INSTITUTE OF NUCLEAR TECHNOLOGY – RADIATION PROTECTION

ANNUAL REPORT 2007

ANNUAL REPORT 2007

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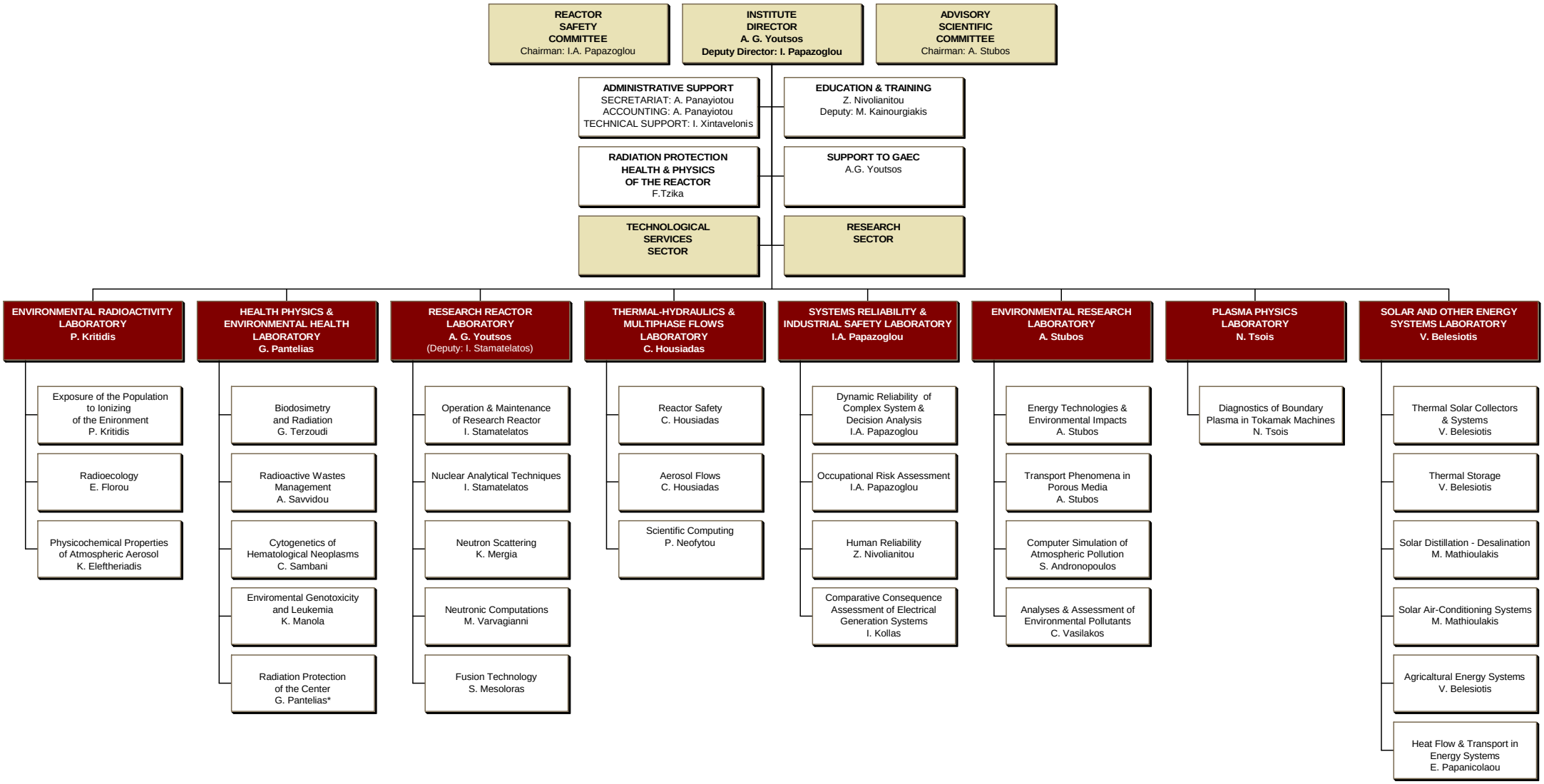
ORGANIZATIONAL CHART 2007



Laboratory: Research, Development and Services
*reports to the Director of the Centre

PREFACE

Transferring know how from Nuclear Technology to other areas of great importance for the Greek society, such as advanced materials, cultural heritage and medical applications, and the development of environmental, energy and health technologies has been a success story for the Institute over the last two decades. This is demonstrated by the ability of its researchers to attract significant funding for their activities from European and National Competitive Research programs and International organizations and by the large number of scientific publications in prestigious international journals and their number of citations.

While the Nuclear Research Reactor Laboratory has continued in developing new experimental facilities for fulfilling the aim of becoming a Centre of Excellence in Neutron Science and Technology, 2007 has been a pivotal year for the Institute due to the world wide emergence of the "nuclear energy technology renaissance". The time has come for the modernization of our ageing nuclear experimental reactor which will allow for its safe and continuous operation and its exploitation not only for the development and characterization of advanced materials for aerospace, fusion and fission applications, but also for the production of key medical isotopes and for providing a large national infrastructure, which will contribute to the development of the necessary nuclear safety culture and technological/scientific know how for the eventual introduction in our country of the emerging new nuclear energy technology, if and when this is decided.

