

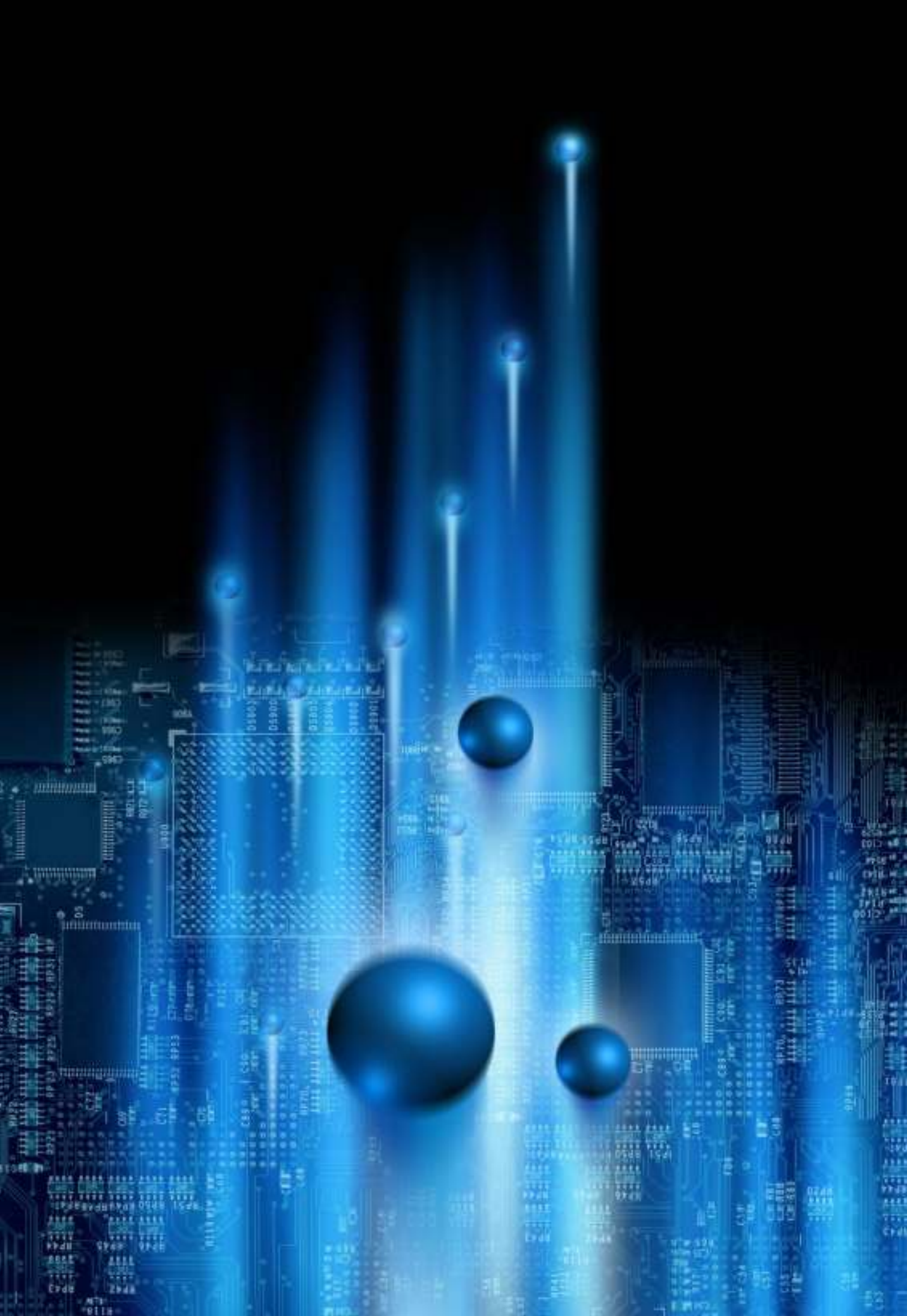
Hephaestus Laboratory

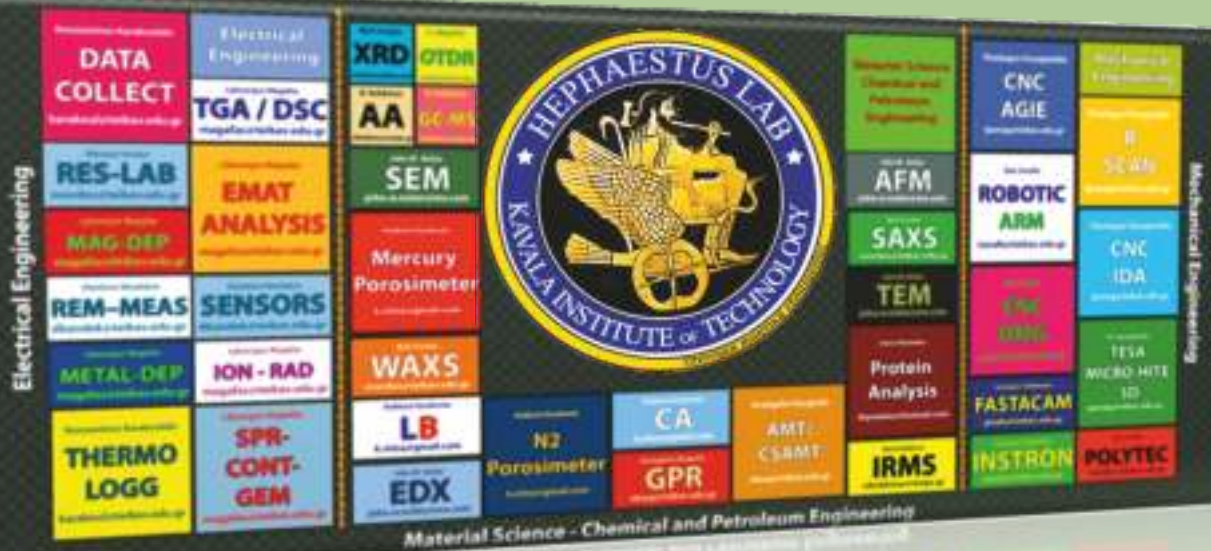
STRATEGIC PLAN



Eastern Macedonia & Thrace
Institute of Technology

Kavala 2015

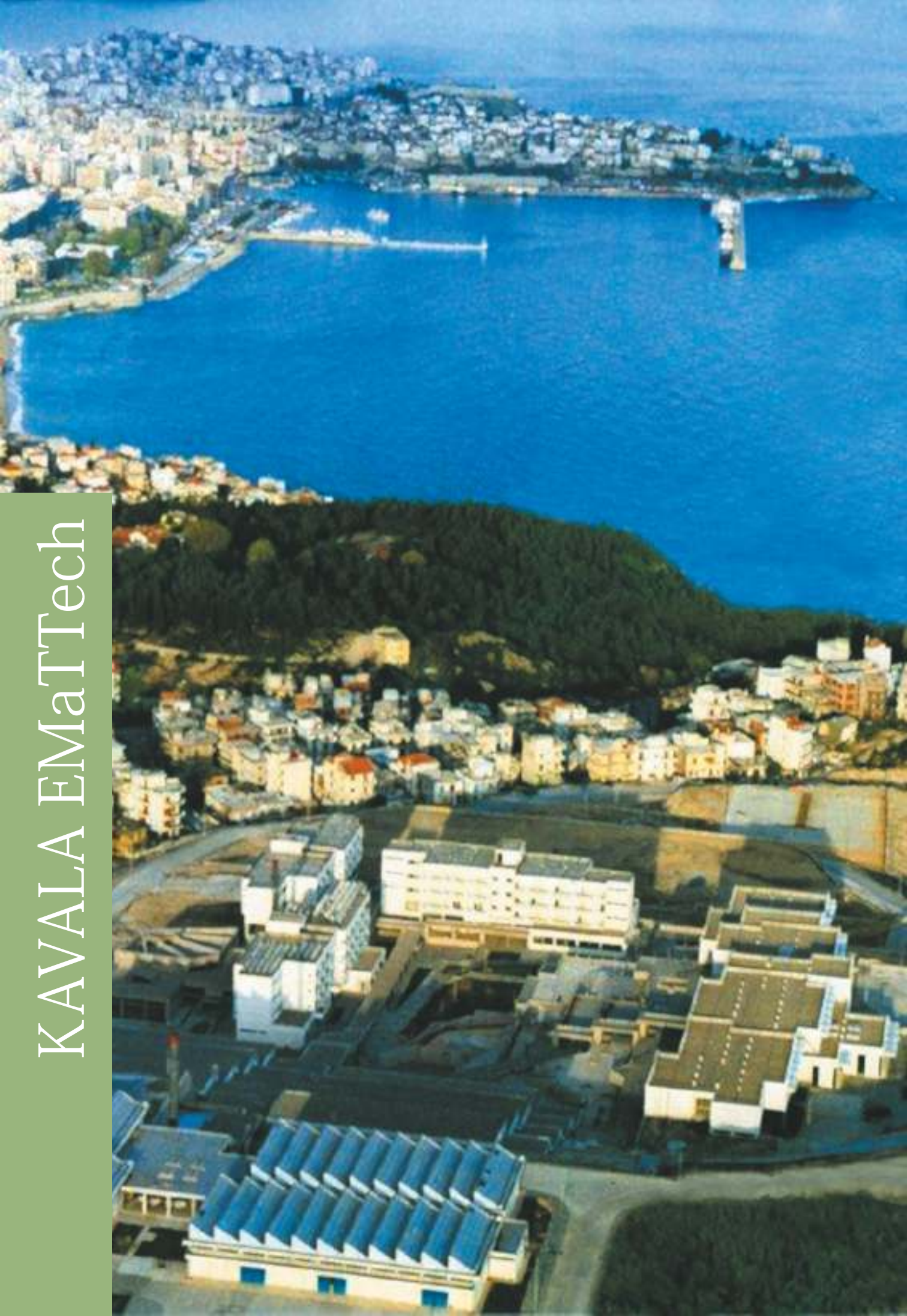




Contact Information
Hephaestus Laboratory
EMaTTech

A: St. Loukas, 65404 Kavala, Greece
T: 0030 2510 462247
E: amitrop@teikav.edu.gr, dbandek@teikav.edu.gr,
john.w.nolan@gmail.com, vordosn@yahoo.com, despinagkika@gmail.com
W: <http://hephaestus.teikav.edu.gr/>

KAVALA EMaTTech





Contents

Executive Summary.....	6
Mission.....	8
Vision	10
Laboratory Description.....	12
• GRID.....	16
• Services.....	18
• Infrastructure.....	20
• Human Resources	22
• Collaborations	24
• Projects.....	28
• Gap Analysis	30
• Strategic Action Points	32
• SWOT Analysis.....	36
Gender Matters.....	38
Students Matters.....	40
Economics	42
Management Structure	46

Contents



Executive

Executive summary



Hephaestus Lab (HL) was established in 2003, initially as an electromagnetic and optical advanced laboratory for X-ray Analysis and Electron Microscopy, and since 2007 as a multidisciplinary laboratory. HL utilises the Eastern Macedonia & Thrace Institute of Technology's advanced research infrastructure. The laboratory aspires to undertake research with the potential to tackle the most urgent challenges of the day, particularly those that affect lives in the region. The aim is to attain a leading position in multidisciplinary research and to share knowledge effectively in order to bring ground-breaking results to the forefront of research. It is our belief that research answers questions and helps us understand phenomena studied. Our goal is to share this knowledge and use it to lead to improvement and positive change.

An Expert Review Committee was established to plan for the short and long term future, which will require some restructuring of the lab's activities between now and 2020. In order to determine the course of action, the committee undertook a review of the current activities, performance and research output. The committee members are as follows:

