,e</sup>  <sup>a</sup>Department of Mathematics and Applied Mathematics, University of Crete, GR-71409, Heraklion, Crete, Greece  <sup>b</sup>Department of Materials Science and Technology, University of Crete, GR-71003 Heraklion, Crete, Greece  <sup>c</sup>Institute of Electronic Structure and Laser, (IESL), Foundation for Research and Technology Hellas (FORTH), GR-71110 Heraklion, Crete, Greece  <sup>d</sup>Institute of Applied and Computational Mathematics (IACM), Foundation for Research and Technology Hellas (FORTH), GR-71110 Heraklion, Crete, Greece  <sup>e</sup>Computation-based Science and Technology Research Center, The Cyprus Institute, Nicosia 2121, Cyprus</p>	<p><b>W3B.1 Tensile elasticity of a freely jointed chain with reversible hinges</b>  <u>P. Benetatos</u> and G. Noh  Department of Physics, Kyungpook National University, Daegu, Republic of Korea</p>
14:45 - 15:00	<p><b>W3A.2 Flexible rare-earth Metal-Organic Frameworks based on Hexanuclear Clusters with Unprecedented Connectivity and Intriguing Gas and Vapor Sorption Properties</b>  <u>E. Loukopoulos</u>, G. K. Angeli, K. Kouvidis, A. Bosveli, C. Tsangarakis, E. Tylianakis, G. Froudakis, P. N. Trikalitis  Department of Chemistry, University of Crete, Voutes 71003 Heraklion, Greece</p>	<p><b>W3B.2 Effects of nanometer confinement on the self-assembly and dynamics of Poly(<math>\gamma</math>-benzyl-L-glutamate) homopolymers and its copolymers with polyisobutylene</b>  <u>M. Spyridakou</u><sup>1</sup>, M. Gkikas<sup>2</sup>, M. Steinhart<sup>3</sup>, G. Floudas<sup>1,4</sup>  <sup>1</sup>Department of Physics, University of Ioannina, P. O. Box 1186, 451 10 Ioannina, Greece  <sup>2</sup>Department of Chemistry, University of Lowell, Massachusetts, Lowell, MA 01854  <sup>3</sup>Institut für Chemie neuer Materialien, Universität Osnabrück, D-49069 Osnabrück, Germany,  <sup>4</sup>University Research Center of Ioannina (URCI) - Institute of Materials Science and Computing, 451 10 Ioannina, Greece</p>
15:00 - 15:15	<p><b>W3A.3 Raman spectroscopic study of SnSe<sub>2</sub> under high pressure</b>  <u>N. Sorogas</u><sup>a</sup>, K. Papagelis<sup>a</sup>, A. N. Anagnostopoulos<sup>a</sup>, D. Christofilos<sup>b</sup>, J. Arvanitidis<sup>a</sup>  <sup>a</sup> Physics Department, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece  <sup>b</sup> School of Chemical Engineering &amp; Laboratory of Physics, Faculty of Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece</p>	<p><b>W3B.3 Birefringence measurements and dielectric response in the nematic phases of symmetric cyanobiphenyl liquid crystal dimers</b>  <u>E.E. Zavvou</u><sup>a</sup>, A.A. Barmdaki<sup>a</sup>, Z. Ahmed<sup>b</sup>, C. Welch<sup>b</sup>, P.K. Karahalidou<sup>a</sup>, A.G. Vanakaras<sup>c</sup>, C. A. Krontiras<sup>a</sup> and G. H. Mehl<sup>b</sup>  <sup>a</sup> Department of Physics, University of Patras, 26504, Patras, Greece  <sup>b</sup> Department of Chemistry, University of Hull, HU6 7RX, Hull, UK  <sup>c</sup> Department of Materials Science, University of Patras, 26504, Patras, Greece</p>
15:15- 15:45	<b>BREAK</b>	
	<p><b>Session W4A. Electronics, photonics and optoelectronics</b>  Session Chair: P. Dimitrakis</p>	<p><b>Session W4B. Strongly correlated systems, magnetism and superconductivity</b>  Session Chair: L. Tsetseris</p>
15:45 - 16:00	<p><b>W4A.1 Mie-resonant nanoparticles for weak and strong light-matter interactions</b>  <u>C. Tserkezis</u></p>	<p><b>W4B.1 Magnetic interactions and novel phase transitions in EuTiO<sub>3</sub></b>  <u>P. Pappas</u><sup>a,b</sup>, E. Liarakis<sup>a</sup>, M. Calamiotou<sup>c</sup>, A. Bussmann-Holder<sup>d</sup>  <sup>a</sup>Department of Physics, National Technical University of Athens, Athens 15780, Greece.</p>

