Faculty of Sciences Meknes Morocco.
Department of Physics
Laboratory of Advanced Materials Studies and Applications (LEM2A)
Advanced Physics Society of Nanomaterials for Energy and Technology (SPANET)

Final program

The Conference is supported by:

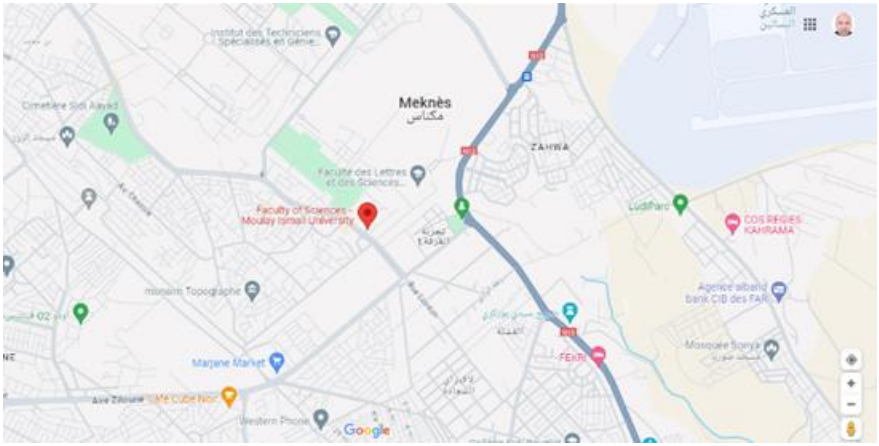
Conference Location:

Faculty of Sciences - Moulay Ismail University

BP 11201, Avenue Zitoune, Meknes, Maroc

https://www.fs-umi.ac.ma/

Access map



Welcome

Dear Colleagues,

The International Conference on Advanced Materials, Microscopy and Energy (ICAMME'24) is held in Faculty of Sciences University Moulay Ismail Meknes-Morocco from May 28 to 31, 2024. This event includes different kinds of presentations given by researchers and experts from the national and international scientific community, including keynote speakers, special sessions, posters and tutorials. It covers a wide spectrum of topics.

A specialized spring school is held from May 28 to 29, 2024 before the Conference. The lectures during this school will cover fundamental and applied aspects related to Advanced Materials and Advanced Microscopy and spectroscopy techniques. The lecturers are international experts in these areas. The school is intended in order of priority to PhD students, Masters 2, Engineers and researchers.

ICAMME'24 is an ideal platform for all International and National Scientists, Professors, Students, and Industrials. There will be feature talks by eminent personalities from academics and industries on recent advances in field of Materials Science, Microscopy, Engineering, Technology and Energy. It will anticipate more than 100 participants around the globe with thought Keynote lectures, Oral Presentations and Poster Presentations. This is an excellent opportunity for the delegates from Universities and Institutes to interact with the world class Scientists.

This conference ICAMME'24, over three days, will permit:

1. *to round up specialists in the advanced materials research field (theoretical and experimental),*
2. *to discover the scientific community and research in the Moulay Ismail University,*
3. *to review to the younger generation today, through various scientific presentations, the evolution of the advanced materials, and the revolution in nanotechnology and their applications in renewable energy.*

We want to thank the members of the Scientific Committee and all the invited speakers.

We recall that the financial support of the symposium was provided largely by:

- *Faculty of Sciences Moulay Ismail University Meknes Morocco*
- *Laboratory of Advanced Materials Studies and Applications (LEM2A)*

We hope that everyone will found in this meeting an important topical interest, a great pleasure on exchanging with the inter-Mediterranean scientific community.

Prof. Abdelhai Rahmani,

General Chairman

The International Conference on Advanced Materials, Microscopy and Energy (ICAMME'24)

Honorary Committee

Minister of National Education, Professional Training, Higher Education and Scientific Research Morocco.
President of Moulay Ismail University Meknes Morocco.
Director of the National Centre for Scientific and Technical Research.
Dean of Faculty of Sciences Meknes.