Expert Review Committee:

- Prof. A. Ch. Mitropoulos
- Prof. E. Vansant
- Prof. D.V. Bandekas
- Prof. A. Christoforidis
- Prof. N. Katopodes
- Prof. G. Moridis

This plan identifies a set of action points that have been formulated to enable us to achieve the laboratory's long-term vision. Some of the major points include the need to restructure the laboratory's activities and increase the critical mass of staff members to include more experienced personnel, Ph.D. students and women scientists. To permit this, there needs to be an increase in funding; identified routes include further integration into regional, national and European research areas, expansion of existing services or development of new services, and better exploitation of services through a formal marketing strategy. An enhanced, product-orientated mindset will also assist in exploiting the laboratory's research output for financial purposes.



Mi
ssion

mission



The mission is to offer an appreciative and collaborative environment for inspiring research at the interface of academia and industry, to foster innovation and give back to the region. We share responsibility for research, celebrate our success together and learn from our mistakes. We encourage risk-taking, make things possible and meet and collaborate with international scientists. In doing so, and in maintaining the highest standard of research, we mentor and coach staff and students in their professional development.



Vi sion

vision



Short

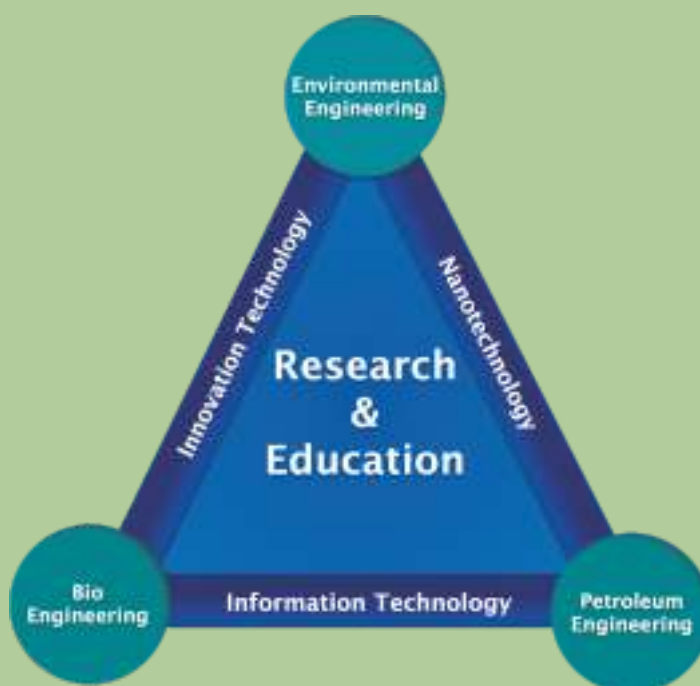
Short-term

In the short-term, the vision is to undertake high-level research in Material Science, particularly the synthesis of porous materials with application in Sorption, Membranes and Catalysis. We will improve the knowledge-base in the laboratory by recruiting new personnel, expand our networking activities and seek out funding opportunities both as leader and also as a partner. We will develop new and improved Measurement Services.

