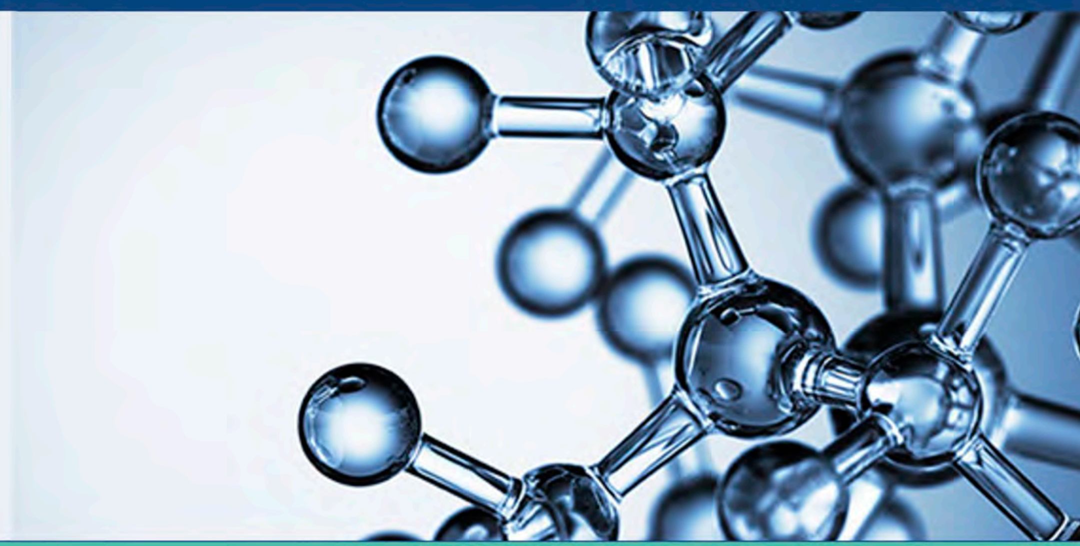
BIOMAC

European Sustainable BIO-based nanoMAterials Community

BIOMAC is a Horizon2020 project that will establish an Open Innovation Test Bed (OITB), a true collaborative ecosystem where technologies and solutions utilizing nano-enabled bio-based materials (NBMs) will be upscaled and prepared for market applications.



THE BIOMAC OITB

- The BIOMAC Open Innovation Test Bed (OITB) will develop tailor-made solutions for producing and integrating nanomaterials across the bio-based value chain.
- The BIOMAC OITB will offer services that cover the assessment of regulation and safety, sustainability, circularity, market potential along with modelling, process control, standardization and characterization.
- BIOMAC will provide open access to the physical facilities and services required for the development, testing and upscaling of materials and products in the field of nano-enabled bio-based products via a single-entry point (SEP).

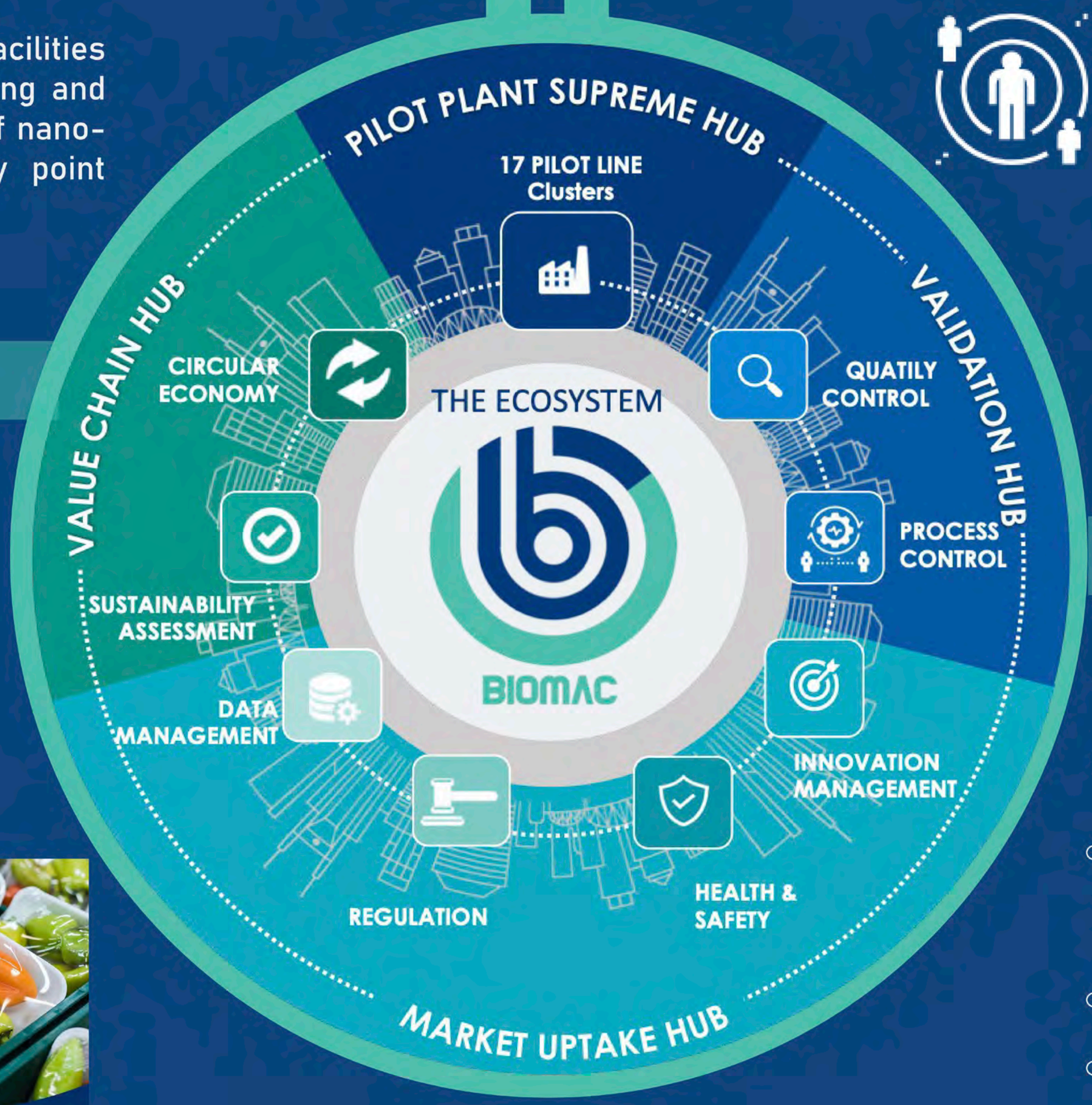
GOALS AND IMPACT

The ultimate goals of the BIOMAC OITB are to help:

- Tackle obstacles that hinder the evolution of concept development in the field of nano-enabled bio-based materials and products
- Industrialize a new generation of nano-enabled bio-based materials

Expected impacts

- Acceleration of bio-based concepts development
- Reduction of concept to prototype component to under eight months
- Enabling of the cost-effective production of high-value nano-enabled
- Elimination of the barriers for the realization of new ideas accessing and creating new markets



TEST CASES

Agriculture
Test Case

Printed Electronics
Test Case

Construction
Test Case

Automotive
Test Case

Food Packaging
Test Case

OBJECTIVES

- Establishment of a self-sustainable OITB
- Upgrade and modify 17 pilot lines
- Validation of the the operation of the OITB through creating and demonstrating 5 novel manufacturing supply and value chains (Test Cases-TeCs)
- Launch of an open call to invite 5 more test cases
- Post-project sustainability of the ecosystem and creation of a sustainability plan

- Pilots
- Characterization
- Modelling
- Monitoring
- Innovation
- IT Platform
- LCA, LCC
- Decision Support Tool
- Dissemination & Clustering
- Biomass Provider
- Business Development
- Standardization
- TeC1 Automotive
- TeC2 Agriculture
- TeC3 Food Packaging
- TeC4 Construction
- TeC5 Printed Electronics

The project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 952941

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Reversibly Designed Cross-linked Polymers

REDONDO

INTRODUCTION

- Cross-linked polyethylene (PEX) exhibits higher thermal stability, better chemical resistance and improved structural integrity compared to polyethylene (PE).
- BUT, PEX cannot be melted and recycled/reused

AIM

Synthesis of reversibly cross-linked polyethylene: inherently recyclable & sustainable-by-design

The project at a glance

01 Synthesis

A. Carbon-dithio reversible bonding

- Cross-linked network based on S-C-S and S-S bonds.
- Stable up to 130 °C and cleavable over 200 °C.

B. Diels-Alder chemistry

- Furan/maleimide complementary functions.
- Cross-linking through Diels-Alder reaction.

02 Green Additives

Biobased additives

- Nanolignin (NL)
- Nanocellulose (NC)
- Chemically modified NL & NC

Properties

- Flame retardancy
- Antioxidant
- Mechanical strength

03 Sustainable & Safe-by-Design

- Life cycle assessments to identify key hotspots for environmental improvement
- Toxicological effects & potential for exposure to health and environmental impact from product inception to end of life
- Development of the **PLACE-me** tool: circular monitoring tool integrating principles of sustainability-by-design along with a holistic value chain assessment

04 Applications

- Processability of newly synthesized rPEX will be evaluated for extrusion.
- Masterbatches will be further formulated
- Two end-users applications:
  - **Pipes** for heating/cooling applications
  - **Cables** for photovoltaic systems

05 Recyclability

- Thermal reversibility of the cross-linking will be assessed.
- Properties of recycled rPEX will be evaluated.
- Recyclability of the final products will be validated.

Communication and Exploitation Activities

- Support the widest diffusion of the project's results to targeted audiences
- Maximise the innovation impacts, contributing to the market uptake of the final products

Meet the Team

aimen, interplast, KBE BERLIN, ITENE, Aristotle University of Thessaloniki, cnrs, SILON, creative nano, AXIA INNOVATION, RDC, iSQ

Funded by the European Union

This project has received funding from the European Union's Horizon Europe Framework Programme under Grant Agreement No 101058449. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

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SUSTAIN A PRINT

Sustainable materials and process for green printed electronics

SaP at a glance

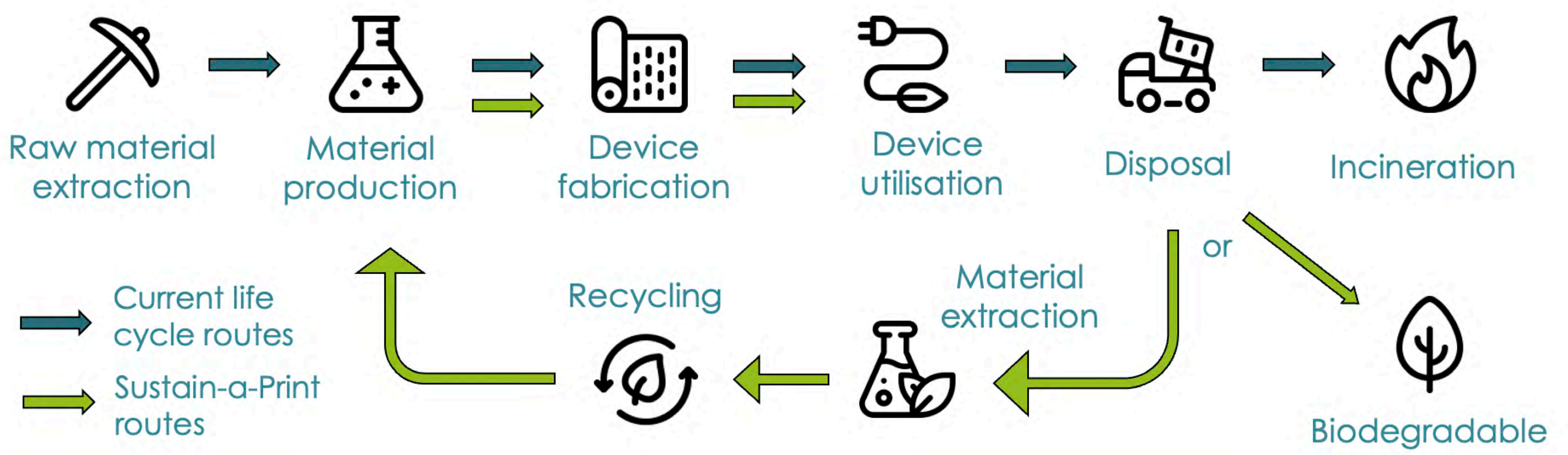
11 PARTNERS
6 EUROPEAN COUNTRIES
36 MONTHS
4.1M € EU CONTRIBUTION

FINDING GREENER ALTERNATIVES AND COMBINING RECYCLABILITY AND BIODEGRADATION INTO ELECTRONIC DESIGNS

Sustain-a-Print (SaP) project aspires to replace fossil-based materials used for printed electronics (PE) production by developing recycled, bio-based, and biodegradable alternatives following Safe and Sustainable by Design (SSbD) methodologies and synergizing with the Circular Economy Action Plan put forth by the European Union.