Based on an ambitious refurbishment/upgrade programme of the reactor systems, which was prepared during the second half of 2006, a Business Plan for the implementation of this programme was prepared and approved by the GSRT in early 2007, while the requested funding in the amount of 1.9 M€ was granted by the Ministry of Development in early summer 2007. The primary objective of this activity is the development and commissioning of a new primary cooling system, in order to extend the reactor lifetime to at least fifteen years and achieve its continuous operation and full exploitation. During the second half of 2007 the technical specifications were drafted for the development and installation of this system and an international call for tender is expected to be published in early 2008. In addition, a large number of preparatory activities have been initiated, including the assessment of the reactor pool integrity, decommissioning of the old cooling system, renovation of the reactor building, and its structural integrity assessment due to seismic events.

The Environmental Radioactivity Laboratory carried out research on assessment of the impact of ionizing radiation on several types of ecosystems, atmospheric aerosol, and heavy metal pollution of environment and continued its routine monitoring of environmental radioactivity in Greece.

The Health Physics & Environmental Health Laboratory has developed state of the art methodologies in biological dosimetry and cancer cytogenetics for the evaluation of radiation sensitivity, cancer proneness, myelodysplastic and leukemic diseases, and for these activities it has been nominated as the reference laboratory in Greece.

The Laboratory of Thermal–Hydraulics and Multiphase Flows (THEMLAB), the newest Laboratory of INT-RP, exploits the longstanding experience of INT-RP in its field and shapes them according to the needs and challenges of currently emerging R&D applications requiring similar scientific know-how, like aerosol medicine, nanotoxicology, industrial hygiene, environmental health, and particle-biofluid mechanics.

The Systems Reliability and Industrial Safety Laboratory (SRISL) continued the development of the methodology for the quantification of the workers' occupational risk, the optimization of risk reducing measures, and the application of this methodology in the Dutch working population. Furthermore SRISL worked on the development of methodologies for the quantification of Human Reliability.

The Environmental Research Laboratory (EREL) has continued to perform R&D in air quality and dispersion of pollutants, decision support systems, nanomaterials and their use in energy and environmental issues, hydrogen safety and storage (the Laboratory staff is coordinating the European Integrated Project on Hydrogen Storage in Solids).

The Laboratory of Thermal Energy Systems continued its R & D work in the area of solar thermal energy utilization and energy savings, with emphasis on the development of new products, methods and analytical tools.

Looking in the future, the Institute of Nuclear Technology & Radiation Protection will keep expanding the scope of its research activities in the energy, environment and health sectors in accordance with its new multiannual Business Plan, which forms an integral part the NCSR DEMOKRITOS Business Plan.

Dr. A.G. Youtsos
Director of INT-RP
Member of the Board of Directors of NCSR Demokritos

2. ACTIVITY REPORT/ PERSPECTIVE

2.1. ACTIVITY REPORT

The activities of the Institute of Nuclear Technology – Radiation Protection (INT-RP) cover the following fields:

I. Nuclear Technology & Radiation Protection (NT&RP)

The INT-RP is the only centre in the country encompassing integrated know how on Nuclear Technology and Radiation Protection and operates and exploits unique infrastructure for the benefit of the Greek research community and society. It has established co-operative links with similar Institutions in Europe and internationally and its facilities attract researchers from the neighbouring countries and Europe. Among the activities of the INT-RP, described in detail in other parts of this report, the following are worth mentioning. The INT-RP

- owns, operates and exploits the only Experimental Nuclear Reactor in Greece (5MW). Through the reactor operation, expertise in the field of nuclear reactor technology is maintained and it is transferred to the new generation of engineers and scientists. Around the reactor a number of large scale facilities for research and technology have been developed. Among the application areas of this infrastructure are materials science and nano-technology, health, environment and cultural heritage. Access to these facilities is open to all the Greek, neighbouring countries and European researchers. These large scale facilities, utilizing the reactor produced neutrons, are unique in the Balkan and East Mediterranean region and render the Greek Research Reactor as a Large Scale Facility in the European Research Area. INT-RP also represents Greece in European and International fora on Nuclear Research Reactors, Neutron Scattering, Nuclear Analytical Techniques, Reactor Safety (Severe Accidents) and on fission and fusion and supports in a large number of relevant activities the Greek Atomic Energy Commission and the Greek State.
- is the only Institution in Greece which carries out research and development in the Fusion Technology for the European Fusion Program and the study of advanced materials for fusion and fission applications. It is also the co-ordinator of the Greek Fusion Program.
- is an integrated radiation protection sector in Greece, a fact that is of significance, considering the existence of a wide range of ionising radiation applications in industry and medicine in the country. The importance of the NT&RP expertise became obvious following the Chernobyl accident, whereby the contribution of the INT-RP for tackling the after-effects of the accident proved decisive. The INT-RP supports – both technically and scientifically - a large number of the activities of the Greek Atomic Energy Commission (GAEC). It is also worth mentioning that the national radiological emergency plan XENOKRATES as well as the greater part of Greek radiation protection safety regulations were developed by the personnel of the INT-RP. The majority of the scientific committee members of the XENOKRATES plan come from the personnel of INT-RP.
- is the sole centre in Greece with expertise and equipment for handling radioactive waste, whereby it constitutes the only unit in the country capable of providing and implementing solutions to the waste handling problem.
- encompasses the only integrated Laboratory of Environmental Radioactivity in Greece, with an extensive network of sampling/measuring/monitoring stations covering the entire country.
- the Laboratory of Health Physics and Environmental Health constitutes the sole Greek Laboratory with expertise in the field of overexposure to ionising radiation using biodosimetry methodologies. It is the reference laboratory for Greek Atomic Energy Commission (GAEC) and it constitutes one of the Laboratories selected by the International Atomic Energy Agency (IAEA) for prototyping the methodology of biological dosimetry.