Long

Long-term

The long-term vision, as illustrated below, is to restructure the activities of the laboratory to become a Centre of Excellence in Research and Innovation in the areas of Environmental Engineering with topics such as water engineering, CO₂ sequestration and separation processes, Petroleum Engineering which includes storage, renewables and other forms of energy and Bio-engineering which includes research on food, bones and proteomics. This will be done by integrating Nanotechnology (including nanoelectronics, and material science), Information Technology (ICT, use of Grid and cloud services, automation and robotics) and Innovation Technology (Business, Smart Specialisation, IPR and ethics) into those thematic areas.



Lab oratory Description





Hephaestus Laboratory (HL) is a center of excellence in Eastern Macedonia & Thrace Institute of Technology with a strong division for the application of nanotechnology in a number of fields. It is a collaborative effort of both institute's researchers and our international partners to provide advanced materials characterization, to generate new materials and ideas, and provide cutting-edge services with a strong gender policy. During the 2009-2012 period, the institute invested more than €10,000,000 to acquire new research infrastructure. This was done through the National Strategic Reference Framework with support of the region. The laboratory is funded through research in national programmes, participation in education and training programmes and provision of services. Research is focused in the following areas:

Petroleum and Chemical Engineering

- Core Analysis
- Petroleum Forensic Fingerprint (PFF)
- Green Chemistry
- Development of Hybrid Technologies

Material Science

- Nanotechnology
- Adsorption
- Membranes
- Catalysis

Electrical Engineering

- Smart sensor system for agriculture
- Fault detection and prognosis in industry
- Power system Modelling
- AI Control Systems
- Microelectronics
- Non-destructive control

Mechanical Engineering

- Renewable Energy Sources
- Robotics
- Metrology
- Development of Smart Materials
- Design and Development of New Devices

Information Technology

- GRID development and use
- Computer Forensics
- Smart app development
- Image processing
- e-learning methodologies





Nanotechnology is considered a crosscutting activity being applied to the development of materials, and utilization of in-situ and ex-situ characterization techniques. In situ techniques are important for understanding the changes that occur in a material during a process. The ex-situ characterization techniques are important to obtain information about the chemical composition, structure, porosity, morphology, diffusion aspects, localization and nature of active sites, sorption selectivity/affinity, stability, catalytic activity etc. Techniques such as BET, SEM, TEM, XRD, SAXS, ICP-AES, HRTEM, TGA/DSC, TPD, NMR, UV/VIS, FTIR, FT-Raman, ESR etc., are be used. The targeted nanomaterials are:

- Microporous zeolite materials (MFI, LTA, FAU, etc.)
- Mesoporous siliceous and non-siliceous materials (MCM, SBA, MSU, metal oxides, etc.)
- Combined micro/mesoporous siliceous and non-siliceous materials.
- Layered and pillared layered materials.
- Activated carbons, carbon molecular sieves and carbon nanotubes.
- Metal-Organic Frameworks (MOF, ZIF, PMO)
- Silicagel, alumina and titania.

Materials are developed for the following applications:

a. Adsorption

1. Development of high-capacity CO₂ and CO selective adsorbents.
2. Removal of VOC's, using adsorbents to concentrate the organics and then using a catalytic process to destroy them.
3. New adsorbents for the storage of important gases such as natural gas and hydrogen with the aim of reducing the air pollution by combustion engines.
4. New absorbents for energy storage, ranging from batteries to super capacitors.
5. Selective adsorbents designed for fast removal of some specific compounds.
6. Removal of gaseous pollution compounds.
7. Study of the domain theory on nanoporous materials.

b. Membranes

Intelligent membrane engineering helps realize the process intensification strategy. Integrated membrane separations and new membrane operations, such as catalytic membrane reactors and membrane contactors, are playing a crucial role in innovation in the area. Membrane reactor technology is showing promise to deliver intensified processes that are more compact, less capital-intensive, giving higher conversions and selectivities in equilibrium- and kinetically controlled reactions, respectively. Membrane reactors can save energy and costs of feed/product separation. Innovative research areas for membranes include:

1. Carbon dioxide separation
2. Hydrogen separation
3. Dewatering of (bio)ethanol
4. (Bio)ethanol removal from fermentation batches
5. Catalytic membrane reactors
6. Novel porous membranes (hybrid membranes)


c. Catalysis

Catalysis is an indispensable tool, when chemical substances are to be converted into valuable or environmentally more benign products. Catalysis enables one to make chemical processes more selective for the desired products, more energy-efficient and/or environmentally friendlier. Innovative research items are:



1. Stabilization of small metal clusters as guests inside nanoporous solids as hosts (gold nanoclusters for oxidation of carbon monoxide, production of propylene oxide by direct epoxidation of propene with in-situ generated hydrogen peroxide)
2. Oxyfunctionalisation of alkanes with oxygen or air
3. Catalytic combustion of VOC's in air
4. Isomerization of heptane isomers
5. Dehydrogenation of light alkanes
6. Direct alkylation of aromatics with alkanes
7. Process intensification
8. Photocatalytic reactions




G GRID



GRID Computing Center
Eastern Macedonia and Thrace
Institute of Technology




hellasgrid site






WLCG Tier-2 GRID site
Worldwide LHC Computing Grid

- 1152 Cores in 96 Worker nodes (HP SL230-G8)
- 432 TB raw storage capacity in HP 3PAR StoreServ Storage
- 10 Management nodes (HP DL380-G8)
- 10 Gbps Network connection



Co-financed by Greece and European Union





GRID is a computer architecture for transparently sharing computing and storage resources in order to create a simple, virtual, unified system from a large number of different systems connected through an advanced network.