2 Industrial Applications | Biosensors | Membrane Switch/ Keyboards

SaP's approach vs current lifecycle routes for PE



SaP Methodology

The methodology will be an iterative process based on industrial specifications and devided into 4 focus areas:

- Materials
- Formulations
- Printing
- Circular Economy

SaP Technologies

- Digital Printing
- Solvothermal batch and flow chemistry
- Ultrasonication
- Polymerization and extrusion techniques
- Screen and inkjet printing
- Separation and recycling technologies

SaP Innovations

// High-performance conductive materials and inks made from recycled & bio-based sources

\\ Digital printing methods for automated production of PE

// Facile separation and reusability of mounted discrete components

\\ Recycling of critical raw materials

www.sustainaprint.eu
info@sustainaprint.eu

Funded by the European Union

This project has received funding from the European Union's Horizon Europe (HORIZON) programme under the grant agreement **No. 101070556**

ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

NANOSCOPY-GR: GREEK NANOSCOPY NETWORK

nanoscopy.web.auth.gr

Iceland Liechtenstein Norway grants

nano scopy

The aims of the network are:

1 to develop an integrated nanoscopy-modeling methodology for advanced studies of nanomaterials and nanostructures down to the atomic scale.

2 to upgrade the capacities for provision of innovative interdisciplinary services in electron nanoscopy.

3 to confront the new challenges in the nanoscopic characterization of materials and devices towards the development of high added-value products.

4 to co-develop electron nanoscopy in Greece and Norway through research synergies.

Network Coordinator Prof. G.P. Dimitrakopulos

Electron Microscopy and Structural Characterization of Materials Laboratory, Physics Department AUTh

ElMicLab — ARISTOTLE UNIVERSITY OF THESSALONIKI

Laboratory of Electron Microscopy and Nanomaterials, Institute of Nanoscience and Nanotechnology, NCSR Demokritos

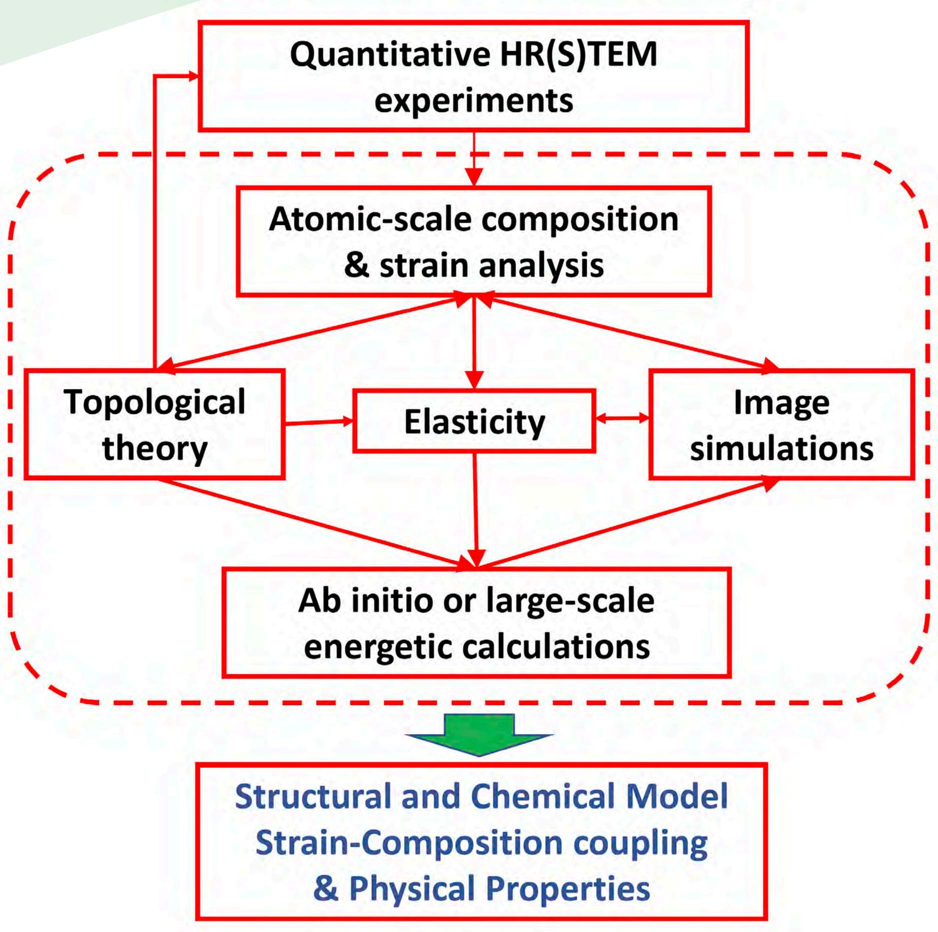
DEMOKRITOS — INN Institute Nanoscience Nanotechnology

Centre for Materials Science and Nanotechnology, University of Oslo

UNIVERSITY OF OSLO

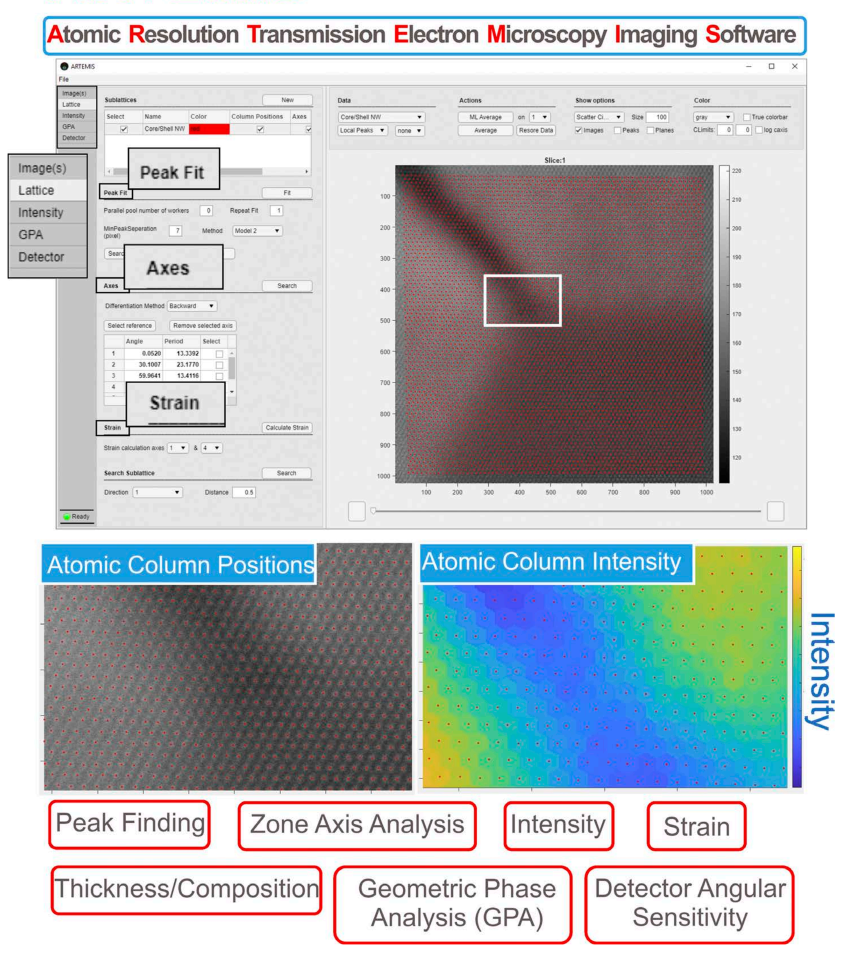
Advanced Scanning Transmission Electron microscopes located in the associated labs.
From left to right:
1) The JEOL JEM-F200 CFEG STEM of ElMicLab AUTh
2) The Thermo Fisher Scientific Talos F200i FEG STEM of EMNL NCSR Demokritos
3) The probe and aberration-corrected FEI Titan G2 60-300 FEG STEM of SMN/UiO

Nanoscale methodology

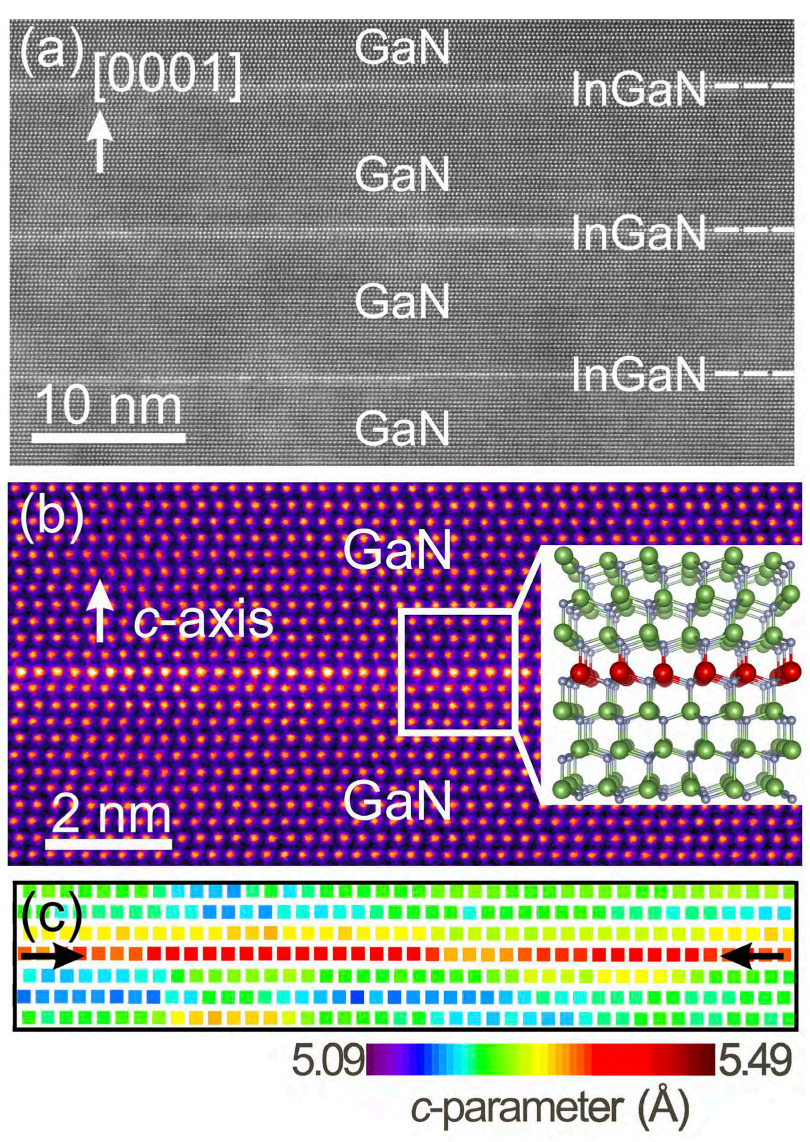


Integrated nanoscopy-modeling methodology for conducting advanced studies of nanomaterials and nanostructures to provide accurate atomistic models. By a combination of **quantitative high resolution STEM** and a multitude of theoretical techniques, we are able to provide **accurate structural and chemical models** as well as **stress/strain fields** at the nanoscale.