General Chair

Abdelhai RAHMANI
Faculty of Sciences, Moulay Ismail University Meknes Morocco

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The International Conference on Advanced Materials, Microscopy and Energy (ICAMME'24)

Scientific Committee

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HASSAN CHADLI	Meknes, Morocco
HASSAN DARHMAOUI	Ifrane, Morocco
HASSAN EL OUADDI	Agadir Morocco
HOUSSAME LIMAMI	Ifrane, Morocco
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KAMMOUNI ABDELKHALEK	Meknes, Morocco
KAMAL HIRECH	Meknes, Morocco
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LAHCEN KHOUCHAF	Lille, France
LHOUSSAINE TENGHIRI	Ifrane, Morocco
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MAALOUF AZAR	Brest, France
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MOHAMED ELAATMANI	Marrakech, Morocco
MOHAMED ELBARGHOUTI	Beni Mallal Morocco
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MY TAHAR SOUGRATI	Montpellier, France
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YOUNES BENHOURIA	Meknes, Morocco

The International Conference on Advanced Materials, Microscopy and Energy (ICAMME'24)

List of keynote speakers

 **Jean Louis BANTIGNIES** **Montpellier France**	Professor of Physics at the Laboratory Charles Coulomb in University Montpellier II Research topics or attachments: ✓ Functional Nanomaterials ✓ Development and study of networks, films and composites based on nanotubes. ✓ Doping, confinement and functionalization in nanotubes https://dumas.ccsd.cnrs.fr/L2C/search/index/q/*/authFullName_s/Jean-Louis+Bantignies
 **Laurent ALVAREZ** **Montpellier France**	Currently works at the Laboratory Charles Coulomb in University Montpellier II. Laurent does research in Condensed Matter Physics and Experimental Physics. Their most recent publication is 'Non-Covalent Functionalization of Carbon Nanotubes by Phthalocyanines Analyzed by Spatial-Resolved EELS'. Other research theme (s) or affiliation (s): Development and study of networks, films and composites based on nanotubes. Doping, confinement and functionalization in nanotubes. https://www.coulomb.univ-montp2.fr/spip.php?page=publications&aigle_auteur=87
 **Lahcen KHOUCHAF** **Lille Douai, France**	Professor of Physics, experimental techniques and nanotechnology, Head of Physical Analysis Lab from 1999 to 2007 in IMT, Lille university, France. After a PhD in 1996 from University of Haute Alsace in Solid State Physics, he obtained an accreditation to supervise research In 2004 France. He works on microscopy and spectroscopy instrumentation development, Environmental Electron Microscopy and Microanalysis to study the properties at low scale of different materials.
 **Asmae Khaldoun** **Ifrane Morocc**	In September 2009, she started working at Al Akhawayn University Ifrane (AUI) as Assistant Professor and got promoted to Associate Professor in 2016. She has taught undergraduate classes such as Physics, Thermodynamics and Material Science and Engineering. She supervised two PhD thesis, and currently has five in progress. The most important results of her work were published in Nature in 2005. From 2007 to 2009, she worked as Project Leader at Avantim Technologies in Amsterdam. She worked on several Shell research development projects on high throughput and formulation technology.

 **Moulay Tahar Sougrati** **Montpellier, France**	In 2009, he joined CNRS in Montpellier, delving into energy conversion and storage materials, particularly Li-ion battery electrodes and innovative iron-based fuel cell cathode catalysts. Dr. Sougrati pioneered operando and in situ techniques for reaction mechanism investigation. Notably, he discovered the electrochemical activity of carbodiimides in Li- and Na-ion batteries, contributing significantly to energy storage system understanding. With 215+ papers and four patents, Dr. Sougrati holds an impressive h-index of 50, reflecting his substantial impact. Currently, he focuses on environmentally friendly Li-ion recycling techniques. Internationally recognized, he's been invited as a visiting scientist in China, Belgium, and Spain, solidifying his position as a key figure in materials science and energy research.
 **Abdelfattah Mahmoud** **Liège, Belgium**	Before joining the University of Liège, Dr. Abdelfattah Mahmoud was a Postdoctoral researcher for 2 years at Forschungszentrum Jülich, JCNS-2 (Germany). He is the Battery Group Leader at GreenMat Lab of the University of Liège (Belgium). His research concerns i) the development of the battery materials for Alkali-ion batteries, ii) all solid state batteries and iii) recycling of spent Li-ion batteries and PV panels. He is in charge of the analytical platforms of electrochemistry and Mössbauer Spectroscopy. His research focused on the characterization of electrochemically active materials by nuclear resonance and neutron scattering techniques.
 **Abdelkrim Talbi** **Lille, Francee**	Abdelkrim Talbi joined the Centrale Lille and Institute of Electronics, Microelectronics and Nanotechnology as a Post-doc. He is, since 2006, Associate Professor with Centrale Lille Institute and as Full Professor since 2018. With over 24 years of expertise in multi-physics micro/nano-systems, including integrated photonic and microwave phononic devices, Abdelkrim Talbi currently spearheads or collaborates on numerous research projects focused on applications in health engineering and smart industry. Notable recent projects where he served as coordinator, scientific responsible, or co-responsible include, PEPR RESIST (2022-2027: WP responsible), ANR WISSTITWIN (2021-2024: coordinator), Horizon 2020 MSCA- DN CanDoIt (2024-2028: Coordinator), and EIC PathFinder SweatPatch (2024-2028: deputy Coordinator). He has published over 140 journal and conference papers. He holds 5 patents and several best paper awards and MBDA innovation award.