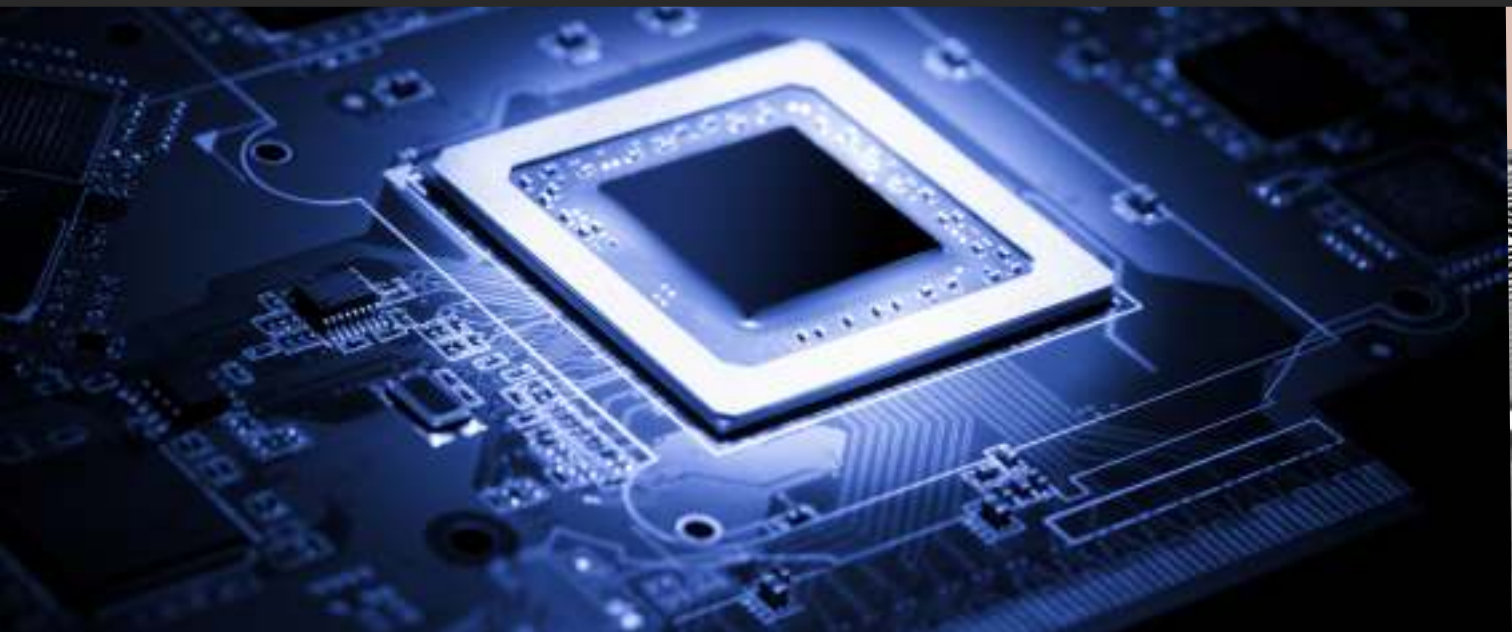
The GRID is a WLCG Tier Two site administrated by the Department of Electrical Engineering under the supervision of Prof. D.V. Bandekas. Since 2013, the institute has a collaboration, in a form of a Memorandum of Understanding, with CERN for the deployment and exploitation of the LHC Computing GRID. The GRID system, being developed in collaboration with CERN, will be linked with the European Grid Infrastructure through HellasGRID.

The laboratory's software developers are converting relevant code to utilise the processing power of GRID. The laboratory will then be able to undertake more efficient advanced modelling and simulations of material-related processes, such as Small Angle X-ray Scattering simulations and adsorption in porous media, in order to quickly validate experimental data and to gain a better understanding of interactions. In the long-term, these activities will be upscaled and expanded to provide support to laboratory personnel, and also services for industry. The laboratory is seeking funding for the development of advanced algorithms to help in the analysis of our Big Data, which is being generated on a daily basis by the characterisation techniques and simulations.



Se.
rvi
ces

services



The laboratory offers a number of services, both to industry and also to universities and research centres. Visitors with the necessary skills can personally utilise the institute's infrastructure. Industry can avail of the following laboratory services:

- Core Analysis (Oil Industry, Geology)
- Chemical Analysis (Oil Industry, Wine Industry, etc.)
- Surface Analysis (Marble Industry, Archaeology, etc.)
- Structural Analysis
(Oil Industry, Marble Industry, Archaeology, etc.)
- Modelling & Simulation
(Oil Industry, Research & Development)
- Quality Testing
(Oil Industry, Wine Industry, Water Industry, Agriculture)
- Non destructive measurements (Archaeology)
- Electronic measurements (Automotive Industry)
- Electric fault prognosis & diagnosis
(Automotive Industry)



Infra stru cture

Infrastructure



Petroleum Engineering

- Small/Wide Angle X-Ray Scattering Apparatus
- X-Ray Diffraction
- Atomic Force Microscope
- Scanning Electron Microscope with X-ray spectroscopy
- Atomic Absorption Spectroscopy
- Contact Angle Analyzer
- Mercury Porosimeter
- Nitrogen Porosimeter
- Ultra Microtome Gas Chromatography Combustion Isotope Ratio Mass Spectrometry
- Gas Chromatography–Mass Spectrometry
- Langmuir-Blodgett Film Deposition
- Proteome analysis
- Ground Penetration Radar

Mechanical Engineering

- CNC DMG CTX 510 Eco
- CNC AGIE Charmilles Actspark FW-1P
- Electrical Energy Analyzer VIP SYSTEM 3/ MK3
- Exhaust Gas Analyzer testo 300M-I/ XL-I
- HUKSEFLUXTM Thermal Sensors
- Infrared Camera Flir E300
- INSTRON 8801 Testing Device
- FOX200/300 measuring the thermal conductivity
- CNC I DA XL 1200 Laser Cutter Pantograph with extra plasma torch
- OFFICE Mill OM-2A
- TESA MICRO-HITE 3D Optical and Contact Coordinate Measuring Machine
- PHOTRON Fastacam SA3
- POLYTEC RSV-150 Remote Sensing Vibrometer
- KAWASAKI RS030 Robotic Arm
- ROMER Omega R-Scan & 3D Reshaper

Electrical Engineering

- Transmission Electron Microscope
- Data Collect
- Device simulations
- Electric e-mat analysis
- Non ion Rad
- Optical fiber splicer (SUMITOMO)
- Optical Time Domain Reflectometers
- Optoelectronic Device Characterization Laboratory
- Portable thermographic system
- Remote Measurement System
- Magnetron Sputter Deposition
- Metal Evaporation
- GRID computer system



Human Resources man





Excellent research in the institute is supported by European researchers having over 2,000 publications and 100 patents. The Greek National Centre for Scientific Research 'Demokritos' has also opened a branch in Kavala at the Hephaestus Laboratory, sharing researchers and also providing a flow of Ph.D. students to the laboratory to ensure a critical mass of laboratory members. Research opportunities are available for interested undergraduate/graduate students, and postdoctoral fellows. Each student is offered maximum opportunity to learn and to acquire professional competence. All members of the faculty and staff are encouraged to achieve professional fulfilment.

Breakdown of personnel

Category	Total
Management	4
Faculty members	14
Researchers	24
Post doctoral researchers	5
Technicians	3

The HL implements staff incentive schemes, including special payments to personnel based on performance. In order to attract and retain the best employees, we aim to create an environment where employees feel their collaborations are appreciated.



Collaborations

Collaborations





As part of its strategy to improve standards at all levels, the laboratory has pursued international collaborations with some of the finest academics and universities from around the globe. These work with us on a daily basis in projects, and educational programmes involving the laboratory.

The distinguished researchers are:

- Prof E. Vansant, University of Antwerp
- Prof. N. Katopodes, University of Michigan
- Prof. G. Moridis, Lawrence Berkley
- Prof. L. Feldman, Reutgers University
- Prof. S. Korban, University of Illinois
- Prof. E. Gazis, National Technical University of Athens

Selected Universities

- University of Antwerp, Belgium
- University of Michigan, US
- University of Massachusetts, US
- University of Alicante, Spain
- Lomonosov Moscow State University, Russia
- Texas A&M University, US
- University of Oxford, UK
- University of Leipzig, Germany
- Universität Basel, Switzerland
- University of Bergen, Norway
- CNRS Toulouse, France
- University of Hannover, Germany
- University of Gent, Belgium
- University of Valencia, Spain

Selected Research Centres

- Berkeley Laboratory, US
- Centre National de la Recherche Scientifique (CNRS), France
- CERN, Switzerland
- National Centre for Scientific Research 'Demokritos', Greece
- Max Planck Institute, Germany
- Fraunhofen Institute of Technology, Germany
- Institute for Energy Technology, Norway
- European Research Institute of Catalysis, Belgium

Industries

- Hellenic Petroleum Group, Greece
- Mineway, Germany
- Virtual Angle, Holland
- Drop Technology Limited, Ireland
- Energean Oil & Gas S.A., Greece
- Kavala Oil S.A., Greece
- Prisma S.A., Greece
- Lamda Electronics, Greece



Region

Over the years the laboratory has built close ties with regional companies, including SMEs. This level of collaboration varies from sending the institute's students to these companies for work experience, to closer ties for development of regional policies. Additionally, the institute has worked closely with regional authorities, to develop the region's smart specialization strategy and to gain an understanding of how it can appropriately address the needs of society. The regional governor has also greatly assisted the institute during the planning and provision phases of the institute's recent infrastructure upgrade.