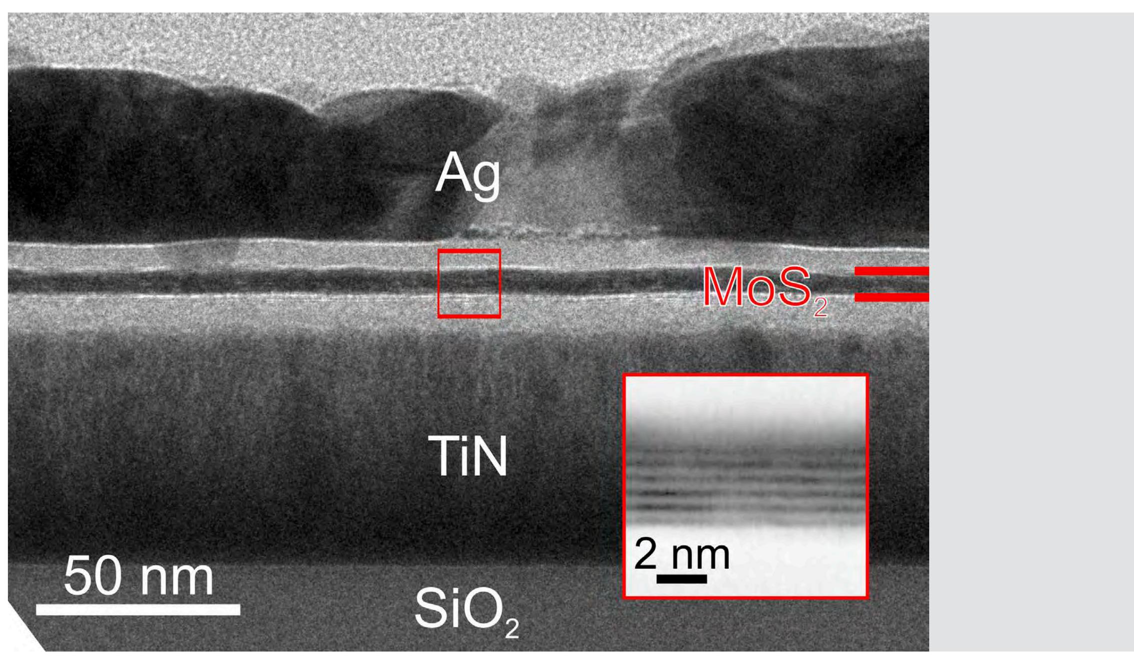
ARTEMIS



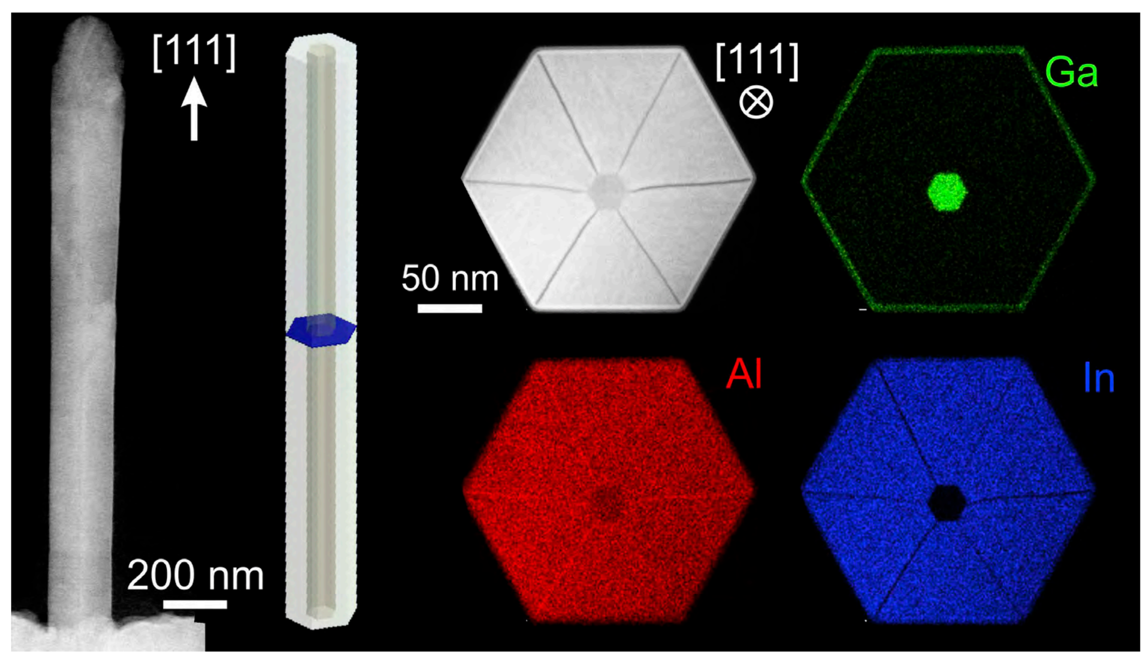
Introducing **ARTEMIS** (***A**tomic **R**esolution **T**ransmission **E**lectron **M**icroscopy **I**maging **S**oftware*), an advanced image analysis tool developed by **ElMicLab/AUTh**. Designed with a user-friendly interface, using the MATLAB app designer, ARTEMIS allows for the quick analysis of vast image sets. With its comprehensive range of analytical tools, this software enables precise quantitative image analysis for both simulated and experimental HR(S)TEM images. No programming experience is needed.



We recently implemented the integrated methodology to determine the composition of **sub-nanometer** $In_xGa_{1-x}N/GaN$ **quantum wells** (QWs) with unparalleled spatial resolution. Atomic resolution STEM images, sensitive to the atomic number are implemented (a and b). The QW composition was determined by comparing experimental images with multislice image simulations. Another route to measure the QW composition is by coupling the experimentally measured strain with the composition using molecular dynamics simulations, known as "strain-composition coupling".



Nanoscale structural and chemical investigations is crucial for device optimization. Here is a cross sectional STEM image of a multilayer structure comprising of a thin layer of SiO_2 with embedded **two-dimensional (2D)** molybdenum disulfide, MoS_2. The specimen was sectioned from a conductive bridge random access memory (CBRAM) configuration.



Chemical mapping using an **Energy Dispersive X-Ray (EDX) spectroscopy** inside the scanning transmission electron microscope unveils the nanoscale elemental distributions in all shorts of nanostructures. From thin films to nanoparticles and to more complex composite structures like **core shell nanowires** (above). Elaborate sample preparation methods are implemented, to align the 3D nanostructure along different projection orientations. This enables 3D structural and chemical characterization such as a **3D strain field reconstruction.**

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ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

STRUCTURAL AND CHEMICAL PROPERTIES OF MATERIALS AT THE NANOSCALE BY TRANSMISSION ELECTRON MICROSCOPY

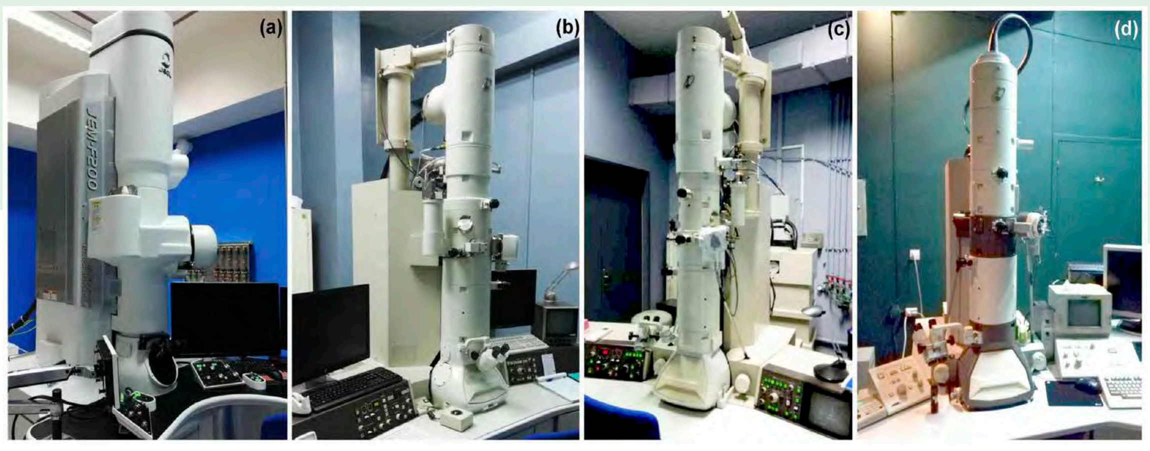
The Electron Microscopy and Structural Characterization of Materials Laboratory (ElMicLab) of the Physics Department, AUTH, with more than half a century of research activity, unique advanced TEM infrastructure, and its members' long-standing expertise, is considered one of the leading electron microscopy labs in Physics and Materials Science in Greece and internationally. Applying an integrated quantitative high-resolution TEM and HRSTEM research methodology, the micro/nanostructure and stoichiometry of innovative materials with high added value is correlated to the growth processes and physical properties.

Electron Microscopy and Structural Characterization of Materials Laboratory Physics Department AUTh

ElMicLab — ARISTOTLE UNIVERSITY OF THESSALONIKI

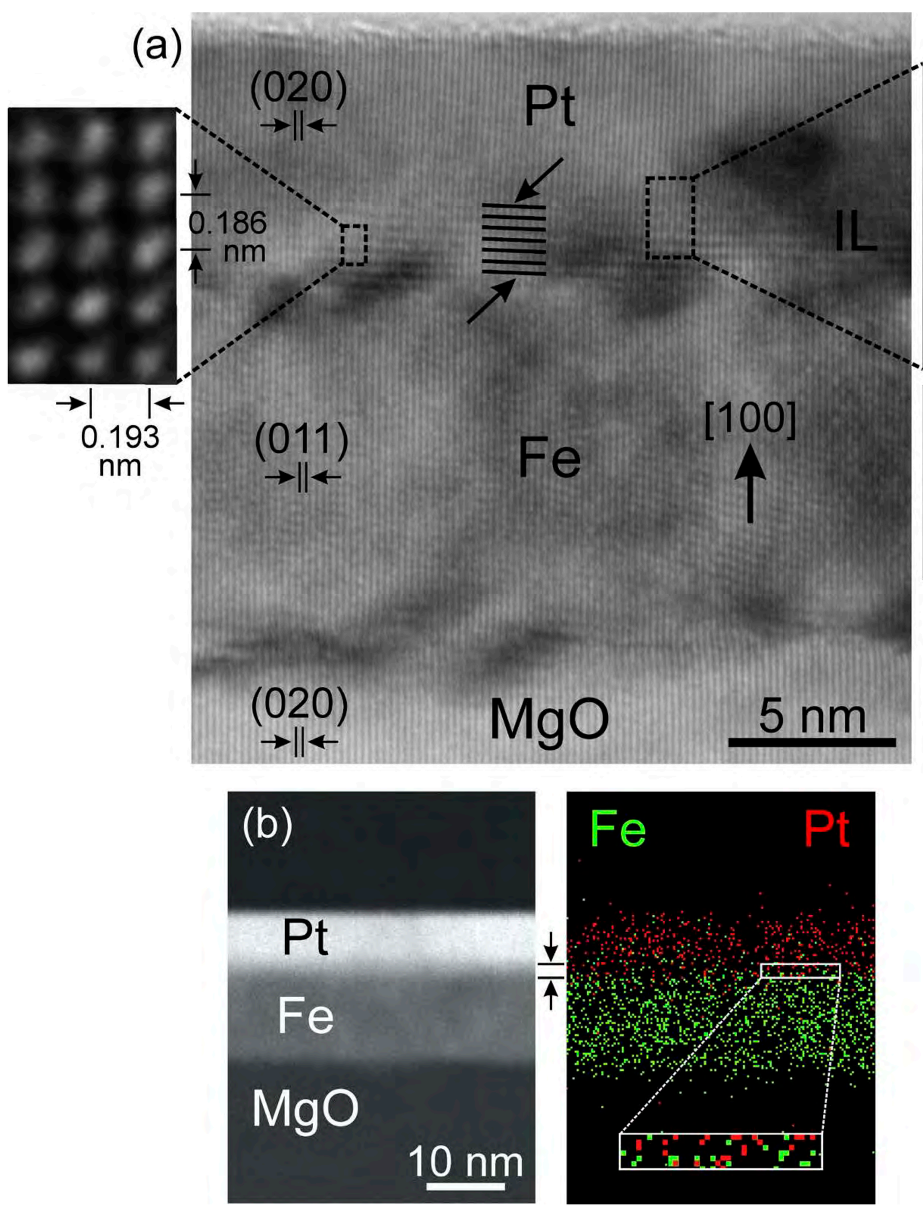
Head of the Laboratory Prof. Philomela Komninou

Members of the Lab/Research Team Thomas Kehagias, George Dimitrakopulos, Nikos Frangis, Nikos Vouroutzis, Nikoletta Florini, Isaak Vasileiadis, Polyxeni Chatzopoulou



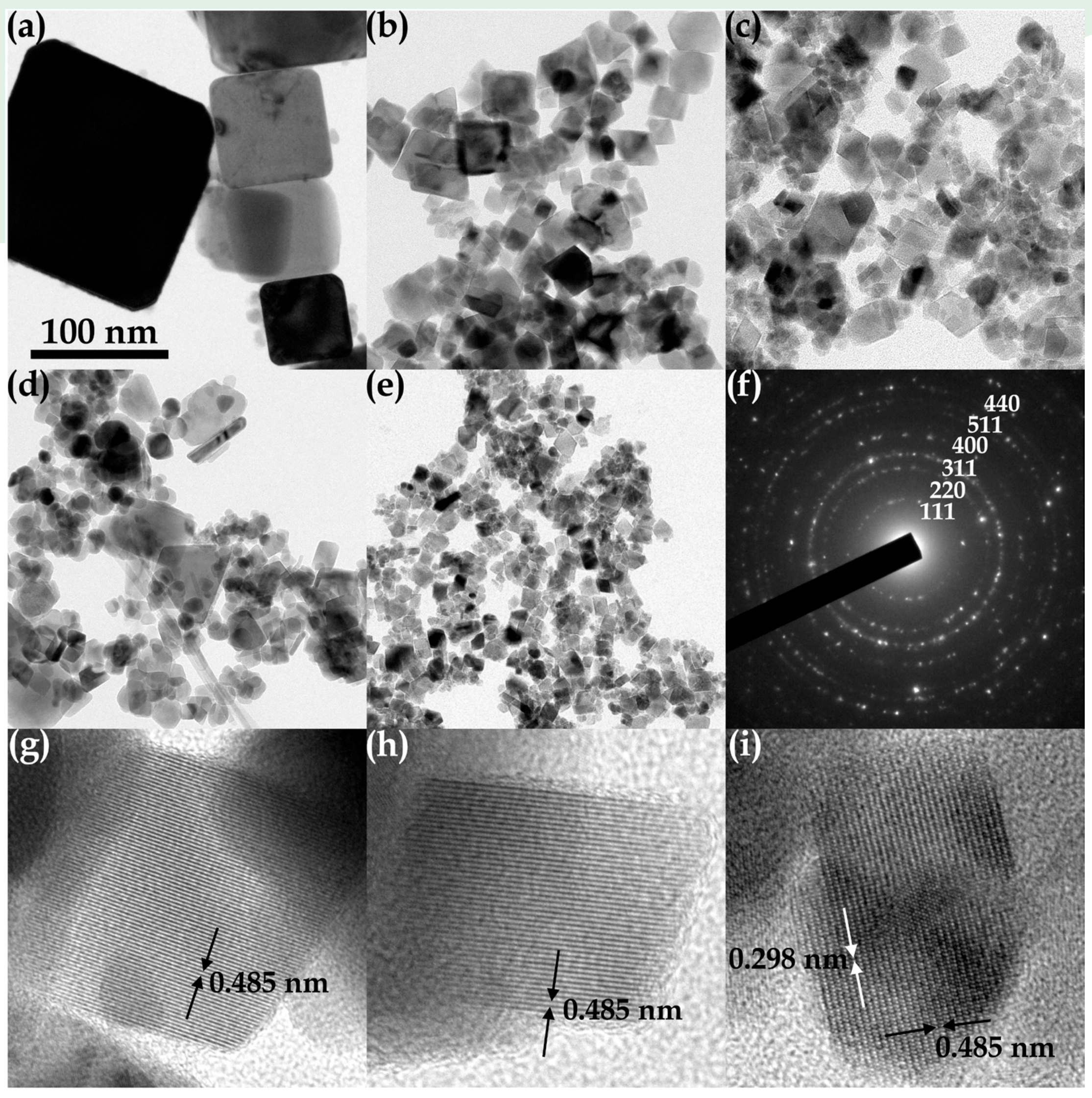
ElMicLab_TEM-infrastructure:

(a) Multifunctional JEOL JEM-F200 CFEG TEM/STEM operated at 200 KV & 80 KV with TEM resolution of 0.19 nm and STEM-HAADF at 0.14 nm.
(b) TEM JEOL JEM-2011 operated at 200KV, with a resolution of 0.194 nm.
(c) JEOL JEM-2000FX operated at 200KV, with a resolution of 0.28 nm.
(d) TEM JEOL JEM-1010 operated at 100 KV

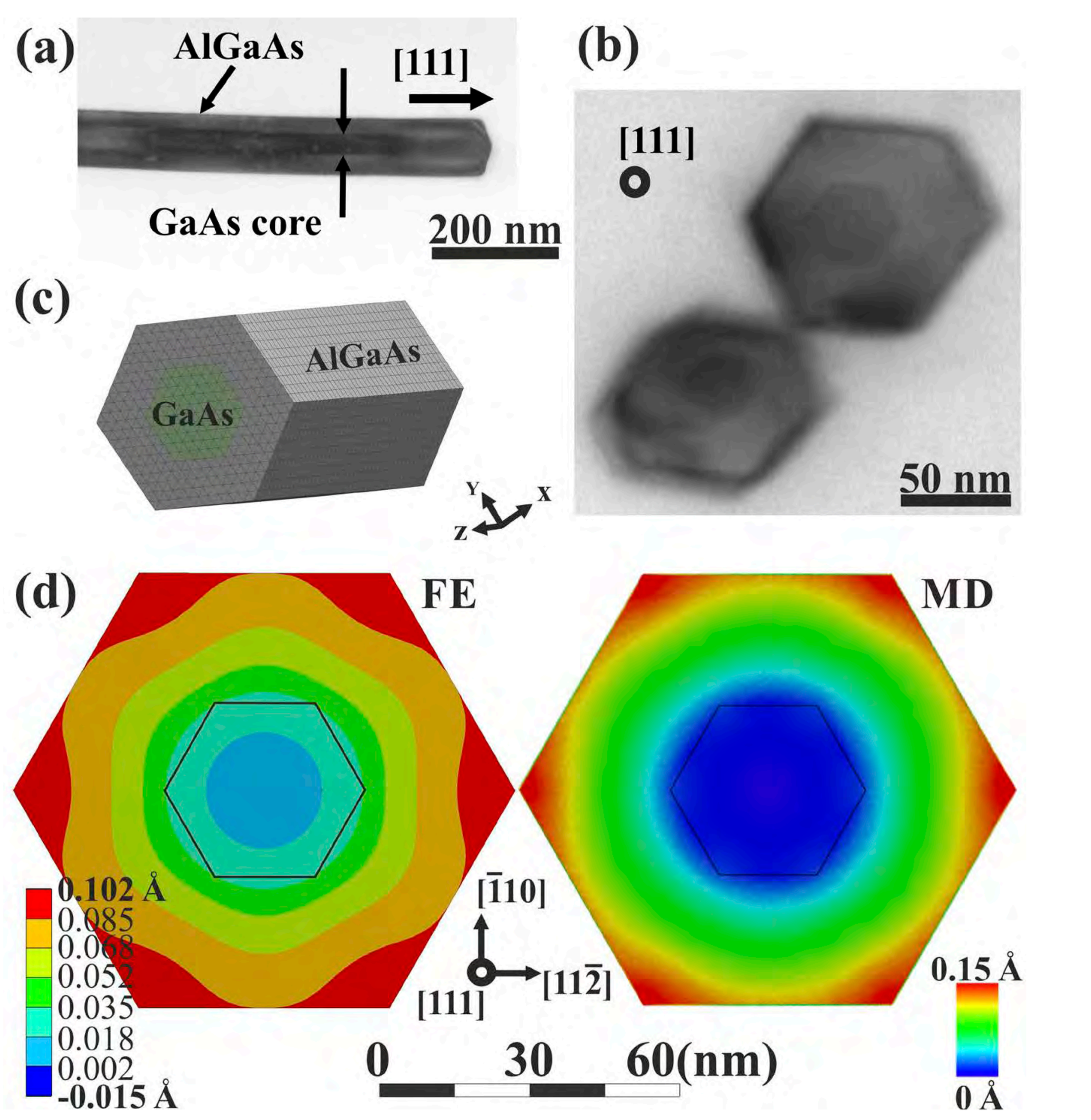


Nanoheterostructures:

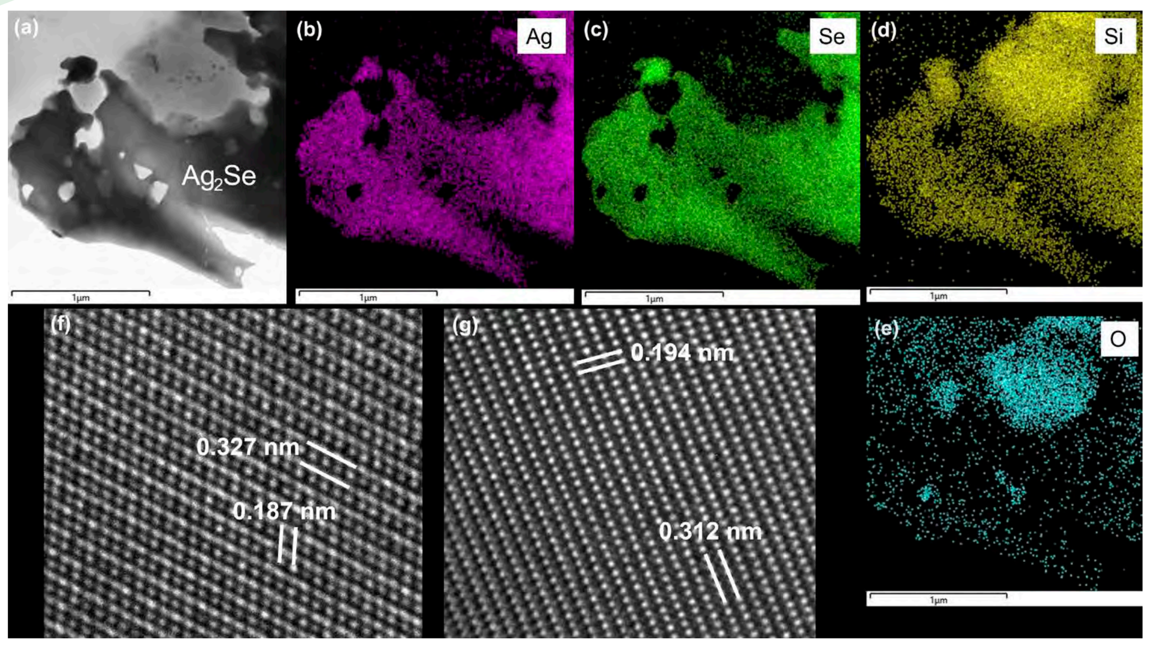
(a) Cross-sectional HRTEM image of a Fe/Interlayer (IL)/Pt heterostructure. The crystal planes of MgO, Fe, and Pt are indicated, while at the Fe/Pt interface, an IL with periodic intensity is denoted by arrows. The tetragonal lattice of the IL is confirmed by the high-magnification HRTEM image (left inset). The chemical ordering of the $L1_0$-FePt structure is revealed by an alternating contrast in HRSTEM image and confirmed by the corresponding HRSTEM image simulation given below (right inset).
(b) STEM image, showing the MgO, Fe, IL (arrows), and Pt layers along with the corresponding EDXS map of the distributions of Fe and Pt elements, revealing their intermixing at the Fe/Pt interface.



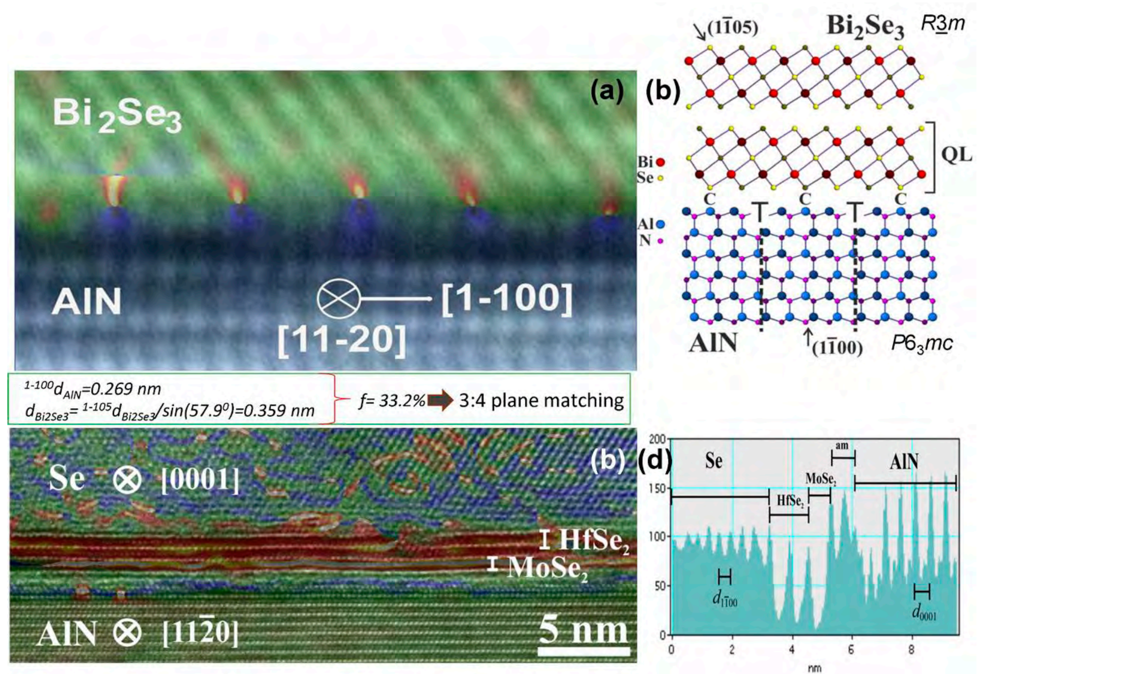
Nanoparticles: (a)-(e) TEM images of magnetite NPs, prepared at pH values of 13.5, 12.0, 11.0, 10.0, and 9.0, respectively, for magnetic particle hyperthermia applications. (f) Typical SAED ring pattern of the Fe_3O_4 lattice corresponding to all cases. (g)-(h) HRTEM images of individual NPs, illustrating their atomic structure.