 **Azar Maalouf** **Brest, France**	Currently works at the Lab-STICC laboratory in the University of Bretagne Occidentale, France. His main scientific interests are the physical chemistry of materials and particularly the study and the implementation of these materials in thin or thick layers and massive materials. The fields of application are: Rechargeable batteries and accumulators (2001 - 2003), optical guided devices (2003 - 2010), materials and circuits operating in the domains of microwaves and hyper-frequencies (2011-present), 3D printing / materials and process (2012-present), electrooptic phenomena / Pockels effect (2022-present).
 **Abdellatif AKJOUJ** **Lille, France**	Professor of Physics at the University of Sciences and Technologies of Lille, France. He is co-author of more than 184 publications and author of several book chapters. He works and directs research related to functional materials, surface and interface science, Nanophotonics and Phononics, Plasmonics and biosensors.
 **Gaëtan Lévêque** **Lille, France**	Gaëtan Lévêque is a professor in the EPHONI group, at IEMN, Lille, France, since september 2010. He received his PhD in 2003 in Université Toulouse III, and was afterwards hired as a postdoc in the group “Nanophotonics and Metrology” of Prof. Olivier Martin, EPFL, Switzerland (2004-2007), and next in the “III-V” group of Brian Corbett, in Tyndall National Institute in Cork, Ireland (2007-2010). He works in photonics, plasmonics, and interaction of plasmon modes with elastic waves. He has published more than 50 articles in international peer-reviewed journals.

Deuxième édition de l'école de printemps sur la Microscopie Electronique, Spectroscopies Raman et Infrarouge, et la Fabrication Additive, 28-29 Mai 2024, Meknès, Maroc.

Programme de l'école

	Mardi 28 Mai 2024, Matin
08:00	**Inscription des participants**
09:30	**Allocutions d'ouverture** **Pr. Abdellah Mir : Doyen de la Faculté des Sciences** **Pr. Hmidou ELOUARDI : Directeur du Pôle d'Études Doctorales de l'Université Moulay Ismail** **Pr. Abdelhai Rahmani : Charman du comité d'organisation**
10:00	**Additive manufacturing / Overview and some process examples,** **Prof. Azar Maalouf**
	Mardi 28 Mai 2024, Aprés midi
14:30	**Théorie classique de la diffusion Raman & applications,** **Prof. L. Alvarez**
16:30	**Spectroscopie infrarouge pour l'étude de la matière condensée.** **Prof. J-L. Bantignie**
	Mercredi 29 Mai 2024, Matin
08:30	**Les batteries Zn-ion : une technologie durable et performante pour le stockage et la conversion d'énergie, Prof. Mahmoud Abdelfattah**
10:30	**Les micro/nano systèmes : technologie, principes physiques et prospectives,** **Prof. Abdelkrim Talbi**
	Mercredi 29 Mai 2024, Aprés midi
14:30	**Introduction to topological photonics, Prof. Gaëtan Lévêque**
16:30	**Microscopies Electroniques sous environnements gazeux, micro et nano analyses et matériaux, Prof. Lahcen Khouchaf**