II. Environmental Technology

A significant number of activities have already been developed in this area, involving a large (larger than the critical mass) number of researchers and specialised operators of the INT-RP. More specifically, the INT-RP is the sole research institute in the country with an integrated R&D approach to environmental matters combining the fields of diagnosis, prognosis, impact and pollution technology.

- The ensemble of activities of the Environmental Radioactivity Laboratory concerns environmental technology in terms of both pure research and environmental quality evaluation studies. Besides, research on radioecology has rank the laboratory to the expertise domain. Furthermore, research on aerosols has become a subject of increased interest for the laboratory.
- The same is true of the largest part of activities of the Laboratory of Environmental Research, with its personnel specialising in the simulation of (conventional and radioactive) pollutant dispersion and air pollutant measurements.
- The Laboratory of Thermal-hydraulics and Multiphase Flows is active in investigating possible health implications from environmental exposures or occupational exposures (in emerging technologies like nanotechnology).
- The Laboratory of System Reliability and Industrial Safety is mainly concerned with R&D in matters of risk analysis, including environmental pollution from large-scale industrial accidents. A number of case studies related to environmental pollution scenarios from chemical industries in Greece have been realised in the framework of the "Sevezo directive" of the European Union.
- The Laboratory of the Experimental Nuclear Reactor has the potential of detecting/identifying environmental contaminants (with a resolution capability of ppm) employing environmental sample neutron activation.
- It becomes clear, thus, that the INT-RP constitutes - by far - the most experienced and reliable consultant of the Greek public and private Greek sector in matters of environmental protection. This is demonstrated by:
  - Its contribution in guiding the environmental crises during the Chernobyl accident and the war at Yugoslavia (fear of depleted of uranium).
  - The increase in incoming funds – during the last five years - from the provision of services to the public and private sector in matters of environmental protection

III. Energy Technology

- It is apparent that the areas related to (both fission and fusion) reactor technology fall into the more general area of energy technology.
- The Solar & other Energy Systems Laboratory (SESL) receives considerable external funding and pursues applied research and technology development in the fields of Solar Thermal Energy Utilization & Energy Savings Systems. It is accredited according to the EN ISO/IEC 17025 standard and is equipped with excellent experimental facilities. Along with experimental techniques, it uses as basic analytical tools the metrology of energy quantities and numerical simulation of flow and heat/mass transfer phenomena.
- The laboratory of Environmental Research has developed significant research activity in the areas of hydrogen technologies (the emphasis being on issues of safety and storage), energy efficient separations (the emphasis being on nonporous media characterization and applications) and enhanced hydrocarbon recovery from underground reservoirs (the emphasis being on the simulation of fluid flow and dispersion processes).

IV. Health Technology

- Biological tissue disinfection/sterilisation (bones, skin, tendons) is performed in the Experimental Nuclear Reactor; these tissues are, subsequently, used in transplant operations.

- The Health Physics & Environmental Hygiene Laboratory gives proper and continuous recognition to problems related to all potential radiation induced health hazards. Specifically, the Laboratory provides operational health physics services related to the Radiation Protection Program in NCSR "Demokritos" and the evaluation of radiation overexposures and radiation accidents in general, by means of biological dosimetry methods. Its research activities involve the use of radiation cytogenetic, molecular genetics and radioisotope methodologies to study questions of basic and applied research in radiation protection, radiobiology and radioactive waste management. In addition, the Laboratory based on its expertise in radiation protection, radiation biology and cancer cytogenetic, offers specialized services for the calibration of radiation survey meters, for the development of individualized protocols for radiotherapy treatment, as well as for the diagnosis of preleukemic and leukemic diseases. Advanced cytogenetic and molecular genetic technologies are also used to evaluate the pathogenetic correlations between genetic changes and leukemogenesis.
- Nuclear analysis techniques are under development for the in vivo and in vitro study of the composition of the human body.
- Mathematical modelling techniques are under development for the "in silico" study of the interaction between particles and biofluids.

V. Health and Safety

- The System Reliability and Industrial Safety Laboratory (SRISL) is active in the area of management of technological risks. SRISL has developed methodologies and associated tools for supporting decisions on the management of risks from technological accidents and extreme natural phenomena. It contains a unique capability in Greece to perform integrated risk studies that assess the consequences of major accidents on public health, the worker's health and the environment while at the same time it assesses the relative likehood of these accidents and consequences. The Laboratory performs research and development in the areas of dynamic system reliability, quantification of uncertainties, human reliability and optimisation under uncertainty and multiple objectives. It also performs risk and safety studies for a variety of industrial installations. During the last four years SRISL has extended its activities in the area of occupational risk in collaboration with the ministry of Labour and Social Affairs of the Netherlands. The SRISL is a Technical Advisor to the Greek ministries of: a) Development; b) Environmental and Physical Planning and Public Works; and c) Employment and Social Affairs on the evaluation and technical assessment of the risk studies of the Greek Industrial Installations subject to the "Seveso Directive" of the European Union.

2.2. ACHIEVEMENTS IN 2007 AND PERSPECTIVE

The strategic objectives have been, and will continue to be, to perform research, to develop products and to provide services.

Emphasis has been placed on (a) publishing in international peer reviewed journals, (b) winning R&D programmes, mainly from the EU and (c) providing high technology services. Research and development performance is reflected in the number (Fig.1) and quality of publications and externally financed programs (mainly from EU), Fig2. Commercial exploitation of research activity is reflected in the level of income from services but also in a number of externally financed programs.