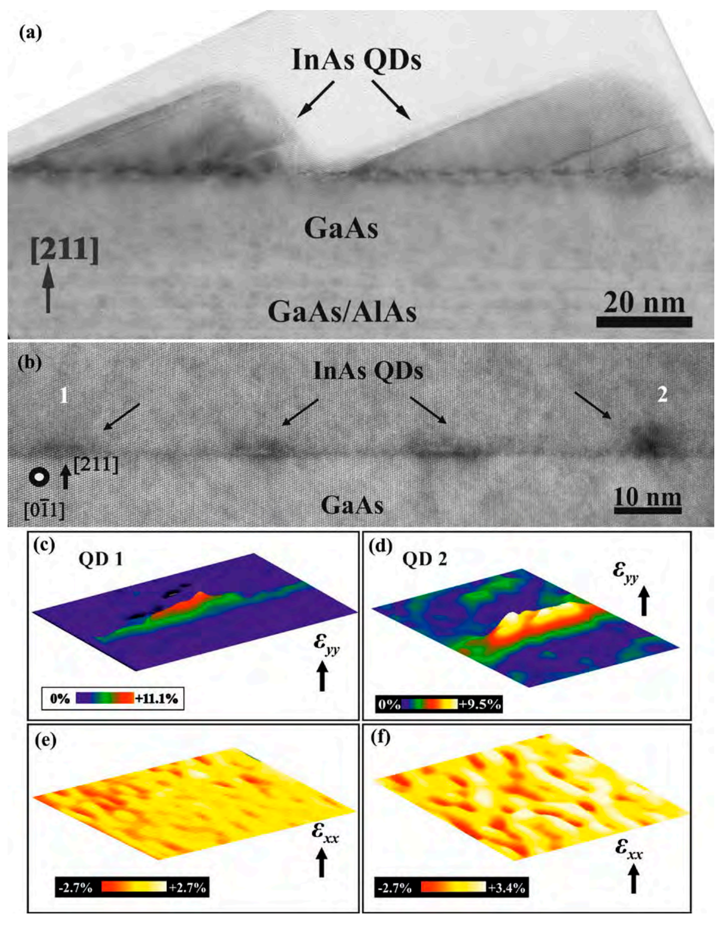
Nanowires: (a) Cross-sectional TEM micrograph of an (111)-oriented coreshell GaAs/$Al_xGa_{(1-x)}As$ NW. b) Plan-view slices of NWs illustrating the core-shell structure. c) Corresponding FE geometric model. d) Simulation of the displacement field obtained by FE calculations and the corresponding MD simulation of the displacement magnitude of each atom after relaxation with respect to the relaxed positions of the equivalent GaAs NW. A 35% Al shell content and S/NW ratio of 0.6 are considered.



Alloys: (a) STEM BF image of the orthorombic Ag_2Se alloy for thermoelectric applications. (b)-(e) Corresponding EDXS elemental maps, showing SiO_2 impurities within the matrix. (f)-(g) HRTEM images of the atomic structure of the orthorombic phase.



Heteroepitaxy of 2D- materials: (a) HRTEM image with superimposed lattice strain map of the 3 quintuples (QLs) Bi_2Se_3/AlN(0001) sample showing the precise location of the misfit dislocations and the associated strain field components (tensile in red, compressive in blue) at the interface. (b) Schematic model of the matching between [11-20] Bi_2Se_3//[11-20]AlN showing two mixed-type misfit dislocations with extra half-planes on the substrate side. Two QLs of Bi_2Se_3 are illustrated. The orientations of the (1-100)AlN and (1-105) Bi_2Se_3 planes are shown. Shading indicates distinct levels along the projection direction. (c) HRTEM image, along the [11-20]AlN zone axis, with superimposed lattice strain map, illustrating the AlN substrate, the $MoSe_2$/$HfSe_2$ interlayer, and the Se capping. (d) absorption intensity profile. Lattice spacing measurements show one d-spacing of $MoSe_2$ and two d-spacings of $HfSe_2$.



Quantum Dots:

Cross-sectional HRTEM image showing (a) surface and (b) embedded InAs QDs in GaAs substrate. (c) and (d) GPA strain surface plots along the growth direction of the QD-1 and QD-2 showing the increase of the out-of-plane strain from the base toward the apex of the dots. (e) and (f) the corresponding inplane GPA strain of the same QDs approximates zero, implying fully strained heterostructures.

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ARISTOTLE
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RESEARCH
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DESIGN AND IMPLEMENTATION OF INNOVATIVE LIFT'S AIR-CONDITIONING SYSTEMS BY USING THERMOELECTRIC DEVICES (TECLIFT)

amdelab.physics.auth.gr

The scope of TECLIFT is the design and construction of thermoelectric air coolers for lift chamber applications, in order to overcome the negative effects of conventional devices, such as the construction volume, energy consumption, noise level and environmental impact.

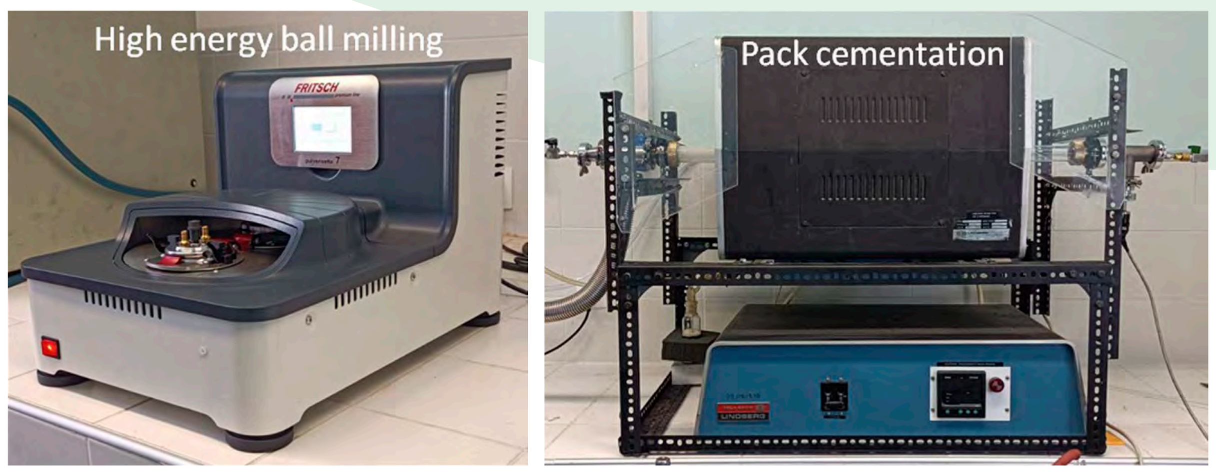
The objectives are:

1. Determination of design and specifications by simulations using commercial TECs.
2. Modification of commercial TECs for performance optimization.
3. Synthesis of innovative TEC materials with less toxic elements.
4. Assemble of TEC units in an experimental lift and real conditions testing.

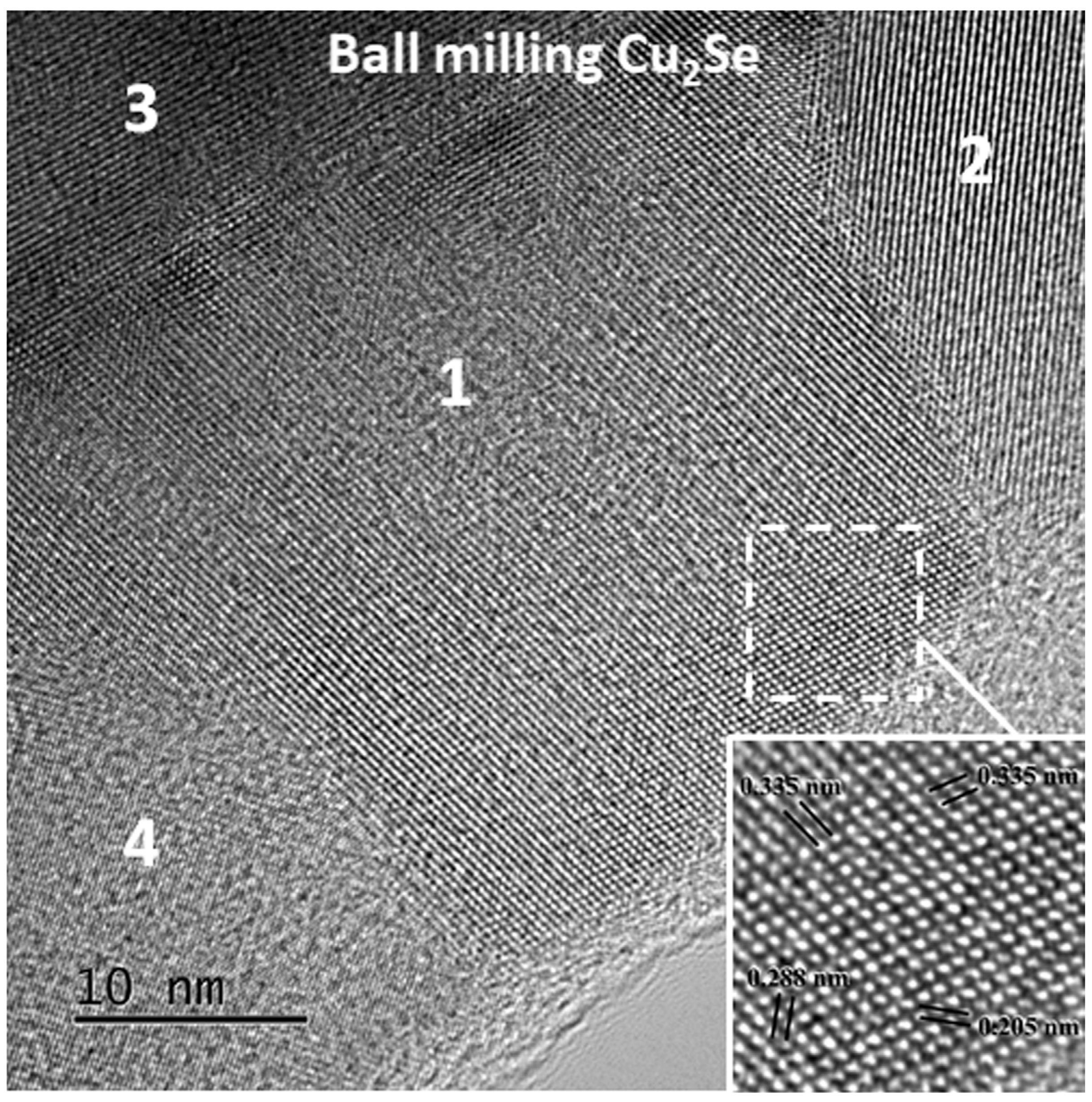
Advanced Materials and Devices Laboratory (AMDE LAB)

AMDe lab
LABORATORY OF ADVANCED MATERIALS AND DEVICES

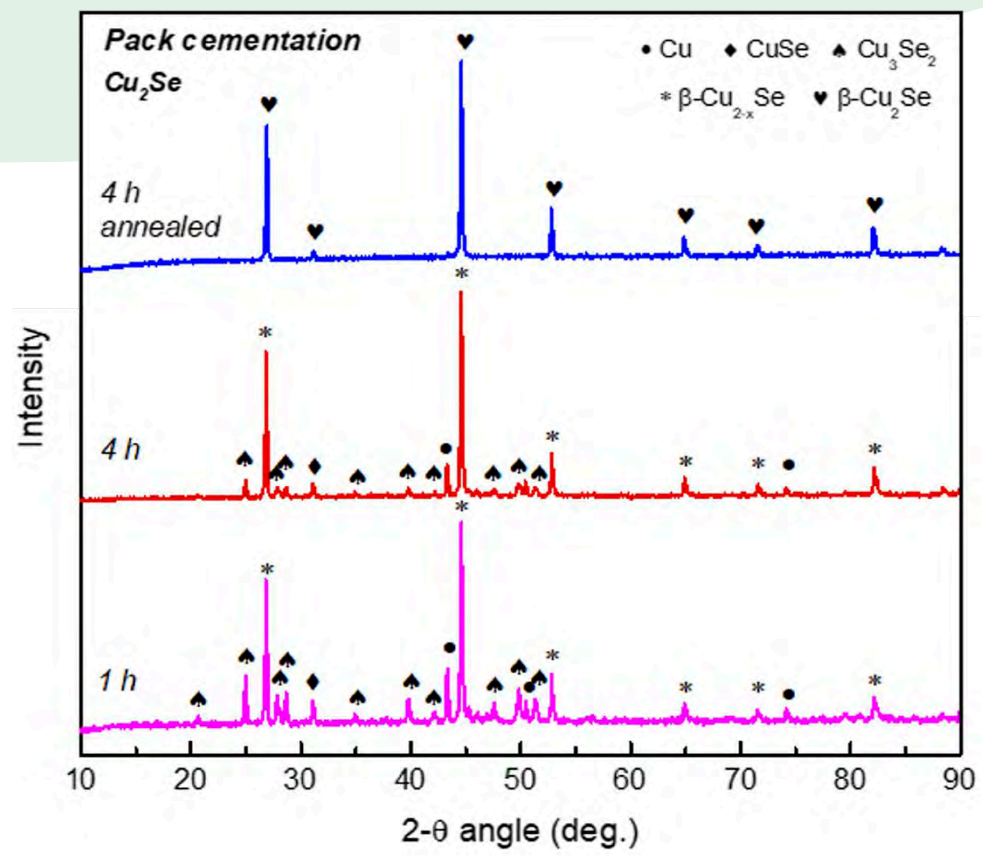
Head of the Laboratory Prof. George Vourlias
Members of the Lab/Research Team George Vourlias, Dimitrios Karfaridis, Lamprini Malletzidou, Ioanna K. Sfampa, Dimitrios Stathokostopoulos, Evangelia Tarani, Aikaterini Teknetzi