Conference Program

	Thursday May 30 2024,
08:30	**Registration**
09:30	**Opening ceremony** **President of Moulay Ismail University Meknes (UMI)** **Dean of Faculty of Sciences Meknes (FSM)** **Chairman of organizing committee of ICAMME24**
10:15	**Reception in honor of participants**
	Plenary session 1 (Chairman: Asmae Khaldoun)
11:00	**Keynote Speaker 1: Jean Louis BANTIGNIES** "Periodic mesoporous organosilica Nanoparticles for nanothermometry applications ; Insights about structure and physical properties relationship"
12:00	**Keynote Speaker 2: Gaëtan Lévêque** " Valley topological crystals for integrated photonics "
13:00	**Lunch**
	Plenary session 2 (Chairman: Gaëtan Lévêque)
14:30	**Keynote Speaker 3: Laurent ALVAREZ** " Study of 1D hybrid carbon nanotubes "
15:00	**Keynote Speaker 4: Abdelfattah Mahmoud** "Efficient recycling strategies of cathode material from spent Li-ion batteries"
15:30	**Coffee Break**
16:00	**Session A (Chairman: Jean Louis BANTIGNIES, Akjouj Abdellatif)**
	Friday May 31 2024,
	Plenary session 3 (Chairman: Laurent ALVAREZ)
09:00	**Keynote Speaker 5: Lahcen KHOUCHAF** "New and advanced methods for observation of fragile and organic materials by High Resolution Environmental Electron Microcopy"
09:30	**Keynote Speaker 6: Azar Maalouf** "Some examples of how 3D printing is used at SMART team in Lab-STICC"

10:00	**Coffee Break and Poster session**
10:30	**Session B (Chairman: Mourad Boughrara, Mustapha Abarkan)**
13:00	**Lunch**
	Plenary session 4 (Chairman: Azar Maalouf)
14:30	**Keynote Speaker 7: Asmae Khaldoun** "Formulation of Fired and Unfired Clay Bricks Using Rheology"
15:00	**Keynote Speaker 8: Abdelkrim Talbi** " Technologies de capteurs et actionneurs MEMS IEMN : de la salle blanche aux démonstrateurs à haut niveau de TRL "
15:30	**Coffee Break**
16:00	**Session C (Chairman: Chadli Hassan, El Amraoui Mohamed)**
18:00	**Closing**

Sessions A

Paper ID and related session

Thursday May 30 2024, afternoon	
Session A (Chairman: Laurent ALVAREZ, Akjouj Abdellatif)	
Time	**Title, Authors and Paper ID**
16:00	2D MXenes materials for applications including energy conversion and storage. (**Darkaoui El Mokhtar, ID-535368)**
16:10	A DFT insight into the physical features of alkaline based perovskite compounds for thermoelectric applications (**Agouri Mohamed, ID-547144)**
16:20	Comparative study of SiO_2 aggregates: Nanoscopic and macroscopic approaches (**El Bahraoui Hassan, ID-546350)**
16:30	Delving into Optoelectronic Insights: A DFT Study of $[NH_3(CH_2)_4NH_3]CdCl_4$ Hybrid Perovskite (**Mazouar Sana, ID-557224)**
16:40	DFT approach on structural and optoelectronic properties of ten different polyyne molecules (**Kensi Youssef, ID-558347)**
16:50	Dielectric analysis of carbon nanofibres reinforced polyvinylidene fluoride composite films (**Nioua Yassine, ID-551081)**
17:00	Effect of co-substitution in $SrTiO_3$ Perovskite by A/B on structural, optical and magnetic properties (**El Harakati Halima, ID-544609)**
17:10	Engineering and optimization of the SPR device ZnO/Ag/WO_3/Ni/2D-Nanomaterials highly sensitive for biomedical processing and detection (**Houari Fatima, ID-551410)**
17:20	Fractional anomalous diffusion laws on spherical surfaces from generalized langevin equation theory (**A. Daoudi, ID-546692**)
17:30	Exploring the Electronic Properties of Armchair and Zigzag Phosphorene Nanotubes (**Arbaoui Zakariya, ID-547809)**
17:40	Exploring the properties of higher-order Tamm plasmons for liquid and gas detection (**Haidar Oumaima, ID-558247)**
17:50	Simulation-based approach to study factors influencing the torsion and effective young's modulus of a twisting metamaterial (**Barhoumi Abderrahim, ID-550886**)
18:00	Spectral Analysis of Dielectric and Electric Response in Insulating Materials (**Zahot Omar, ID-554694**)
18:10	Theoretical and experimental investigation of the impact of point defects on the thermoelectric properties of Cu_2Se deposited by DC-sputtering technique **(Ahmoum Hassan, ID-530721)**
18:20	Raman spectroscopy of single-walled carbon and boron-nitride nanotubes: A comparative theoretical study **(El Ouardi Oumaima, ID-558279)**
18:30	Dynamic analysis and parametric study of vibrations in multi-cable-stayed beams with elastic supports (**Berjal Mohamed, ID-553325**)
18:40	Ab initio study of the electronic, optical and thermoelectric properties of lead-free double perovskites $K_2(Se,Te)Br_6$ **(Kerrai Hamza, ID-557258)**
18:50	Structural and optoelectronic properties of quaterthiophene molecule encapsulated inside single-walled carbon nanotubes **(Amine Jodar, ID-556931)**