	Center for Nano Optics, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark	<sup>b</sup> Institute of Nanoscience and Nanotechnology, National Center for Scientific Research 'Demokritos', 15310 Athens, Greece. <sup>c</sup> Section of Condensed Matter Physics, Physics Department, National and Kapodistrian University of Athens, GR-15784 Athens, Greece. <sup>d</sup> Max-Planck-Institute for Solid State Research, Heisenbergstr. 1, D-70569 Stuttgart, Germany.
16:00 – 16:15	<b>W4A.2 Free space topological surface states at photonic crystals with C4 symmetry</b> <u>A. C. Tasolamprou<sup>a</sup></u> , M. Kafesaki <sup>a,b</sup> , C. M. Soukoulis <sup>a,b,c</sup> , E. N. Economou <sup>a,d</sup> , T. Koschny <sup>c</sup> <sup>a</sup> Institute of Electronic Structure and Laser, Foundation for Research and Technology Hellas, N. Plastira 100, 70013 Heraklion, Crete, Greece <sup>b</sup> Department of Materials Science and Technology, University of Crete, Heraklion, 70013, Greece <sup>c</sup> Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, Iowa, 50011, USA <sup>d</sup> Department of Physics, University of Crete, Heraklion, Greece	<b>W4B.2 Mossbauer and crystallographic studies of disordered LiFe<sub>5-x</sub>Mn<sub>x</sub>O<sub>8</sub> ferrite</b> <u>V. Panagopoulos</u> , V. Psycharis, E. Devlin, Y. Sanakis and M. Pissas Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Aghia Paraskevi Attikis, Greece
16:15 – 16:30	<b>W4A.3 Fabrication and characterization of Transparent Thin Film Transistor with ZnO as active material on flexible substrate</b> <u>A.-M. Papadopoulos<sup>a</sup></u> , F. Farmakis <sup>b</sup> Micro- and Nanotechnology Lab, Department of Electrical and Computer Engineering, Democritus University of Thrace, 67100 Xanthi, Greece	<b>W4B.3 Tuning of magneto-mechanical forces due to magnetic field – nanoparticle interactions</b> <u>N. Maniotis<sup>1,2</sup></u> , A. Makridis <sup>1,2</sup> , T. Samaras <sup>1,2</sup> and M. Angelakeris <sup>1,2</sup> <sup>1</sup> School of Physics, Faculty of Sciences, Aristotle University, 54124 Thessaloniki, Greece <sup>2</sup> MagnaCharta, Center for Interdisciplinary Research and Innovation (CIRI-AUTH), 57001 Thessaloniki Greece
16:30 - 16:45	<b>W4A.4 Computational Nanometrology in Line Edge Roughness Measurements: Synthesized data and Pixelization</b> <u>G.Papavieros<sup>a,b,c</sup></u> , V. Constantoudis <sup>a,b</sup> , E.Gogolides <sup>a,b</sup> , N. Vouroutzis <sup>c</sup> <sup>a</sup> Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Agia Paraskevi, Greece <sup>b</sup> NANOMETRISIS Private Company, NCSR Demokritos, Agia Paraskevi, Greece <sup>c</sup> Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece.	<b>W4B.4 Structural stability and magnetic properties of Mn<sub>1.05</sub>Co<sub>x</sub>Bi<sub>1-y</sub>Sn<sub>y</sub> (Co, Sn: x, y=0.02-0.04) compounds</b> <u>M.Gjoka<sup>1</sup></u> , Ch. Sarafidis <sup>2</sup> , W. Khalifa <sup>3</sup> , D. Niarchos <sup>1</sup> <sup>1</sup> Institute of Nanoscience and Nanotechnology, NCSR Demokritos, 15310 Athens, Greece <sup>2</sup> Department of Physics, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece <sup>3</sup> Department of Mining, Petroleum and Metallurgical Engineering, Cairo University, Egypt
16:45	<b>CLOSING CEREMONY</b>	



# ORGANIZERS



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