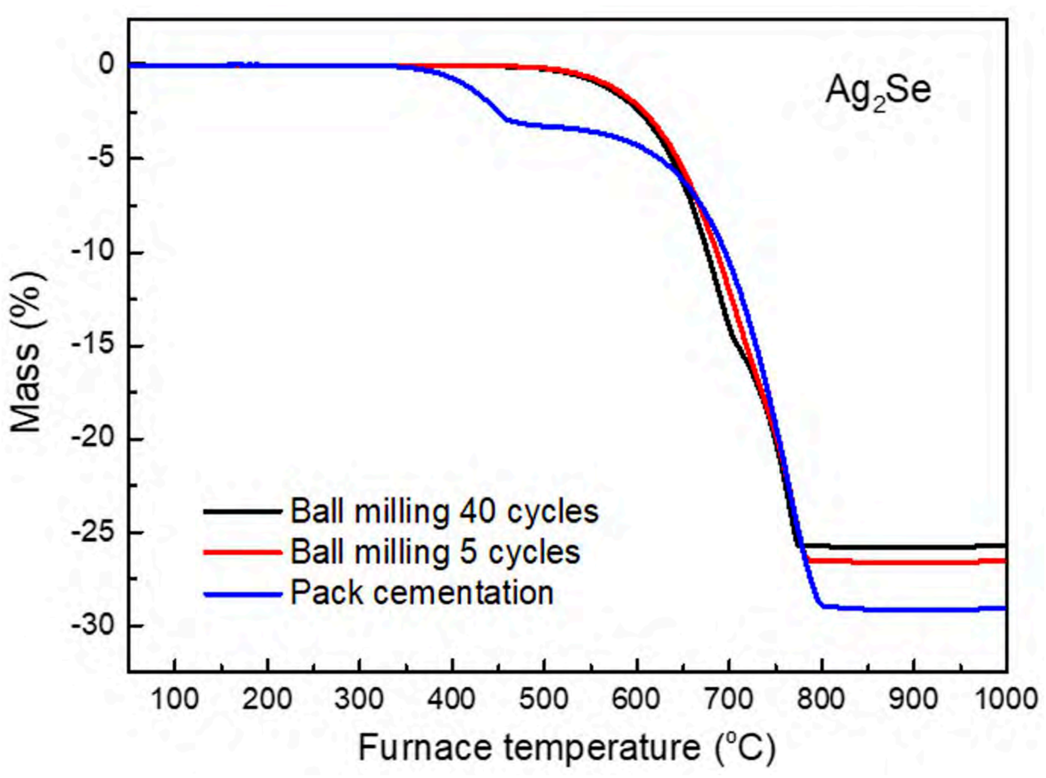
Experimental setup of the high energy ball milling and the pack cementation techniques.



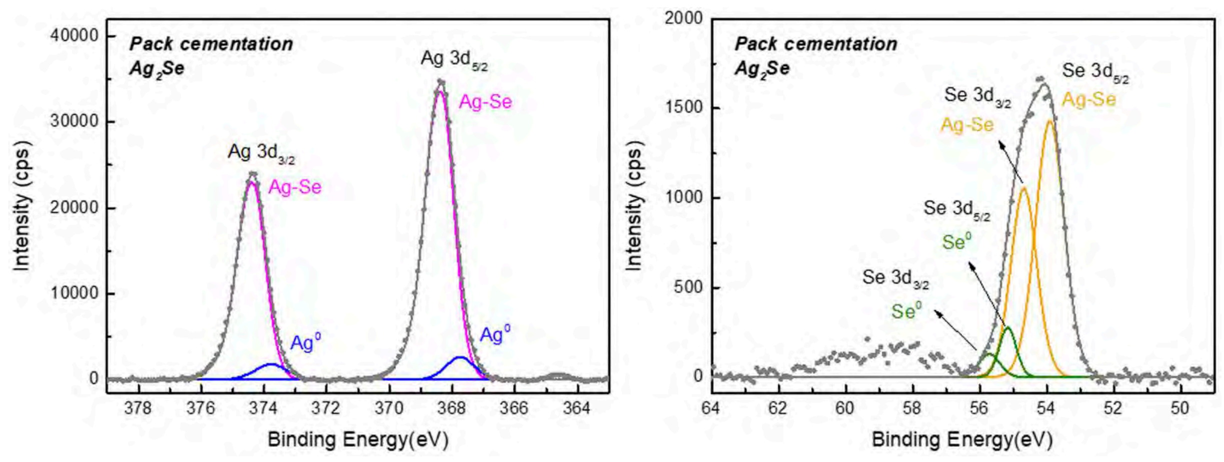
High-Resolution (HRTEM) TEM analysis of a selected region from powder Cu_2Se synthesized by high energy ball milling. All 4 grains present the FCC Cu_2Se structure (PDF#88-2044), whereby the measured d-spacing values are close to their bulk counterparts, suggesting a stoichiometric alloy formation. Grain 1 is projected along the [0 1 1] axis, while grain 3 near the same axis in-plane rotated relatively to 1. Grain 4 is viewed near the [1 1 2] axis and grain 2 is out-of-axis. (Courtesy of T. Kehagias, Electron Microscopy and Structural Characterization of Materials Laboratory, AUTH)



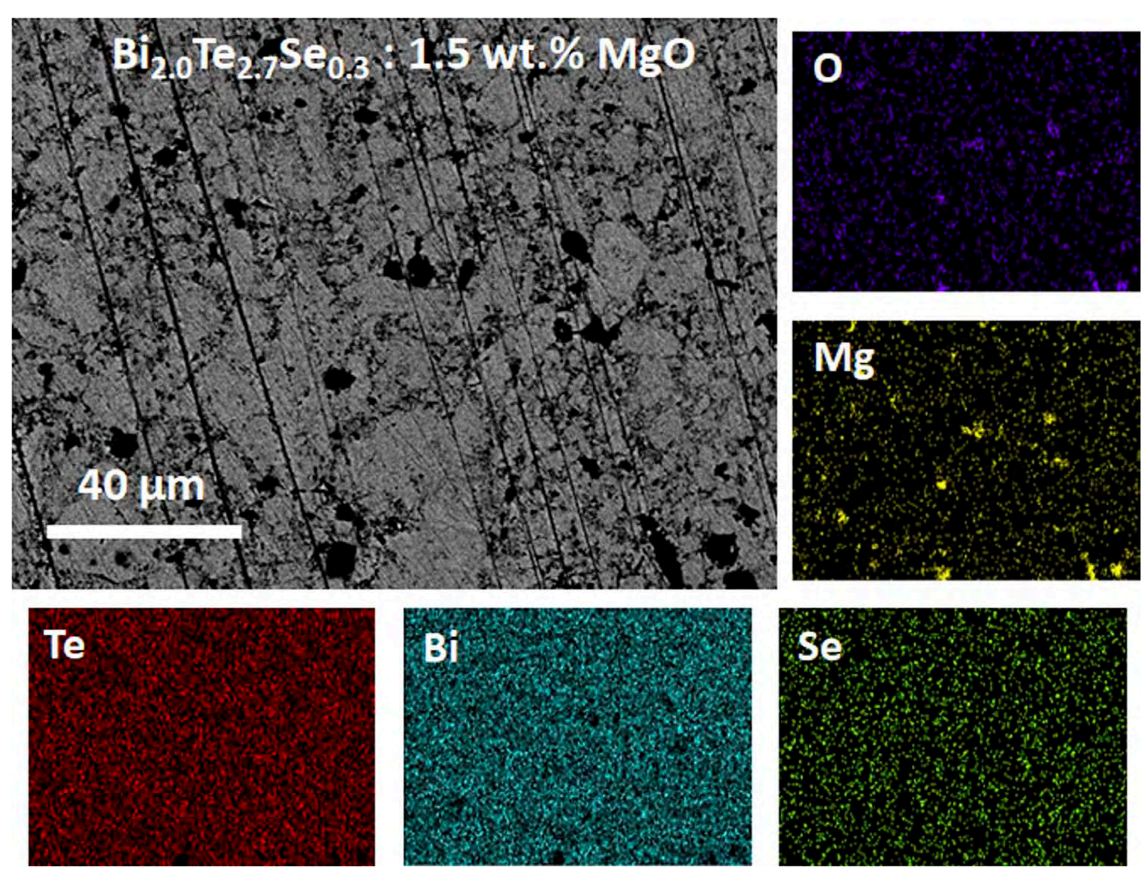
XRD patterns of Cu-Se powders synthesized by the pack cementation process at 240 °C in 1 h, 4 h and after the annealing of the latter at 350 °C for 0.5 h. The complete synthesis of thermoelectric cubic ß-Cu2Se is vachieved after annealing.



TGA curves of Ag_2Se powders prepared during 5 cycles or 40 cycles of high energy ball milling and by pack cementation. The samples were heated up to 1000 °C under air at a rate of 10 °C/min. Thermoelectric Ag_2Se phase was stable up to 400 °C, which is higher from the temperature region of maximum thermoelectric performance (40-50 °C).



High resolution XPS spectra of core levels Ag 3d and Se 3d of Ag_2Se powders synthesized by pack cementation in 3 h. The main contributions in both spectra are attributed to the Ag-Se bonds of Ag_2Se compound. A limited trace of elemental Ag and Se is detected (<10% of bonds).



Backscattered electron SEM micrograph and the corresponding EDS elemental maps acquired from the surface of hot pressed $Bi_{2.0}Te_{2.7}Se_{0.3}$: 1.5 wt.% MgO pellet.

REGION OF CENTRAL MACEDONIA
MANAGING AUTHORITY
O.P. Region of Central Macedonia
European Union
European Regional Development Fund
ΕΣΠΑ 2014-2020
Co-financed by Greece and the European Union
KLEEMANN

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RESEARCH
COMMITTEE

LABORATORY OF ADVANCED MATERIALS AND DEVICES (AMDE LAB)

amdelab.physics.auth.gr

The scope of the Laboratory of Advanced Materials and Devices, AUTh, is the development and research of high-tech activities, the collaboration with research centers and academic institutions, and the organization of lectures and scientific events.

The research objectives of AMDE Lab are:

1. Formation and synthesis of high-tech materials.
2. Structural and chemical state characterization using X-ray methods.
3. Optical Properties and Spectroscopy.
4. Thermal analysis.
5. Morphological characterization and elemental analysis of materials and surfaces.
6. Study and electric characterization of advanced semiconductor devices

Advanced Materials and Devices Laboratory (AMDE LAB)