Sessions B

Paper ID and related session

Friday May 31 2024, morning	
Session B (Chairman: Mourad Boughrara, Mustapha Abarkan)	
Time	**Title, Authors and Paper ID**
10:30	Dynamic Behavior Analysis of a Multi-Cable-Stayed Beam Carrying Concentrated Masses (**Mohamed Rjilatte, ID-558183**)
10:40	The physical properties of antiperovskite nitrides (Zn,In)NCo_3 : Density functional theory and Monte Carlo simulation **(Amhoud Othmane, ID-558343)**
10:50	Advanced first principles-based study using Berry polarization and Wannier formulation to explore the promising ferroelectric material $SnTiO_3$ (**Belboukhari Aimad, ID-548970**)
11:00	Comparative study of thiophene and furan oligomers: unveiling structural, electronic and optical properties (**Elhadfi Soufiane, ID-558350**)
11:10	$CsSnI_3$-based perovskite solar cell: Numerical analysis of inverted- structure with over 24% efficiency (**Chabri Ilyas, ID-536261**)
11:20	Application of the cascaded lattice boltzmann method to the numerical analysis of medium-scale heat sink cooling **(Laktaoui Amine Fatima Zahra, ID-558220)**
11:30	Estimation du rayonnement solaire global quotidien grace à l'apprentissage profond (LSTM, GRU, SAE-LSTM, SAE-GRU) **(Hamdaouy Hamid, ID-552866)**
11:40	Lithium decorated 2D orthorhombic (o)-B_2X_2 monolayers for hydrogen storage: first principles calculations **(Benaddi Ayoub, ID-538359)**
11:50	Predictive Modeling of Carbon Dioxide Emissions in Morocco: A Comparative Analysis **(Baqqass Sanae, ID-554718)**
12:00	Re-exploitation of a gypsum deposit for the production of high-performance plaster intended for insulation in buildings (**Boulaaqidate Sahar, ID-553243**)
12:10	Analysis of Spent Coffee Grounds as an Additive in Unfired Clay Bricks **(Abdellaoui Yasmine, ID-557065)**
12:20	Evolution of chip morphology and cutting forces during high speed machining of titanium alloy (**Anas Chtioui, ID-545408**)
12:30	Development of new anodes based on 1,4-trans polymyrcene and carbon graphite for microbial fuel cells (**Tahiri Y, ID-555588**)

Sessions C

Paper ID and related Oral Session

Friday May 31 2024, afternoon	
Session C (Chairman: Chadli Hassan, El Amraoui Mohamed)	
Time	**Title, Authors and Paper ID**
16:00	Energy Efficiency and Building Design (**Arkia Gakou, ID-556764)**
16:10	Assessment of Earth-Air Heat Exchanger Performance for a House: A Case Study in Ifrane, Morocco (**Rania Skalli Cherif, ID-555207**)
16:20	Greywater recycling system for households. **(Khawla Dada, ID-555770)**
16:30	Incorporating Polystyrene Waste Additive into Unfired Clay Bricks: A Study on Material Properties **(Q. Limami, ID-556373)**
16:40	The Application of Spent Coffee Grounds as an Additive in Unfired Clay Bricks **(Ilyass Bougaa, ID-555184)**
16:50	Determination of the quality coefficient of screws used in implantology (**Essakhi Aziz, ID-555869**)
17:00	Potential valorization of SiO_2 flint aggregate via surface functionalization (**Abdelhamid Oufakir, ID-555869**)
17:10	Thermal analysis study on the grain refinement of al9si alloy **(Zriki Safae, ID- 555540)**
17:20	WS_2 Anchoring material for lithium-sulfur batteries: A DFT study (**Boukidi O., ID-560386**)
17:30	Structural and dielectric properties of Li_4ABO_6 oxide (**Doughri Doha, ID-550871**) **Online**
17:40	Investigation of Mechanical behavior of Ag/Cu Bilayer using Nanoindentation Test (**Herbazi Rachid, ID-549574) Online**
17:50	Magnetocaloric Effect, Structural, Magnetic and Electronic Properties of High Entropy Alloys $AlCo_xCr_{1-x}FeNi$: First-Principle Calculations and Monte Carlo Simulations (**Abjaou Ali, ID-556582) Online**
18:00	Development of polymer-graphite composites as electrodes for methanol-operated microbial fuel cells **(Haddouchy Hassan, ID-555738) Online**
18:10	Optimising the composition of clay blocks with the incorporation of wood ash for improved performance in sustainable construction **(Bajji Said, ID-539178) Online**
18:20	Utilizing Residues from Traditional Moroccan Pottery: Crafting Eco-Friendly Bricks with Indigenous Clay **(Bajji Said, ID-531404) Online**
18:30	Design For Additive Manufacturing: Opportunities, Limits, And Methods (**Lkadi Omar, ID-552423**) **Online**
18:40	Lignin from plant material (Rubia tinctoruim L.): extraction and characterisation **(Chajii Oumaima, ID-550699) Online**
18:50	Modeling railway system using 3d finite element method (**Hinde Laghfiri, ID-560123**) **Online**
19:00	Study of the dispersion of limestone and siliceous fillers in naphthenic and paraffinic bitumen during spreading (**Marouane Ouazri, ID-558281**) **Online**