The Institute is financially healthy and has self-financed significant building and equipment infrastructures. In addition it finances the employment of a large number of scientific, technical and administrative personnel.

- A three year reactor refurbishment and renovation program was initiated during 2007. The program includes a major refurbishment of the building and facilities, replacement of the

reactor primary cooling system, and reactor Instrumentation, as well as. The program is expected to be concluded in 2009 and the reactor will be fully operational in 2010.

- Two nuclear engineers and a radiation physicist were employed.
- Through INT-RP participation in the European Integrated Project "Materials at Extreme Environments" we have solely assigned the undertaking to characterize materials for aerospace, fission and fusion applications by neutron scattering techniques. This serves as an example of the European wide recognition of the INT-RP expertise in employing neutron scattering techniques for the study of advanced materials.
- Extension of the neutron scattering facilities through the development of complementary X-ray techniques. A Bruker D8 apparatus has been installed giving the ability for X-ray diffraction and reflectivity measurements in the temperature range 70 to 1800 K. In addition, a Small Angle X-ray Scattering apparatus has been installed and it is operational.
- Through our participation in the project "Integrated Environmental Centre" new experimental facilities and computational infrastructure have been developed, e.g. the advanced computer cluster THALES (Thermofluid & Aero-biocolloidal Large Scale Engineering Simulations).
- A new contemporary building, for handling and temporary storage of radioactive sources, was erected to international standards (funding by the ministry of Environment and Public Works and the Greek Atomic Energy Commission).
- In the area of Solar Thermal Energy Utilization and Energy Savings, two major R & D projects under the COMMUNITY SUPPORT FRAMEWORK Program were recently completed, one leading to the erection of an energy-autonomous building integrating state-of-the-art energy savings technologies by exploiting, in particular, solar energy and geothermy and leading to two international patent applications. The second project (AKMON) was also recently successfully completed with the participation of 17 industrial companies and aiming the development and application of the Solar Keymark (SKM) European Certification Scheme at a national level, in cooperation with the Greek solar product manufacturing branch.
- EREL coordinates the European Integrated Project on Hydrogen Storage in Solids and has achieved the development of novel and promising hydrogen storage materials with significantly enhanced gravimetric storage capacities at room temperature.
- EREL is in the process of being accredited (EN-17025) for PM10, PAH and BTX measurements in atmospheric samples.
- A four year major programme to quantity Occupational Risk and thus providing a rational basis for occupational risk management has been completed. The program has been financed by the Dutch Ministry of Labour and Social Affairs and the SRIS laboratory supplied the mathematical methods and models

Mid term goals include

- A Strategic Planning for upgrading, full operation and exploitation of the Nuclear Research Reactor is planned to be ready early in 2007.
- Full renovation and upgrading of the Nuclear Research Reactor operation facilities are planned. Early 2007 the reports and preliminary estimates for this undertaking will have been delivered. Once funding has been attracted, the necessary procedures will be initiated. A large part of the work will be put for International competition for companies specializing in Nuclear reactors and also steps will be taken for Greek companies to participate in the consortium. These actions will require a long scheduled reactor shutdown and re-deployment of some of the personnel.
- Training of young engineers in the field of Nuclear Technology.
- The suggestion of the international scientific jury of the "Centre of Excellence Programme" (which is in agreement with the policy of the INT-RP) of giving priority to the neutron diffractometer and the development of new neutron scattering facilities will be fully implemented. For this the installation of a TOF reflectometer, SANS and USANS facilities are being implemented.
- Emphasis will be given in the application of nuclear analytical techniques in industrial, environmental and medical studies.

- The development of a methodology for the evaluation of environmental quality, as related to conventional and radioactive pollution and their synergistic action, is in progress at the ERL, based on the analysis of cytogenetic aberrations in natural aquatic populations. Development of methodology for source identification and apportionment of atmospheric pollutants, by means of elemental and radioactive aerosol tracers.
- The SRISL has developed a methodology for developing optimum strategies for responding to Emergencies owing to major industrial accidents. In 2007 SRISL has completed the quantification of models for 63 specific hazards faced by workers in various occupations. These models form the building blocks for the development of an integrated occupational risk model used in the assessment of occupational risk in companies of various sizes and activity fields. SRISL will continue to work on methodologies and applications for the optimisation of occupational risk in collaboration with the ministry of Labour and Social Affairs of the Netherlands. It will also continue R & D in risk assessment and management methodology and application on new and emerging risks (e.g. nanotechnology) and assessment of the integrity of vital infrastructures. It will also develop models for integrating human factors in safety analysis of complex technological systems and continue work on Soft Computing.
- The THEMLAB will develop quite versatile, common physical methods and tools for the numerical simulation of dispersed, particle-laden multiphase flows, with the help of computational fluid dynamics (CFD). The scientific problems are concerned with applications in the areas of energy and environment and pertaining to human health implication issues. It will also operate a CFD platform (on THALES), which, besides inhouse developed tools, will be also equipped with state-of-the-art commercial software. A particular aim is to be connected to the grid (by means of the grid site GR-05-Demokritos).
- In the field of interest of SESL, emphasis will be given in the development of technologies for the optimal utilization of solar thermal energy (4th generation solar collectors and systems) along with related applications (thermal distillation-desalination, solar-assisted drying and air-conditioning), thermal storage systems, methodologies and tools for assessment of energy performance and metrology of energy quantities.