Industry

The laboratory has also developed strong partnerships with both industry, such as Kavala Oil, Energean Oil & Gas and Prisma Electronics. We view ourselves as partners with the industry aiming to move on together understanding and resolving society's needs. We will ensure services satisfy customers' requirements through professional quality services. We will use industry professionals in collaboration with our research to reach the desired result for this purpose.

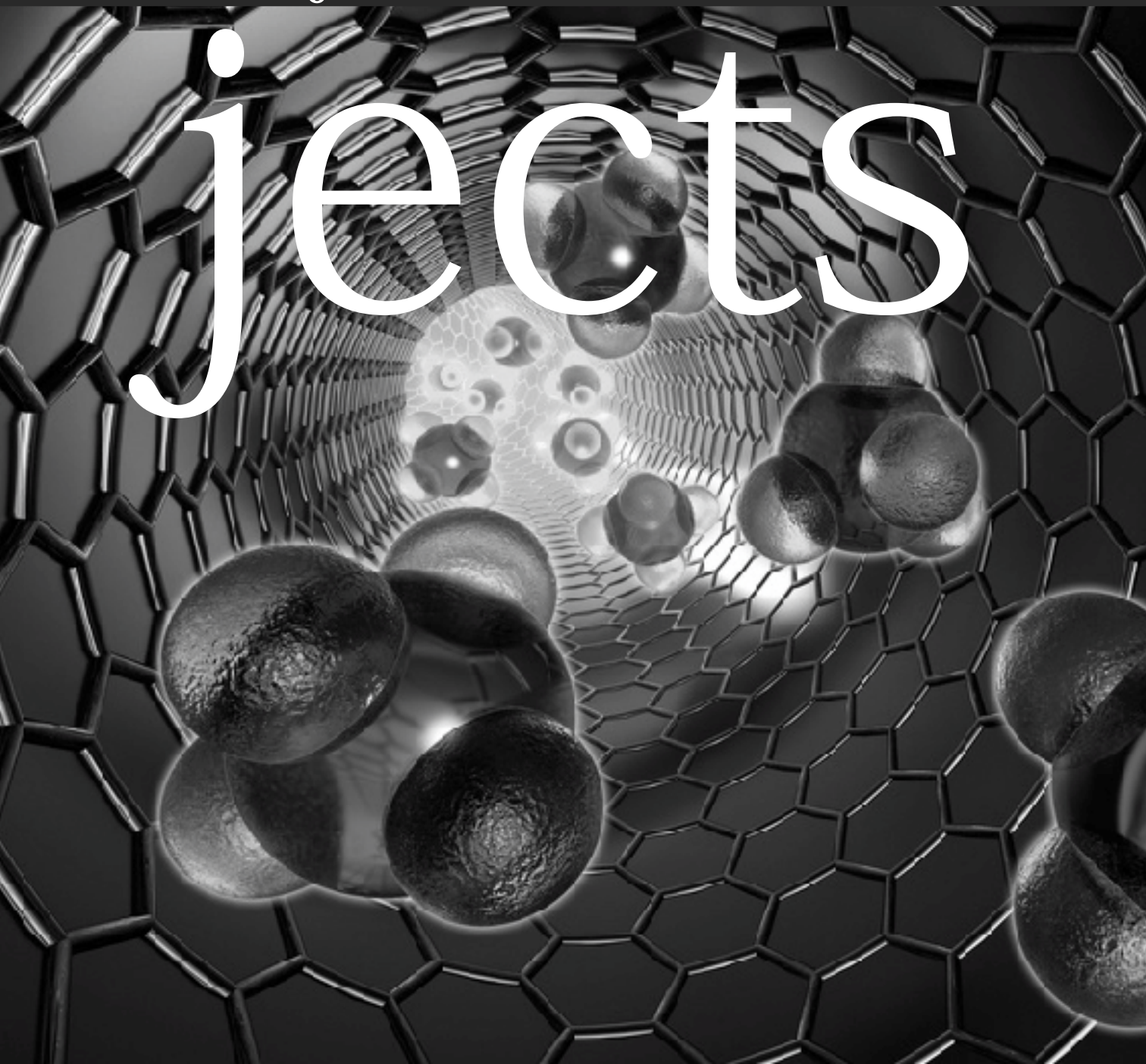




Pro

Projects

jects

The background of the lower half of the image is a complex, abstract composition. It features a dark, hexagonal grid pattern that recedes into the distance, creating a sense of depth. Scattered throughout this grid are numerous glowing, spherical objects of varying sizes. These spheres have a textured, metallic appearance and emit a bright, white light from their centers, which fades into a dark, charcoal grey outer shell. The overall effect is one of a futuristic or scientific environment, possibly representing a microscopic view of a material or a digital simulation.



A breakdown of the major projects that have funded our research activities for the past number of years is presented in the following:

1

Nanocapillary Thales Project

Principal Investigator: A.Ch. Mitropoulos, Eastern Macedonia & Thrace Institute of Technology. Jan 2012 – Dec 2015. Funded by the Greek General Secretariat for Research & Technology, Budget: €600,000.

2

NANOSKAI Archimedes project

Principal Investigator: A.Ch. Mitropoulos, Eastern Macedonia & Thrace Institute of Technology.

Jan 2012 – Dec 2015. Funded by the Greek General Secretariat for Research & Technology Budget: €100,000

3

M.Sc. programmes: €70,000 per year

4

National Strategic Reference

Framework (NSRF) grant for upgrading of the institute's infrastructure: €10 million





Gap

Gap Analysis

analysis

“

The following gap analysis was undertaken to identify and enable the correction of gaps between the desired levels of what we think are the correct trends to achieve our vision, and the real situation in the laboratory. The difference between these two items is the so-called gap. The analysis contains specific action steps needed to close this gap. As indicated by the dates below, we expect to close these gaps before 2020.