AMDe lab
LABORATORY OF ADVANCED MATERIALS AND DEVICES

Head of the Laboratory Prof. George Vourlias
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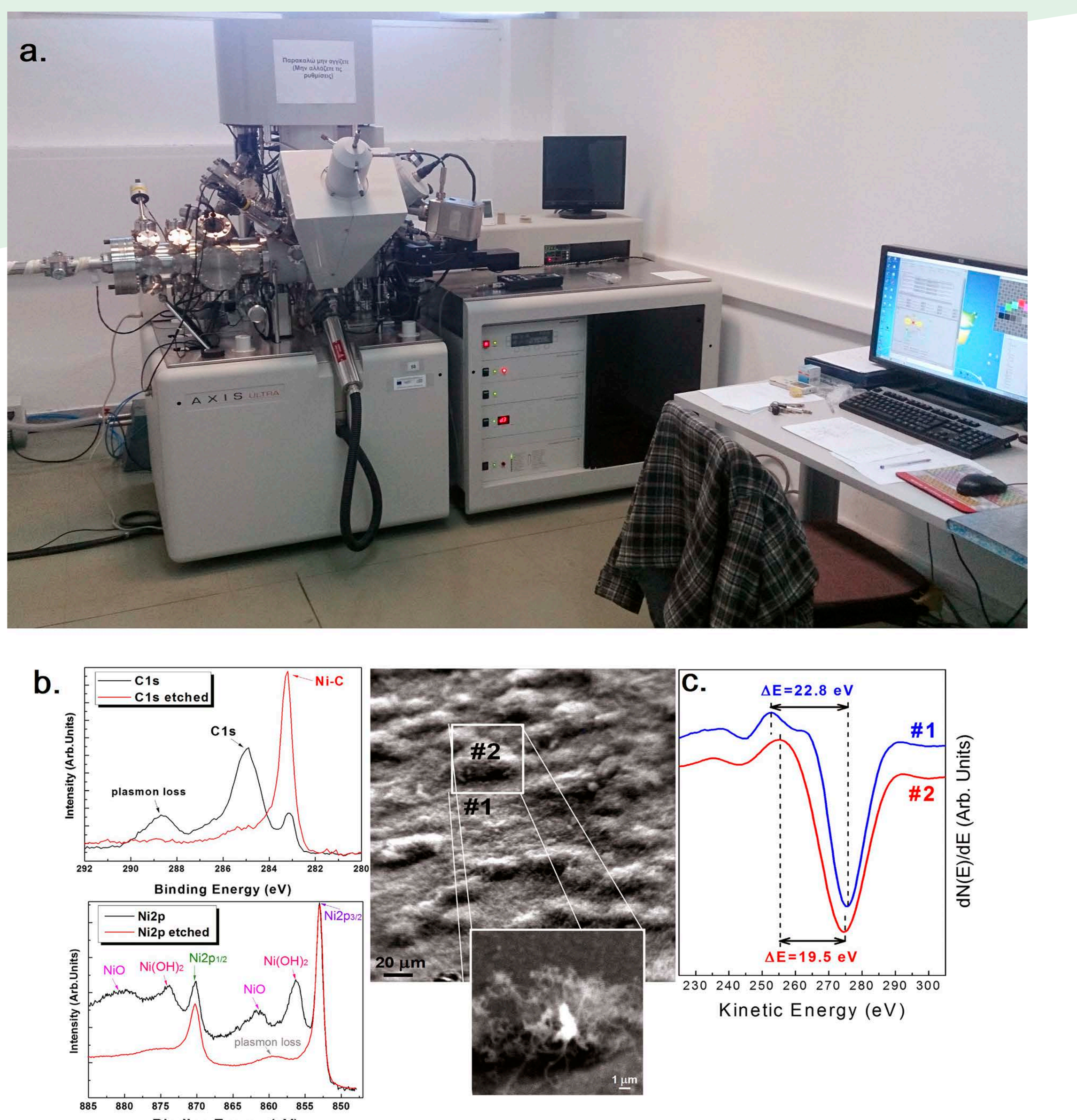
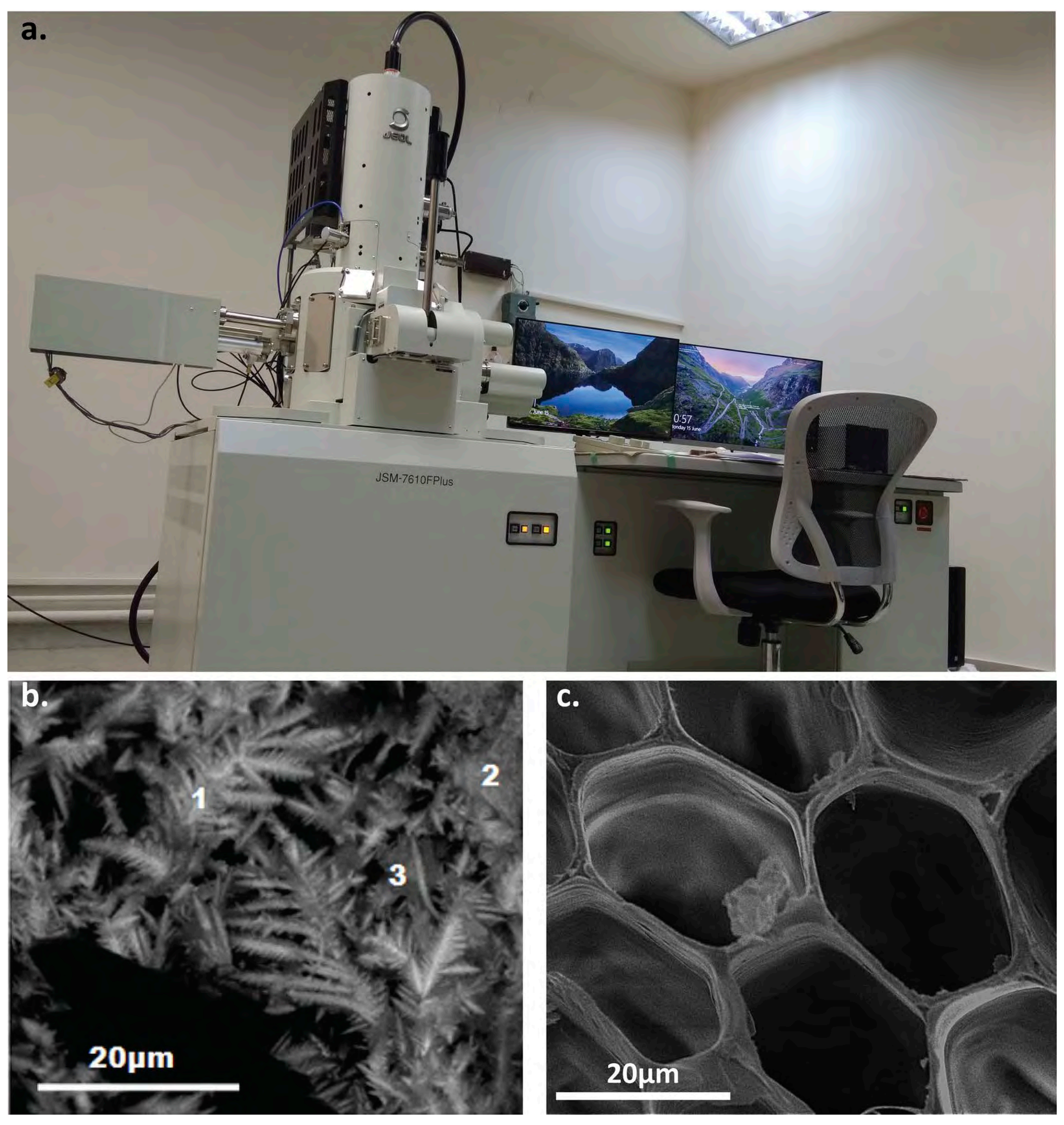
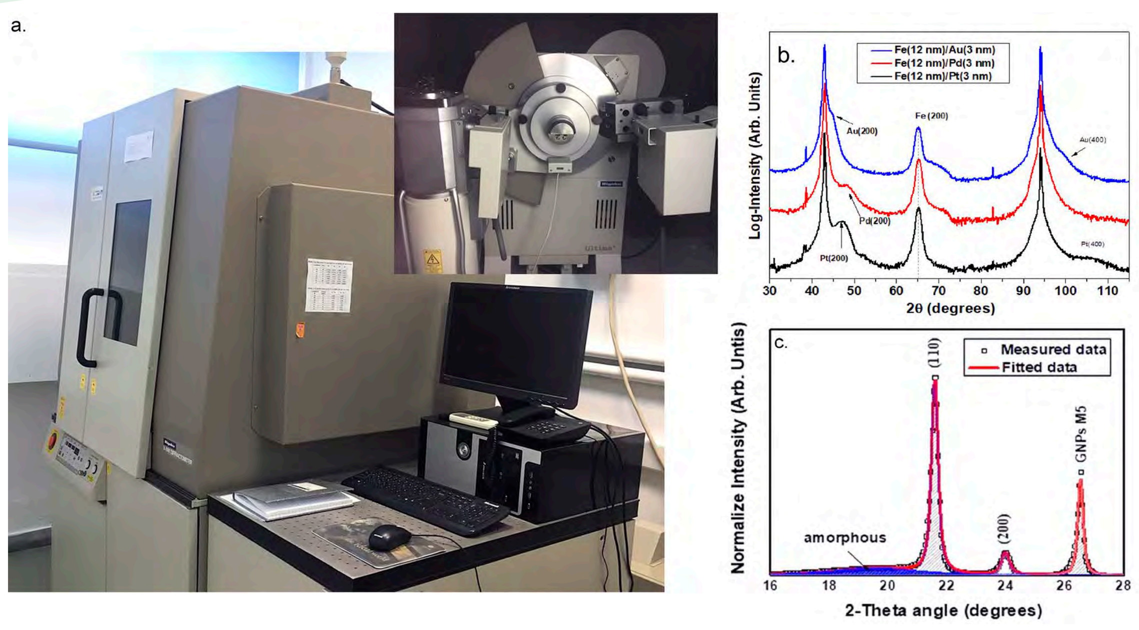


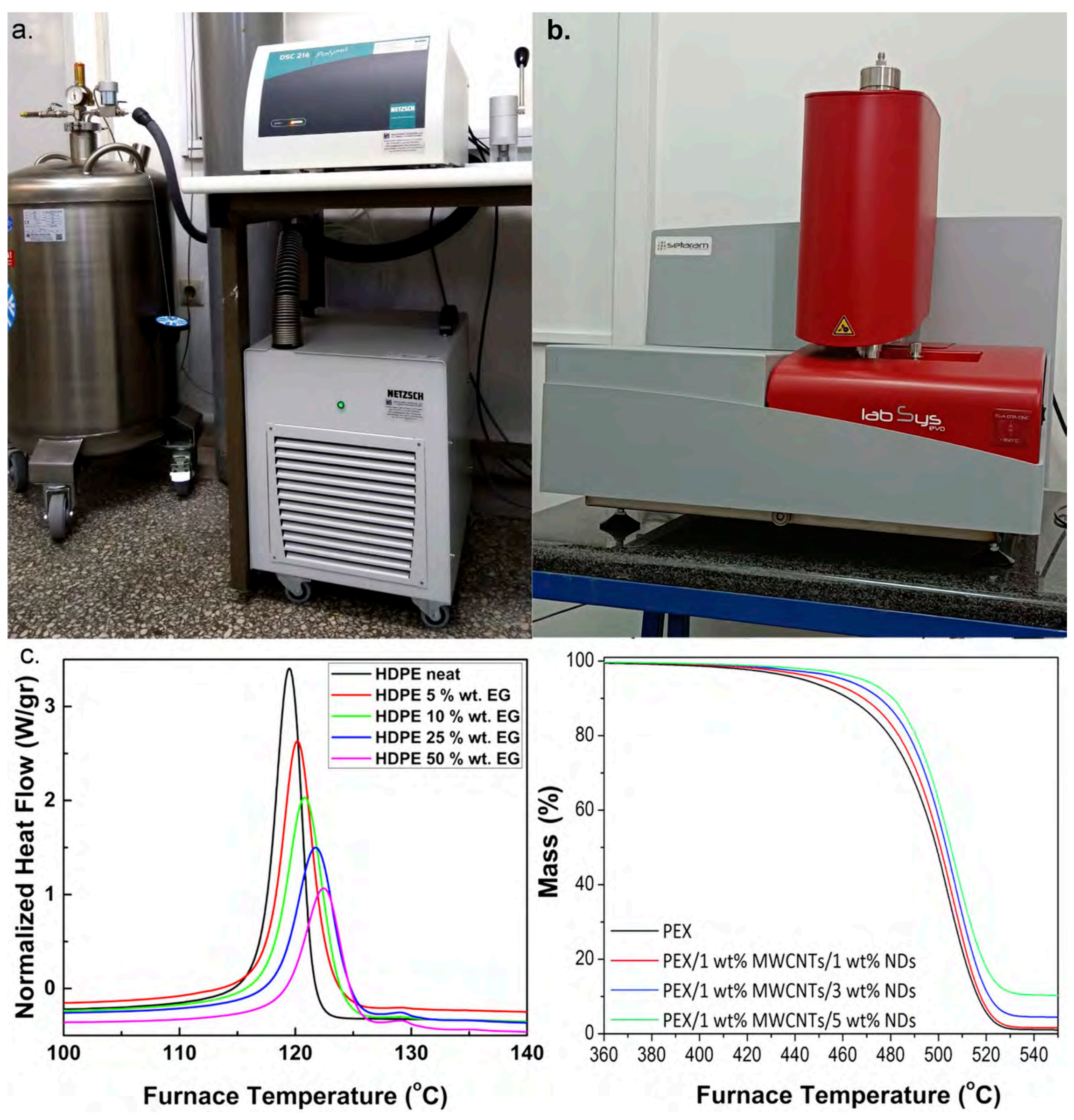
(a) Kratos Axis UltaDLD X-ray Photoelectron (XPS) and Scanning Auger Microscopy and Spectroscopy System (SAM/AES).(b) HR XPS measurements after the Ar Ion etching of the surface. (c) FEG AES measurements and quality tests of CNTs on two different spots.



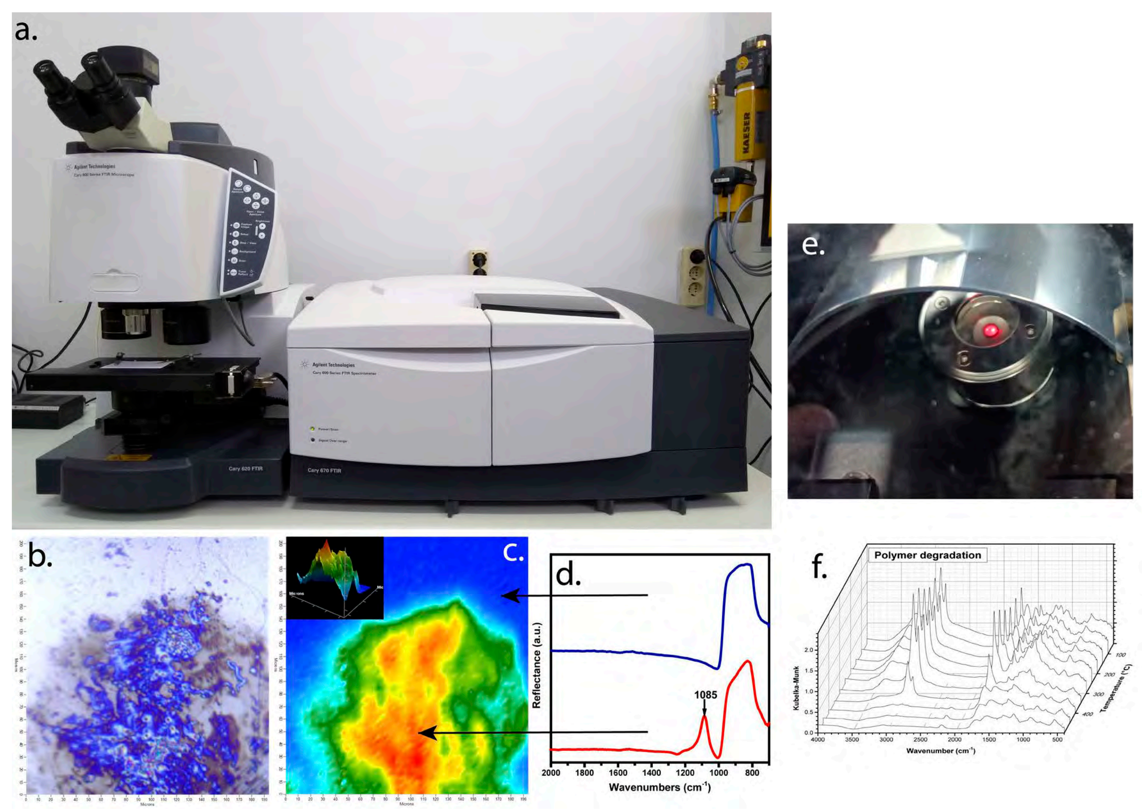
(a) A JEOL JSM-7610FPlus Schottky Field Emission Scanning Electron Microscope (SEM) coupled with Energy Dispersive X-Ray (EDX) microanalysis. High-resolution SEM images of the morphology of dendrite (b) and hemp stem (c) specimens.