Finally it should be noted that the importance – for the country, the protection of the environment and the health of the population - of maintaining a critical mass of researchers working in the area of NT&RP is self evident. Consequently, special emphasis has been given, and will continue to be given, in this direction.

2.3 EDUCATION

The Institute provides, each year, a number of seminars and courses on the following topics

(i) radiation protection
(ii) nuclear technology

Lecture notes are available on these topics and are continuously being updated.

It is worth noting that the IAEA mission on Integrated Safety Assessment of the Research Reactor found that our reactor is a safe system, operated by experienced, well trained personnel with high standard of safety. The mission characterised as "good practice"[1]: (a) the personnel training (b) dosimetry and (c) the existence of a Probabilistic Safety Assessment in the Safety Analysis Report of the Reactor.

In the period 2007, 6 Doctoral Dissertations, 3 Post-graduate Diploma Theses, 4 Diploma Theses and 4 Training Courses have been completed

[1] Definition of "good practice", as given by IAEA: "It is a proven performance, activity of use of equipment, which the team considers to be markedly superior to that observed elsewhere. It should have broad application to other facilities".

3. Laboratories

- **Research field**
- **Achievements**

NUCLEAR RESEARCH REACTOR LABORATORY

Head: Dr. A.G. Youtsos
Deputy Head: I.E. Stamatelatos

Personnel:

Researchers	7
Other Scientists:	4
Co-operating Researchers:	5
PG Scholarships:	2
Technicians:	14
Total	32

General Description

Operation and exploitation of the Greek Research Reactor (GRR-1) are the main objectives of the laboratory. Through reactor operation expertise in nuclear technology and radiation protection is developed. Successful exploitation of the reactor facility is achieved through the development and utilization of experimental research facilities aiming to apply neutron techniques in research and technology and carry out interdisciplinary research in the areas of material science, nanotechnology, condensed matter physics, applied nuclear physics and radioisotope production, health, environment and cultural heritage studies. Available experimental techniques include neutron diffraction, neutron reflectivity, irradiation rigs, neutron activation analysis including capabilities for large volume sample. In addition to the reactor based techniques, complementary techniques are available including prompt-gamma neutron activation using isotopic neutron sources, small angle X-ray scattering, X-ray reflectivity and X-ray diffraction. The reactor facilities are unique in the Balkan and East Mediterranean region and render the Greek Research Reactor as a Large Scale facility. The laboratory participates in GSRT, EU, IAEA research programs and moreover, provides services on environmental, health and material sciences issues. Collaborative agreements and links with European and International research centers have been established. Members of the laboratory participate in International fora and provide support to the Government, public bodies and the industry.

Research activities

The R&D activities during 2007 can be summarized as following:

- Materials and Nanotechnology
  - Magnetic thin films studied by neutron scattering techniques and magnetic measurements
  - Electrical, magnetic and structural properties of ITER materials
  - Porosity of graphites by neutron scattering techniques
  - Development of oxidization resistance in multilayered structures
  - Oxidization phenomena of thin films of SiC
  - Oxidization of ITER first wall materials studied by neutron reflectivity
  - Development of multilayered structures for aerospace applications
  - Amorphous bulk magnetic materials
  - Determination of residual stresses in welds of heat sink materials with metals using neutron diffraction
- Environmental Studies
  - Study of nanomaterials for environmental applications using neutron and X-ray techniques
  - Study of surface phenomena
- Nuclear Technology & Radiation Protection

    - Neutronic analysis and criticality safety calculations
    - Thermohydraulics calculations
    - Instrument design
    - Characterization of radioactive waste using non-destructive techniques
    - Development of nuclear techniques for analysis of large volume environmental, industrial and cultural heritage samples
    - Development of a prompt gamma neutron activation technique for non-destructive analysis of concrete
    - Neutron metrology
- Infrastructure development
    - Neutron optical devices
    - Neutron detection electronics
    - Automation and control of micro-positioning devices
    - Development of data acquisition systems
    - High and low temperature apparatus
- Software development for
    - Data acquisition
    - Neutron scattering data analysis
    - Neutron detection
    - Instrument control

Achievements

A three year reactor refurbishment and renovation program was initiated during 2007. The program includes replacement of the reactor primary cooling system, control instrumentation as well as a major refurbishment of the building and facilities. The program is expected to be concluded in 2009 and the reactor to be fully operational in 2010. The main achievements during 2007 were the following:

- Preparation of an integrated Reactor Research and Business Plan
- Inspection of major reactor systems and components by IAEA experts and independent nuclear, mechanical and civil engineers
- Preparation of a Reactor refurbishment and renovation plan
- Preparation of the technical specifications for replacement of the reactor primary cooling system and instrumentation
- Employment of a nuclear engineer and a mechanical engineer for the requirements of the project
- Preparatory work for the decommissioning of the old primary cooling system
- Installation of an X-ray reflectivity, diffraction apparatus and a Kratky Small Angle X-ray Scattering to be complementary to the neutron scattering techniques

Education

Doctoral Dissertations

1. A. Dandou, "Heat and momentum flux parameterization for urban areas in prognostic meteorological models", in collaboration with the Department of Physics, Athens University (2007).