Trends	Triggers	Potential gap	Action	Date
Strategic target	Current Situation	Track the gap Future Situation		
Understand the needs of and strengthen the collaboration with the industry	There are contacts but these are not explored fully	Dedicated leadership pursuing links with industry	Commitments from industry and the laboratory	2015
Invest in areas of research strength	Lack of substantial research funding	Collaborative research, proposal scouting, search for other revenues	Foster key international partnerships, participate in the European Research Area, seek new sources of revenue	2020
Increase the number of members research active lab members.	Lack of participation in good publications	To become an Research-active lab	Recognize research achievements, promote research activities	2020
Develop a research-driven education for students	Evaluate current programs educational	Outline opportunities, create a researcher mentality research	Develop an advisory board	2015
Roles and responsibilities of researchers	Absence of clear duties	Redefine administrative support in research	Planned program	2014
Availability of mentors to support and guide stakeholders, improve research output	Lack of managers/mentors	Attract talented people	Promotion, coordination, career days to raise awareness	2016
Ranking	Lack of dissemination	Change of general attitude, increase awareness	Promotion of the institute, interaction with other	2020
Fund raising	Government policies	Increase awareness	Seek out new paths towards revenue	2014 - 2020
Engage experts	Establish a council	Inspire the external members	Foster key international partnerships	2016
Celebrate achievements	Absence of rewarding success	Develop Awards	Create a program that rewards excellence, achievements, collaborations, mentorships	2015
Increase the number of women involved	Hesitancy of women to prove their worth	Use of Women in Science Association	Recognition of their work	2014





Strategy Action Points

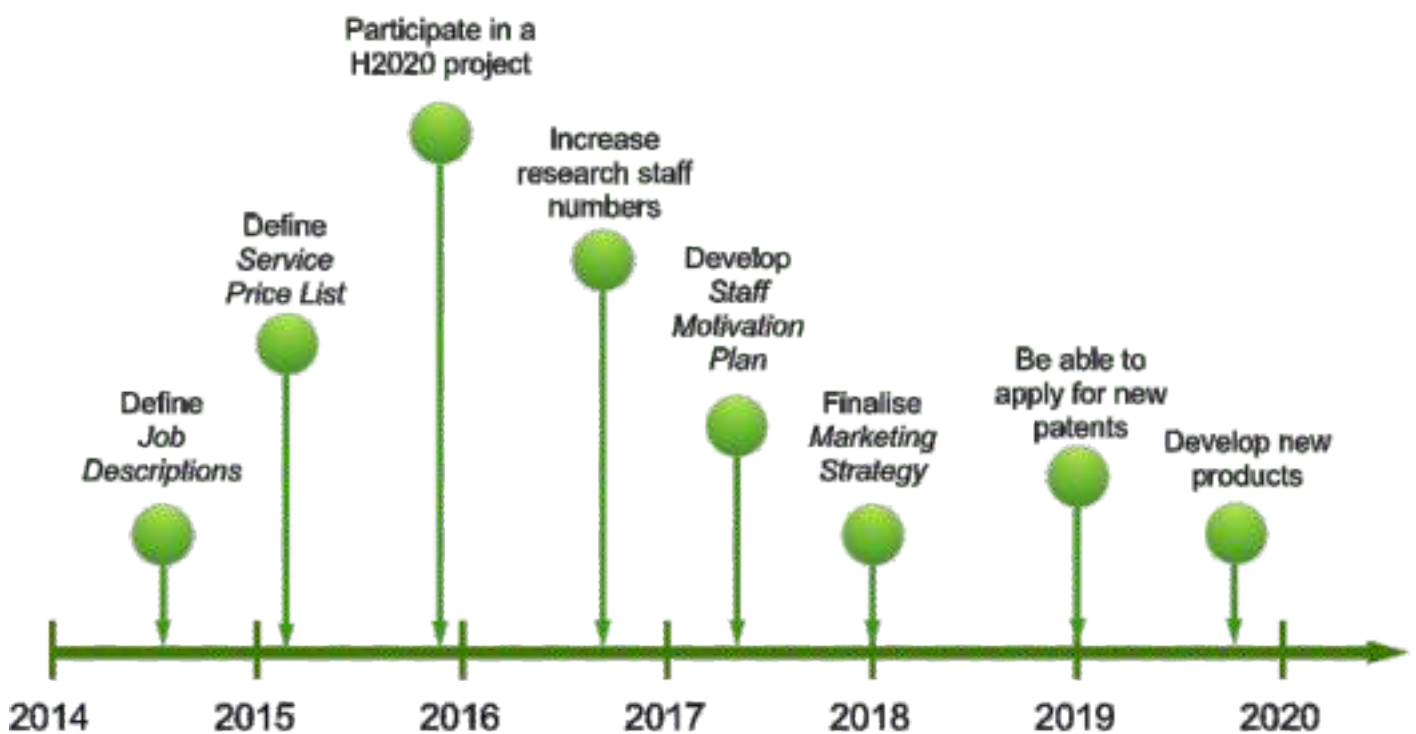
Strategy Action Points



1. Define service costs
2. Develop employee job descriptions
3. Increase the critical mass of participants in the laboratory:
 - experts on processes relevant to the long-term vision
 - experts on techniques relevant to the long-term vision
 - post doctoral researchers
 - Ph.D. students
 - M.Sc. students
4. Develop new outreach programmes
5. Develop Marketing Strategy
6. Exploit results through patents and products
7. Increase engagement with expert research groups and attract mentors for young researchers.
8. Increase the number of women scientists in the laboratory
9. Promote the laboratory in the region and on the national stage in order to expand collaborations with regional entities, including region authorities, and companies, especially SMEs.
10. Develop staff motivation schemes
11. Integrate the laboratory's activities into the regional smart specialisation plan for the efficient and eco-friendly use of regional resources.
12. Integrate the laboratory into the European Research Area through applications for funding.
13. Invest in areas of research strengths
14. Restructure the activities of the laboratory towards Environmental, Petroleum and Bio-engineering.



major milestones







Swot

Swot Analysis

ana
lysis

Strengths

- Qualified and experienced staff
- Well-equipped laboratory
- Long-established experience in characterisation, including development of new in situ techniques
- Strong collaboration between the institute's management and research staff

Opportunities

- Increasing demand for quality services
- Further strengthen the bond between the industry and the laboratory
- Increased financial resources
- Ability to attract experts
- Involve M.Sc. students in the laboratory's research activities

Weaknesses

- Not well defined costing/pricing policy
- Over exploitation of human resources
- Lack of high tech companies in the region
- High cost experienced personnel in specific scientific fields
- Reduction of financial income

Threats

- Economic crisis
- Bureaucracy
- Inability to obtain funding due to austerity measures in R&D
- Lack of Research motivation



Gender

Gender Equality



Gender inequality is the unequal treatment of people based on their gender, and is generally considered a result of the roles for men and women that have been constructed in society over many generations. It is a phenomenon which has risen to the forefront of social awareness over the past decade.

Problems associated with gender equality are being tackled through many policies, etc. Greece belongs to a group of countries with low activity in the adoption and implementation of policies and measures for gender equality. Meanwhile, the under-representation of women in research reflects a broader and deeper lack of recognition of the gender equality issue in science, which affects its content, methods and priorities. This is something that has a significant negative impact in quality, political and scientific results of research in economic and social terms.

The laboratory welcomes and promotes gender equality at all levels; students, lecturers and administrative staff, and strives to create an environment free from discrimination and misconduct. We recognize that to achieve our vision and stated mission, we require the cooperation and input from all individuals. We work to ensure the rights and dignity of all are respected and we support staff and students in reaching their full potential. The laboratory works closely with the Association of Women in Science to promote gender equality, and implements many relevant policies. The objectives are set out in the institutes Gender Equality Plan.