Poster Session

Paper ID and related Poster Session

Friday May 31 2024, morning	
Poster session (Chairman: Brahim Fakrach, Ali Oubelkacem)	
Panel	**Title, Authors and Paper ID**
01	Theoretical characterization of photoactive chalcogenophene derivatives for the design of organic solar cells **(Elhadfi Soufiane, ID-558349)**
02	Exploring the Vibrational Properties of Black Phosphorene and Phosphorene Nanoribbons: Raman study **(Arbaoui Zakariya, ID-557685)**
03	Activated carbon based salt hydrate for sustainable thermochemical energy storage **(Moulakhnif Kaoutar, ID-547385)**
04	Linear frequencies and mode shapes of a multi-cable-stayed beam carrying masses at many locations. an analytical approach and a parametric study (**Mohamed Rjilatte, ID-553361)**
05	First principal investigation of Structural optical and thermoelectric properties of hybrid organic-inorganic perovskite $[NH_3\text{-}(CH_2)_4\text{-}NH_3]CdCl_4$ compound **(Hafida Ziouani, ID-551441)**
06	Comparative study on the properties of In- and V-doped CeO_2 nanostructured thin films grown by Spray Pyrolysis technique: application to electrochromic devices (**El Habib Abdellatif, ID-555945)**
07	New design of bimetallic temperature sensor based on surface plasmon resonance technology (**Mohamed El Barghouti, ID-554472)**
08	The influence of adding sand to a composite material based on gypsum plaster and pottery clay on thermal conductivity **(Omari Soufian, ID-551843)**
09	Synthesis of clay bricks waste-based geopolymer foams for sustainable buildings and circular economy potentials **(Moujoud Zineb, ID-550245)**
10	Linear Vibration Analysis of Multi-Cable-Stayed Beams Resting on Multiple Elastic Supports (**Mohamed Berjal, ID-558216**)
11	Study of Carbon Nanotube-Based Nanomaterials for Water Desalination and Purification, study by DFT (**Nasser Hafida, ID-559110**)
12	Hydrogen storage in ZnS monolayer decorated with light metal atoms: a DFT study (**Hamza Jebbouri, ID-559116**)
13	Développement d'un outil "Early Warning System" pour la surveillance des eaux de barrages par Absorption UV-Vis et Fluorescence optique 3D : Cas du barrage Ahmed El Hansali de la région Khénifra-Beni Mellal (**Idir Ouider, ID-560325**)
14	Study of the thermal conductivity of carbon nanotubes (**Ourada Haddou, ID-560364**)
15	Thermal and Vibrational Properties of Phosphorene using LAMMPS and RAMAN spectroscopy (**Zouhir Hamadi, ID-560349**)
16	Tailoring the optoelectronic and transport properties of Cs2AgSb(Cl,Br)6 halide double perovskites for optoelectronic applications (**Kerrai Hamza, ID-557262**)

17	Modelling of a tma part and determination of their quality parameters **(A. AMOR, ID- 556152)**
18	Optoelectronic properties of armchair (7,7) and zigzag (12,0) boron nitride nanotubes: A theoretical study **(El Ouardi Oumaima, ID-561036)**
	Mitigation of Copper Pitting Corrosion in Industrial Heat Exchangers (**Arrousse N, ID-556372**)
19	Enhancing Tamm Plasmon Sensor Performance Using Nanostructured Gold Grating and Porous Materials (**Haidar Oumaima, ID-553443)**