Post graduate diploma theses

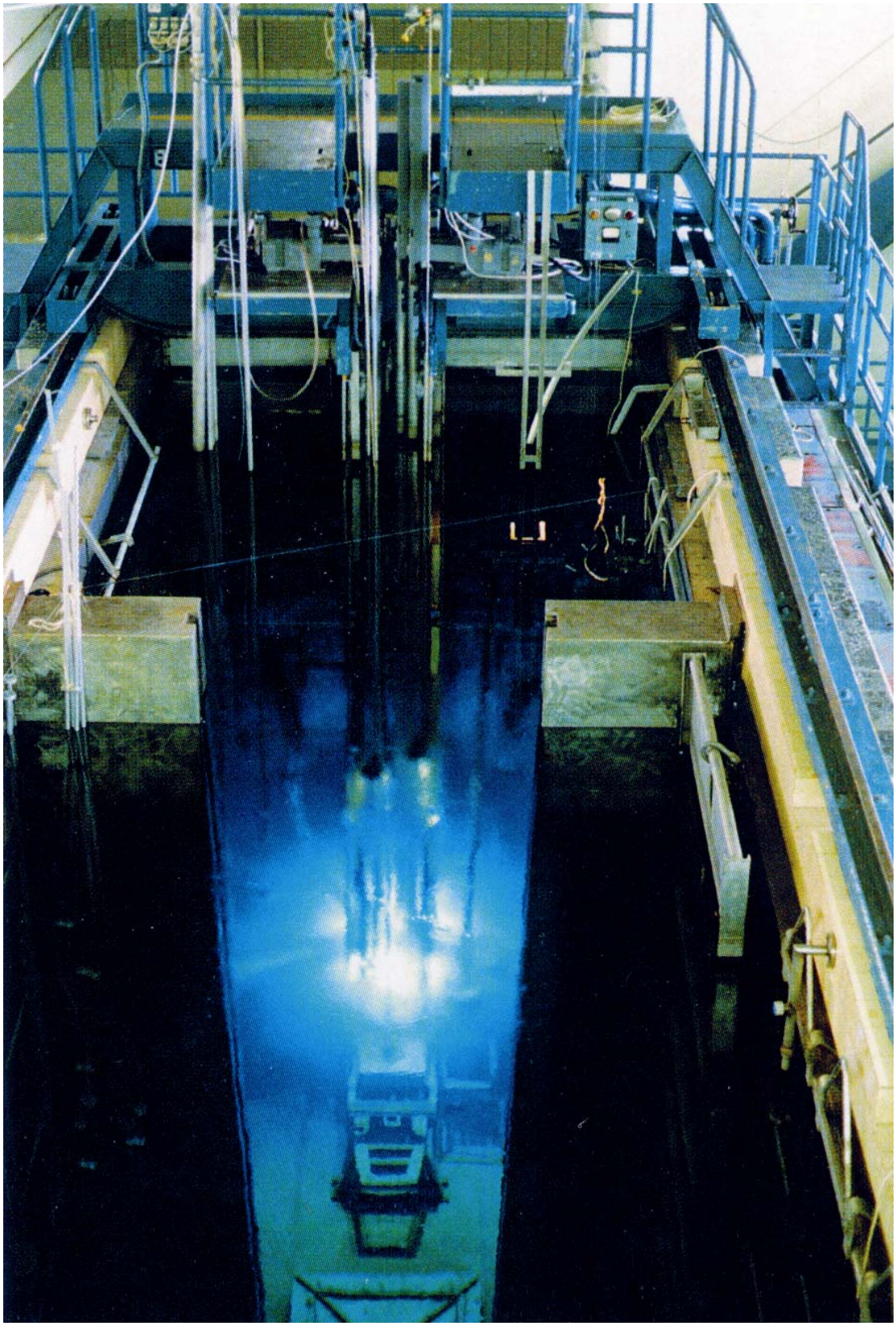
2. Nanopoulos D., «Non-destructive prompt gamma neutron activation analysis of concrete samples». Diploma Thesis, National Technical University of Athens, Department of Applied Mathematics and Physics (in collaboration with Prof. E. Gazis), 2007
3. Andrikopoulos P., «Design, construction and operation of a neutron chopper». Diploma Thesis, Physics Department, Athens University (in collaboration with Prof. G. Trimberis), 2007

Undergraduate students training

1. Kotsina Zoi, "Analysis of small angle neutron scattering data for the determination of porosity in graphites", Physics Department, Athens University, 1/12/2006 – 31/1/2007.
2. Merakou Stella, "Analysis of small angle neutron scattering data for the determination of porosity in graphites", Physics Department, Athens University, 1/12/2006 – 31/1/2007.
3. Barlas Antonis, "Determination of residual stresses in welds using neutron diffraction", National Technical University of Athens, Department of Applied Mathematics and Physics, 13/11/2007-20/12/2007
4. Papakonstantopoulos Paul, "Neutron Activation Analysis Advanced Prognosis Calculations Using code NAAPRO", Department of Applied Mathematics and Physics, 1/11/2007 - 30/12/2007

In addition, members of the laboratory participated in the teaching activities of the following national and international Post Graduate courses

1. IAEA Post Graduate Educational Course on Radiation Protection and Safe Use of Radiation Sources, Organized by GAEC
2. Inter – University Postgraduate Course in Medical - Radiation Physics (IPCMRP)
3. Inter- Departmental Post-Graduate Course on Protection, Conservation and Restoration of Cultural Heritage Monuments. Aristotelian University of Thessaloniki.