Students

Students Matters





We want to make a difference, improve education, transform the research in the laboratory into something to be really proud of. We strive to provide the students working with us an opportunity to share the excitement of research and show them how we can extend the boundaries of knowledge. Students can benefit from academics active in scientific research; it leads to high quality research-informed teaching, beneficial for our masters programmes, and an enhanced student learning experience. One of our goals is to change the mind set of the educator, and the student, to motivate them to want to help overcome the big challenges in society, especially here in Greece. This is achieved by promoting excellence in research-led education and innovation. We value the creation of new ideas, and would like the students to explore those ideas, and make something of them. In order to offer the maximum possible support for researchers and young scientists, senior scientists are expected to help students take their ideas from theory to practice. Specifically they learn how to:

- develop a research plan from scratch;
- turn results into a product idea;
- write and submit a proposal for funding;
- evaluate a proposal;
- plan and develop a prototype;
- undertake a market analysis and plan finances;
- disseminate results.



Economics

The following tables provide a breakdown of the laboratory's economics, including the funding from projects, and other programs. The income from various services is also provided.

Economics



Research Project	Thales Project Nanocapillary	Archimedes Projects	6 MSc Programs	Industry
Budget	600,000.00€	200,000.00€	100,000.00€	20,000.00€
Personnel	40	30	25	10

Στον πίνακα, 79.3 13.3 και το 10 εκατομμύρια and 1 εκατομμύρια να γραφτεί έτσι 10,000,000.00 1,000,000.

Sales Summary

	2011	2012	2013	2014
Number of Services provided	5	10	14	9
Number of samples analyzed	210	845	322	278
Number of customers	3	7	5	6

Financial Summary

	2011	2012	2013	2014
Income generated from projects	500,000	300,000	300,000	300,000
Income generated from services	-	20,790	31,400	38,700
Income received from region	-	10,000,000	1,000,000	-
Staff Expenses	9,980	79,320	89,340	91,200
Other expenses	5,120	51,200	10,800	9,970
Total expenditure	15,100	79,371	100,140	101,170
Performance ratio Income/Expenditurex100	33%	79.3%	13.3%	3.4%





Risk

Risk Analysis

ana
lysis

R

Risk Analysis

Risk analysis is the process of prioritizing risks based on the probability of the risk occurring and the impact it would have on the project. There are two primary methods of risk analysis you can use on your project.

- Qualitative Risk Analysis (uses a relative or descriptive scale to measure the probability of occurrence - e.g. Low, Medium, High)
- Quantitative Risk Analysis (uses a numerical scale – e.g. Low 0%-30%, Medium 31%-60%, High 61%-100%).

H	50%Unforessen political events	65% Industry trends	90% Financial Risk
M	20% Loss of key persons	40% Economic conditions	70% Threat from competitors
L	10% Business Plan	10% Failure to recruit quality personnel	35% Technological Risk
	L	M	H
Probability			

Impact

- High – Risk that has the potential to greatly impact project cost, project schedule or performance (Purple)
- Medium – Risk that has the potential to slightly impact project cost, project schedule or performance (Green)
- Low – Risk that has relatively little impact on cost, schedule or performance (Yellow)

Risks that fall within the PURPLE and YELLOW zones will have risk response plan which may include both a risk response strategy and a risk contingency plan.



Management

Management Structure





The management structure is composed of the Research Coordinator and three directors. A Steering Committee of noted scientists takes strategic decisions concerning realisation of projects. It makes decisions about which of the presented projects will be realized and is responsible for the management and monitoring of a long-term objectives of the laboratory; it controls the realization of projects at the strategic level, verifies the coherence with established aims, and keeps established frames such as range, costs and deadlines. Should any changes in the actions or objectives occur, they must be first presented and accepted by a member of the SC. The laboratory's research staff report to the SC.

Research Coordinator

Prof. A. Ch. Mitropoulos received his Master degree in Surface Chemistry and Colloids in 1984 and his Ph.D. in Physical Chemistry in 1989 from the Chemistry Department of the University of Bristol. Between 1991 and 1993 he served at the Department of Energy and then as a Research Associate at the National Centre of Research in Greece. Since 1998 he has been full professor at the Department of Petroleum Technology at the Eastern Macedonia & Thrace institute of Technology and from 2002 - 2008 Vice-President. Since 2008 he is president of the EMT. He is also Research Coordinator of the Hephaestus Laboratory since its inception in 2007. His main research field is the study of adsorption in-situ with Small Angle X-ray or Neutron Scattering.



Material Science Lab Director

Prof. E. F. Vansant completed his undergraduate training at the University of Leuven in 1968 as a Chemical Engineer. In 1971 he received his Ph.D. in chemical engineering (Physical and Inorganic Chemistry) from the University of Leuven and his Aggregation for High Education at the University of Antwerp in 1974. He acted as invited Senior Research Scientist or as Visiting Professor for research and teaching purposes in USA, UK, Italy, P.R. China, Israel, Germany, New Zealand, India, Australia, etc. In 1984 he became a distinguished Professor in Inorganic Chemistry at the University of Antwerp (UIA), Belgium. In the past he received several national and international awards for his innovative research on the development of new inorganic materials and environmental applications. His research activities include (a) the optimisation of separation and purification techniques based on adsorption, membranes and chemical reactions for both industrial and ecological purposes and (b) the development of new inorganic materials and (c) the chemical modification of surfaces in porous materials. He is involved in several national and international research projects in collaboration with companies and other universities.

Electrical Engineering Lab Director

Prof. D. V. Bandekas obtained his Diploma in Electrical Engineering in 1990 and his Ph.D. in 1994, from the Democritus University of Thrace. He joined the Kavala Institute of Technology in 1995 as an assistant professor, and became permanent professor at the Department of Electrical Engineering in 2002. Since 1998 he is Head of Faculty of Electrotechnics and Electric Measurements, Department of Electrical Engineering and is also a member of the Technical Committee of the institute. Prof. Bandekas is Vice-President of the institute, for Academic Affairs since 2008. He is the institute's manager of the GRID computing centre, and is Electrical Engineering Director in the Hephaestus Laboratory.

Petroleum and Mechanical Engineering Lab Director

Prof. A. Christoforidis obtained a B.Sc., M.Sc. and Ph.D. in Chemical Engineering at the Technical University of Vienna (Austria). In the early eighties, he worked for MERCK Pharmaceuticals in Darmstadt, Germany and then for the same company in Athens. From '84 - '86, he was a project coordinator and manager in the Greek Ministry of Environment, Physical Planning and Public Works (Y.PE.CHO.D.E.) in the Directorate of Chemical Industries in Athens. In 1986, he became professor of "Advanced Chemical Mechanics" in the Department of Petroleum and Natural Gas Technology of KIT. He has formerly been Operational Manager of the Department of Petroleum and Natural Gas Technology, Head of the Department of Petroleum and Natural Gas Technology and Vice President of EMT. He currently also holds the directorship of the Center of Technical Research in East Macedonia & Thrace. His main scientific interest lie in the area of environmental monitoring and utilisation of porous bio-materials for environmental applications.

Steering Committee Members

Prof. L. Feldman has a B.A. (Physics) from Drew University (1961), M.S. (Physics) – Rutgers from Rutgers State University (1963) and a Ph.D. (Physics) from the Rutgers, The State University (1967). His research interests include Electronic Materials, Surface and Interface Science, Thin Films, Epitaxy and Materials Modification and Analysis Using Ion Beams for applications in Materials Science. Since 2007 he is Director of the Institute for Advanced Materials, Devices and Nanotechnology at Rutgers University and the Vice President of Physical Science and Engineering Partnerships at Rutgers University. He is the holder of many honors and awards, including the Elizabeth Laird Memorial Lecture, University of Western Ontario, Miegunyah Distinguished Fellow and Distinction in the Physical Sciences Alumni Award, Rutgers Graduate School. He is author of over 400 peer-reviewed articles in international journals. Since 2012 he is International Council Member at the Eastern Macedonia & Thrace Institute of Technology and a member of the laboratory's SC.