Rigaku Ultima+ diffractometer operating at Bragg-Brentano and Grazing Incidence (GIXRD) geometry.
(b) HR diffracted peaks from ultra-thin films.
(c) Powder diffraction patterns of polymers with modeling.



(a) NETZSCH Differential Scanning Calorimeter.
(b) Thermogravimetric and Differential Thermal Analyses (TGA).
(c) Heat flow and mass degradation dependence on temperature.



(a) Agilent Cary 670 Fourier Transform Infrared (FTIR) spectrometer connected with a Cary 620 FTIR microscope. (b) Microscopic image of a SiC surface (c) FPA chemical images using FTIR spectra of the SiC surface and the SiO_2 spots (d). DRIFT environmental chamber (e) for the in-situ record of polymer degradation (f).

(a) Semiconductor characterization system Keithley 4200-SCS for electrical characterization of micro and nano-devices.
(b) Van der Pauw and Hall measurements set-up (10-330 K & ≤ 1.4 T).
(c) Characterization of carrier traps in semiconductor devices and materials, with a computer controlled Low-Frequency Noise (LFN) measurement system (1 Hz-100 kHz), with two SR760 FFT spectrum analyzers and two SR570 low-noise current pre-amplifiers

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ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

STUDY & ELECTRICAL CHARACTERIZATION OF ADVANCED SEMICONDUCTOR MATERIALS & DEVICES

amdelab.physics.auth.gr

Extensive experience in the design and/or characterization of semiconductor materials and devices, which includes pioneering work on electrical and noise characterization, compact modeling suitable for circuit simulators, TCAD simulations, variability and reliability of a wide variety of micro- and nano-electronic devices.

Our areas of interest include advanced CMOS devices on poly-Si (TFTs), Nanotransistor, multi-gate MOSFET, Organic transistors, Textile transistors, Quantum Dots Nanodevices on GaAs and Silicides on Si, Simulation of modern devices (multi-gate MOSFETs, FD-SOI UTBB MOSFETs, OTFTs and TOFETs).

AMDElab
LABORATORY OF ADVANCED MATERIALS AND DEVICES

Advanced Materials and Devices Laboratory (AMDE LAB)

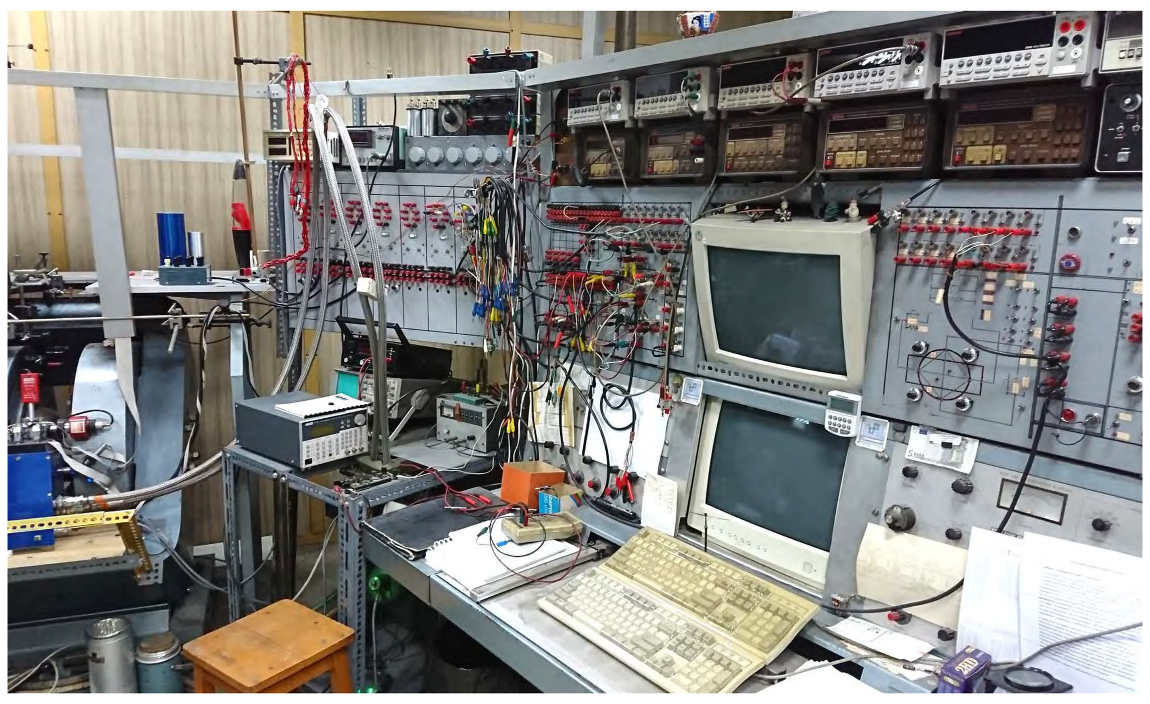
Head of the Laboratory Prof. George Vourlias
Members of the Lab/Research Team D. Tassis, K. Chrysafis, I. Samaras, N. Hastas, T. Kaimakamis

Computer-controlled system for I-V and C-V measurements, to fully characterize modern transistors or diodes. The system comprises voltage, current sources and arbitrary pulse generator, thus is capable for studying also Hot-Carrier effects (static & dynamic electrical stress).

Keithley 4200-SCS (semiconductor characterization system) including I-V measurements and C-V spectroscopy, for electrical characterization of micro and nano-devices (2-4 terminals).

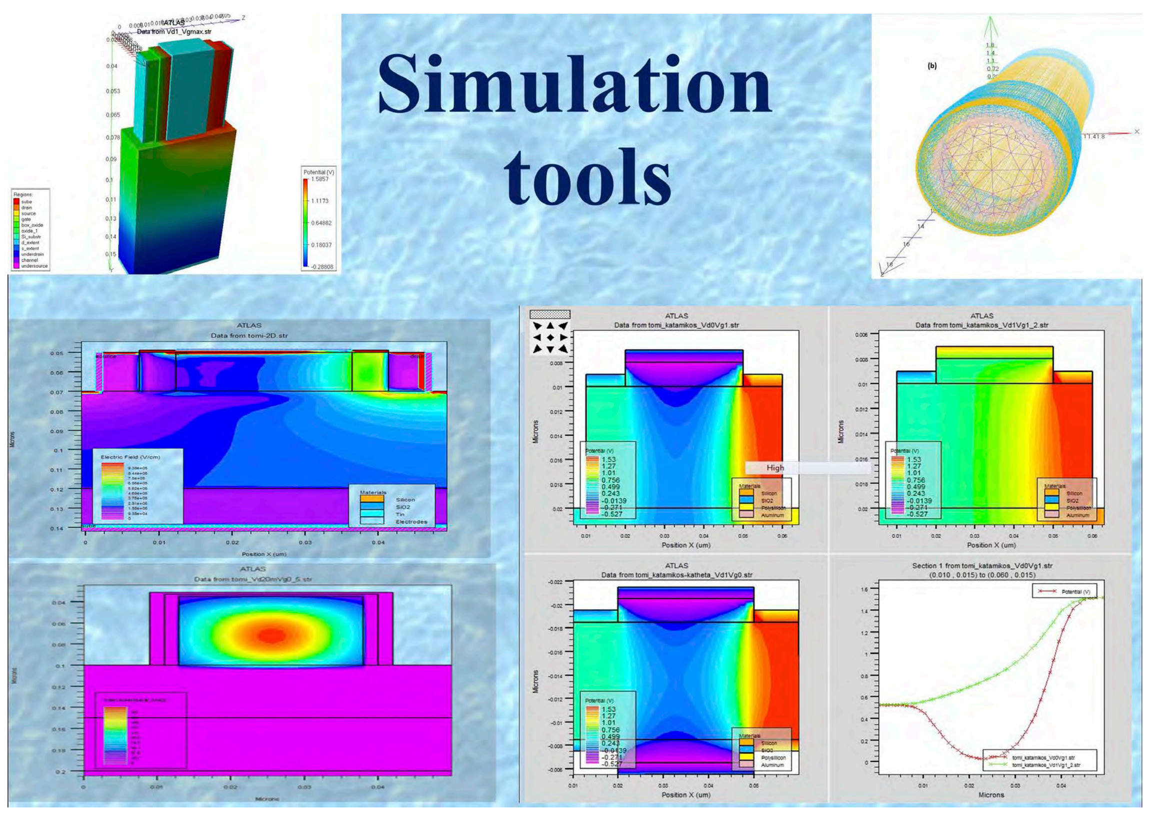
Computer controlled Low-Frequency Noise measurement system (1 Hz-100 kHz). It comprises two SR760 FFT spectrum analyzers and two SR570 low-noise current pre-amplifiers. All the critical stages are powered by NiMh batteries or are opto-isolated to reduce external noises and interference. The LFN technique allows for the characterization of carrier traps in semiconductor devices and materials.

Probe station SussMicrotec EP4 for electrical contacts in "on-chip" semiconductor devices and integrated circuits.



Van der Pauw and Hall measurements set-up for electrical characterization of materials in the temperature range of 10-330 K and magnetic fields up to 1.4 T.

A computer network comprising Linux and MS windows based computers is equipped with 2-D and 3-D device simulators (Silvaco TCAD suites), capable to simulate all modern electronic devices. We have successfully simulated devices comprising - but not limited to: multigate transistors (Double-gate, Triple-gate, Gate-all-around), JL FinFET, Nano-wire transistors, FDSOI, OECT, Organic TFTs, Textile Organic TFTs.



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ARISTOTLE UNIVERSITY OF THESSALONIKI

RESEARCH COMMITTEE

TECHNOLOGY TRANSFER OFFICE AUTH

rc.auth.gr/tto

Head of TTO Dr. Eri Toka
Members of TTO Eri Toka, Byron Chrysovergis, Eleftheria Papanikolaou, Andreas Retsinas, Paul Stavropoulos, Sotiria Chatzigiannaki, Georgia Tsiamanta

Valorization of research results according to academic principles and codes of conduct.

Contact point between the academic community and industry/market

Key actions

- Consulting and training on the commercialization of research results and technology transfer.
- Protection, management and promotion of the intellectual property of the academic community.
- Mechanisms of technology transfer (licenses, spin-offs, research in collaboration with industry partners).

1170 Active projects in collaboration with Industry

~20 Licenses for IP employment

77 Active Patents

14 Spin-off Companies

Spin-offs

Exothermia modeling efficiency · emisia MISSION FOR ENVIRONMENT · ATMOSPHERE UAV SERVICES · KIKLO · Captain · ATHLETOPIA · medoid AI · PLINT NANOTECHNOLOGY FOR EVERYONE · BIO2CHP ON-SITE ENERGY PRODUCTION · CYCLOPT · HEARart TECHNOLOGIES · HSpin · REALMINT AI · THETA BIOMARKERS · iASC DIGITAL VALUE CHAINS

Walk | AUTH Innovation Accelerator

walk AUTH INNOVATION ACCELERATOR

Aristotle University's Center for Entrepreneurship and Innovation is deploying the WALK Innovation Accelerator program, which is specifically designed to nurture early-stage, innovative business ideas developed by AUTH-affiliated teams.

Activities:

- Incubation/Acceleration program
- Entrepreneurship courses
- Physical and digital presence of the center
- Entrepreneurship Competitions
- Meet-ups

Ευρωπαϊκή Ένωση Ευρωπαϊκό Ταμείο Περιφερειακής Ανάπτυξης
ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ ΥΠΟΥΡΓΕΙΟ ΑΝΑΠΤΥΞΗΣ ΚΑΙ ΕΠΕΝΔΥΣΕΩΝ ΕΙΔΙΚΗ ΓΡΑΜΜΑΤΕΙΑ ΔΙΑΧΕΙΡΙΣΗΣ ΠΡΟΓΡΑΜΜΑΤΩΝ ΕΤΠΑ & ΤΣ ΕΥΔ ΠΡΟΓΡΑΜΜΑΤΟΣ «ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ»
ΕΠΑνΕΚ 2014-2020 ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΠΡΟΓΡΑΜΜΑ ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ ΚΑΙΝΟΤΟΜΙΑ
ΕΣΠΑ 2014-2020 ανάπτυξη - εργασία - αλληλεγγύη
Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης

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