Research Reactor

ENVIRONMENTAL RADIOACTIVITY LABORATORY (ERL)

Head: Dr. P. Kritidis

Personnel

Researchers and Functional Scientific Personnel	4
Other Scientists:	1
Co-operating Researchers:	0.3 (1 part time)
Scholarships:	2
Technicians:	3
Post-doc fellows:	0
Graduate students (diploma):	1

General description

The scientific subject of ERL is the environmental radioactivity (soil radioactivity, indoor radon, marine radioactivity, aerosol radioactivity). This relates to both natural and artificial radioactivity. ERL operates also a network of 40 sampling and measuring stations across the country, which is a key part of the National routine network. ERL is also engaged with radiological certification of imported and exported foods and materials.

The Laboratory is in the process of obtaining accreditation according to EN 17025 for specific atmospheric aerosol measurements in order to satisfy the European standard EN12341. Through structural programmes and together with other laboratories, ERL carries out a substantial investment in novel state of the art instrumentation for the characterization of the atmospheric aerosol physicochemical properties which is part of a Large Scale Environmental Research Infrastructure within NCSR "Demokritos".

Research activities

- Coordinated research projects in collaboration with other scientific teams from research centers and universities, local authorities and international organizations. Principal topics:
  - Radioecology and radio-eco-toxicity
  - Physicochemical properties of atmospheric aerosol
  - Source apportionment and receptor modeling
  - Risk assessment in indoor, urban and natural environments
- Applied research projects related to the radiological and conventional impact of human activities on the environment.
- Control of radioactivity in various environmental media and food radioactivity control, in accordance with the frame program REM of DG XI / EU and the national obligations related to it. The routine monitoring network includes 40 stations for sampling of air, radioactive deposition, surface and drinking water, soil and food. The routine monitoring is performed according to assignment of the Greek Atomic Energy Commission.
- Technical studies and measurements on demand of third parts.

ERL is a part of the REM network of DG XI / EU (Environmental Radioactivity of the European Community). The services provided are of approximately 75 000 Euro per year and include:

- Analysis of radionuclides in food and other samples and issuing of related certificates to Greek and foreign enterprises and persons.
- Radiological studies in regions of enhanced natural radioactivity, after the request of private enterprises or governmental organizations.
- Analysis of heavy metals in environmental and other samples.

The scientific staff of ERL provides expert services in national and/or international committees (EU, IAEA, Greek ministries), including reviews in scientific journals. They are also engaged in educational activities (supervising of PhD fellowships, diploma works, participation in university post-graduate studies and seminars, EU and IAEA seminars e.a.).

ERL is also co-ordinating Regional Development Programmes entitled "Development of an operational mapping system of the atmospheric particulate matter concentration and the estimated population exposure in Attica", within the structural funds programme "Consortiums for Research and Technological Development in High Priority Areas" with has a CEC contribution of 75%. ERL also participated in the "Technology development for optimising air quality in industrial buildings:. Characterisation of Air Quality in Industrial Buildings – Mechanisms Controlling the Indoor/Outdoor Particulate Matter Chemical Characteristics And their Effects to Human Exposure and Inhaled Dose".

Other major activities are focused on the study of microphysical properties and their effect on good practices and techniques for PM monitoring standards such as the EN12341 PM10 standard, as well as the retrieval of information on emission sources, source apportionment and receptor modelling in view of the needs of local and regional and national authorities to abide with Directives 96/62/EC, 1999/30/EC, 2000/69/EC, 2002/3/EC and Decision 97/101/EC.

Research work on source apportionment of pollution by means of aerosol particle elemental tracers has been successfully conducted by applying novel factor analysis tools on atmospheric aerosol composition data

Achievements

- Regional Coordination of the RER/7/003 programme activities and Data management at the international level
- Development of an innovated methodology for the radiological impact assessment of non humans natural populations
- Development of state-of-the-art protocol for global bioindicator monitoring in the marine environment based on the EU Green Paper
- Coordination of the Regional Programme for "Development of an operational mapping system of the atmospheric particulate matter concentration and the estimated population exposure in Attica",
- Development of methodology for an in house atmospheric aerosol PM_{10} sampler
- Completed 10 years of aerosol black carbon monitoring in the Arctic
- Highly specialised portable unit for field measurements of pollutants from industrial stacks
- Participation in the “Sample collection” Group of the Emergency Plan of the Greek Atomic Energy Commission
- Participation in the I.A.E.A Technical Co-operation Project RER8009 for “Air Pollution Monitoring in the Mediterranean region”

Education

PhD - Thesis

1. Karanasiou A (2007) **“Source apportionment of pollution by means of aerosol particle elemental tracers”**

2. N. Evageliou, Chemist MSc, “Study on the distribution and speciation of radionuclides and trace elements in the marine environment (University of Athens).