Prof. N. Katopodes holds a B.Sc. from the Aristotle University of Thessaloniki, Greece and a BSE, MSE, PhD from University of California. His research interests include Fluid Mechanics, Free-Surface Flow, Computational Methods, Control of Flow and Transport, Industrial Multiphase Flows. He is President of the Board of Regents at EMT since 2012. He has many awards both in a national and in an international level.

Prof. G. Moridis has been a Staff Scientist in the Earth Sciences Division of LBNL since 1991, where he is the Deputy Program Lead for Energy Resources, is in charge of the LBNL research programs on hydrates and tight/shale gas, and leads the development of the new generation of LBNL simulation codes. Moridis is a visiting professor in the Petroleum Engineering Dept. at Texas A&M University, and in the Guangzhou Center for Gas Hydrate Research of the Chinese Academy of Sciences. He holds M.Sc. and Ph.D. degrees from Texas A&M University and B.Sc. and ME degrees in chemical engineering from the National Technical University of Athens, Greece. Moridis is the author or co-author of over 65 papers in peer-reviewed journals, more than 175 LBNL reports, paper presentations and book articles, and three patents. He was a SPE (Society of Petroleum Engineers) Distinguished Lecturer for 2009–10, and was elected a SPE Distinguished Member in 2010. He is the recipient of a 2011 Secretarial Honor Award of the U.S. Department of Energy. He is an Associate Editor of four scientific journals, and a reviewer for 24 scientific publications.



Prof. S. Korban is since 2013 Vice Provost and Director, Office of International and Transnational Affairs in the University of Massachusetts Boston. He was for many years Professor of molecular genetics and biotechnology at the University of Illinois at Urbana-Champaign. Since 2009, he has been director of International Programs for the College of Agricultural, Consumer and Environmental Sciences. He joined the University of Illinois faculty in 1982 after completing postdoctoral training there. He holds a Bachelor's degree in biology and chemistry and a Master's in plant physiology from the American University of Beirut and a Doctorate in plant genetics from UNL.

Prof. E. Gazis has a Ph.D. in Nuclear Physics from the Department of Physics, University of Athens, Certificate of Graduate Studies, NRCS Demokritos and B.Sc. in Physics, Department of Physics, University of Athens. He is Professor, Physics Department at the National Technical University since 2003. He is delegate of Greece to the CERN Council, 2005 and a member of the Greek National Council for Research and Technology (ESET).



RESEARCH



Editors

Prof. A. Ch. Mitropoulos

Prof. D. V. Bandekas

Dr. J. W. Nolan

N. Vordos M.Sc.

D. A. Gkika M.Sc.

Artwork & Layout

Thomi D. Aggelou

www.thomiaggelou.gr



Hephaestus Laboratory



Contact Information

Hephaestus Laboratory
EMaTTech

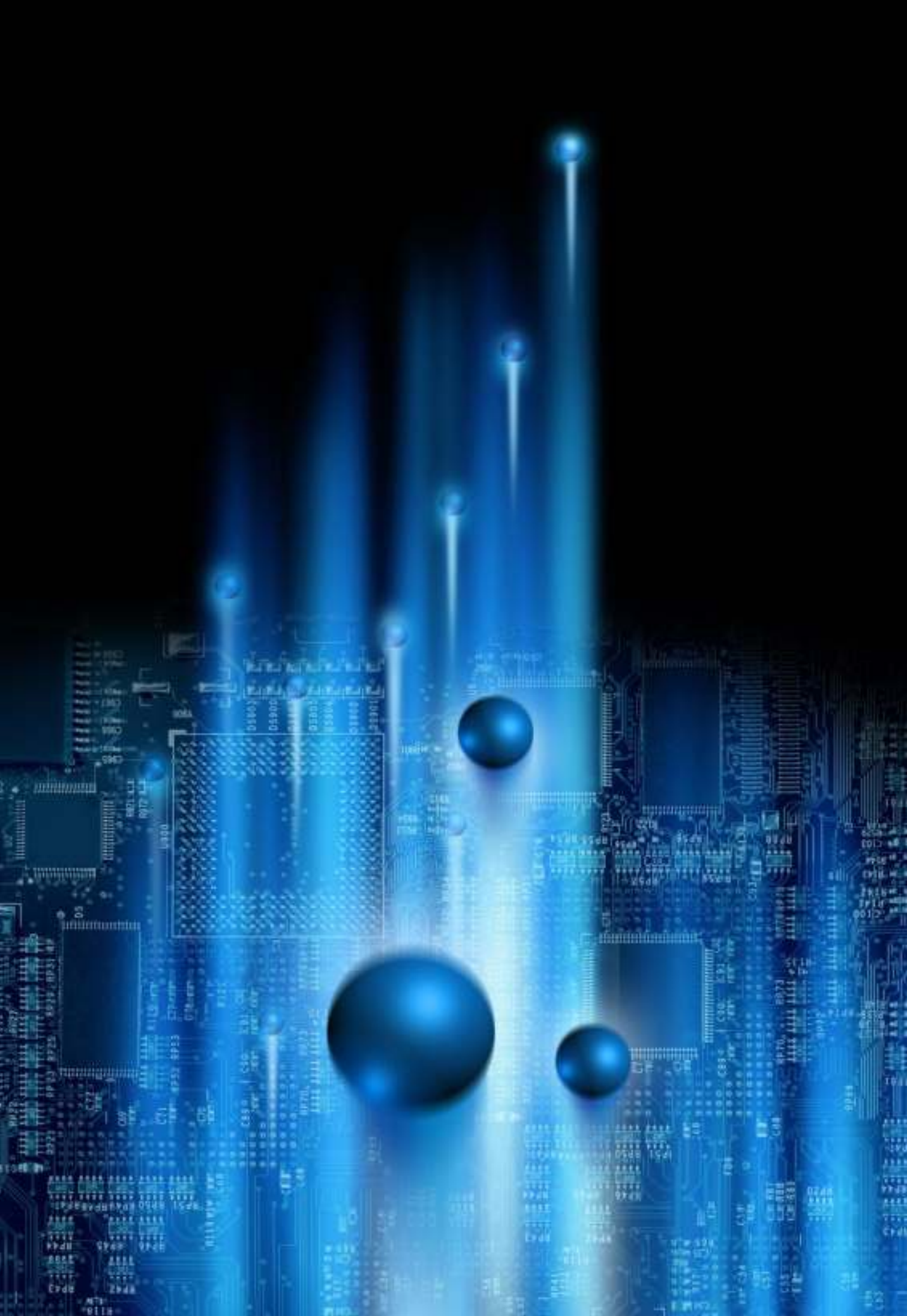
A: St. Loukas, 65404 Kavala, Greece

T: 0030 2510 462247

E: amitrop@teikav.edu.gr, dbandek@teikav.edu.gr,

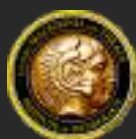
john.w.nolan@gmail.com, vordosn@yahoo.com, despinagkika@gmail.com

W: <http://hephaestus.teikav.edu.gr/>





HL STRATEGIC PLAN



Eastern Macedonia & Thrace
Institute of Technology

Kavala 2015