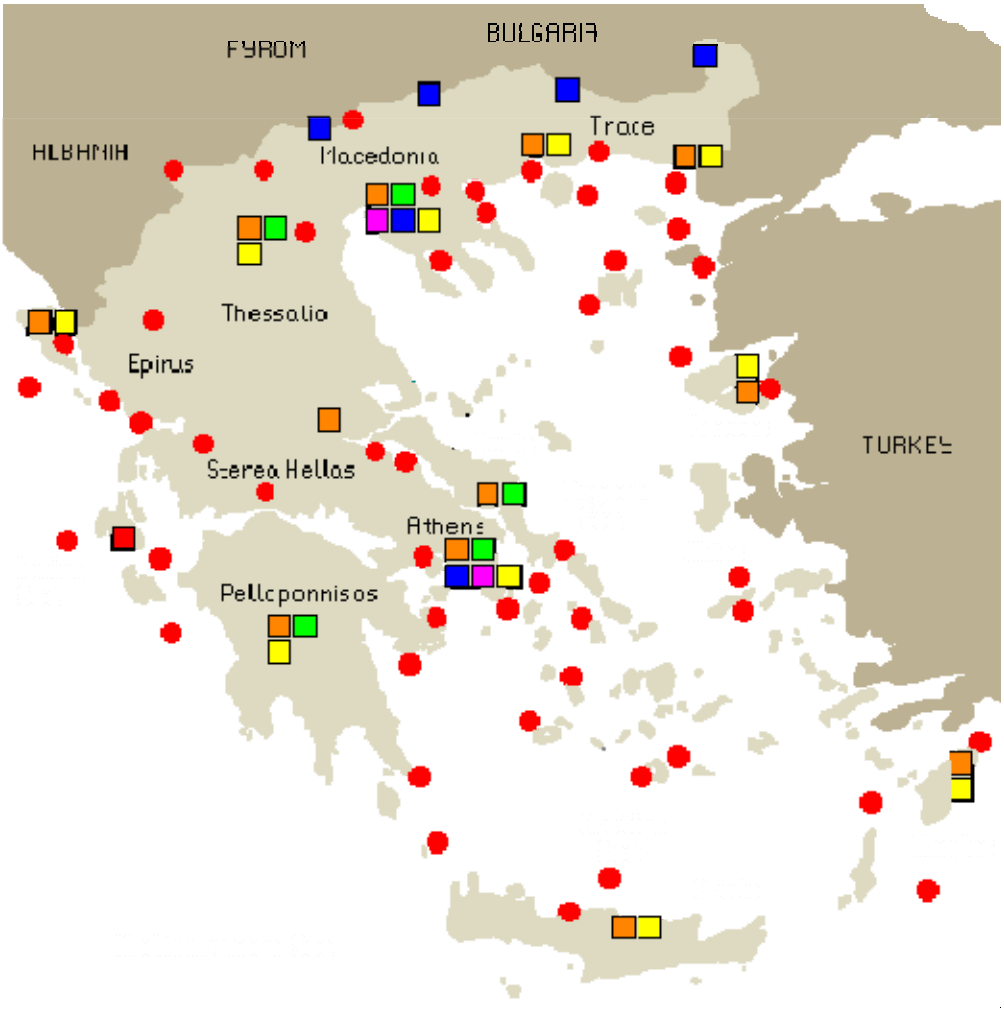
Organization of Meetings

RER/7/003, Third Planning and Coordination Meeting, Athens, 15-16 March 2007

Intercalibration Exercices

- IAEA – Sediment & Mussel 2007
- ARMERA

The sampling network:



*The **red circles** represent areas where marine radioactivity studies have been performed **occasionally**.*

Total beta activity in air
Radioactive deposition
Total beta activity of surface and drinking water
Gamma-ray intensity
Specific radionuclides in milk and mixed diet

HEALTH PHYSICS & ENVIRONMENTAL HEALTH LABORATORY (HPEHL)

Head: G. Pantelias

Personnel

Researchers and Functional Scientific Personnel	3
Other Scientists:	1
Co-operating Researchers:	-
Scholarships:	2
Technicians:	8

Overview

Since the early days of its foundation in 1960 the Health Physics & Environmental Hygiene Laboratory of the Institute of Nuclear Technology & Radiation Protection, gives proper and continuous recognition to problems related to all potential radiation induced health hazards. Specifically, the Laboratory provides operational health physics services related to the Radiation Protection Program in NCSR "Demokritos" and the evaluation of radiation overexposures and radiation accidents in general, by means of biological dosimetry methods. Its research activities involve the use of radiation and cancer cytogenetics, molecular genetics and radioisotope methodologies to study questions of basic and applied research in radiation protection, radiobiology, cancer genetics and radioactive waste management. In addition, the Laboratory, based on its expertise in radiation protection, radiation biology and cancer cytogenetics, offers specialized services for the calibration of radiation survey meters, for the development of individualized protocols for radiotherapy treatment, and for the diagnostic and follow-up cytogenetic evaluation of patients with hematological neoplasms.

Achievements

The Health Physics & Environmental Hygiene Laboratory has been the reference laboratory of the Greek Atomic Energy Commission and the International Atomic Energy Agency (IAEA) for biological dosimetry studies and the evaluation of absorbed doses in cases of radiation accident, as well as for standardization of state of the art methodologies applied for biodosimetry purposes. The Laboratory belongs to the "European LeukemiaNet"(ELN), (Network of Excellence for Leukemia, supported from the FP6 Program of the European Community) and it is the National Reference Laboratory for the cytogenetic characterization of myelodysplastic syndromes (nominated by the Hellenic Society of Hematology).

Specifically, the research activities of the Laboratory contributed essentially to the:

- Elucidation of the mechanisms underlying the biological effects of ionizing radiation at the molecular, chromosomal and cellular level.
- Development of cytogenetic methodologies in combination with molecular DNA-probes for biomonitoring purposes and the development of reliable and sensitive biological dosimeters for the estimation of absorbed radiation doses and cancer risk.
- Development of cytogenetic methodologies for the identification of persons with increased radiosensitivity and genetic predisposition to cancer, and the individualization of radiation therapy treatments.
- Study of the role of stable reciprocal translocations and chromosomal rearrangements in the mechanism of radiation induced carcinogenesis.
- Development of cytogenetic methods for the evaluation of mutagenic and carcinogenic potential of genotoxic chemicals.

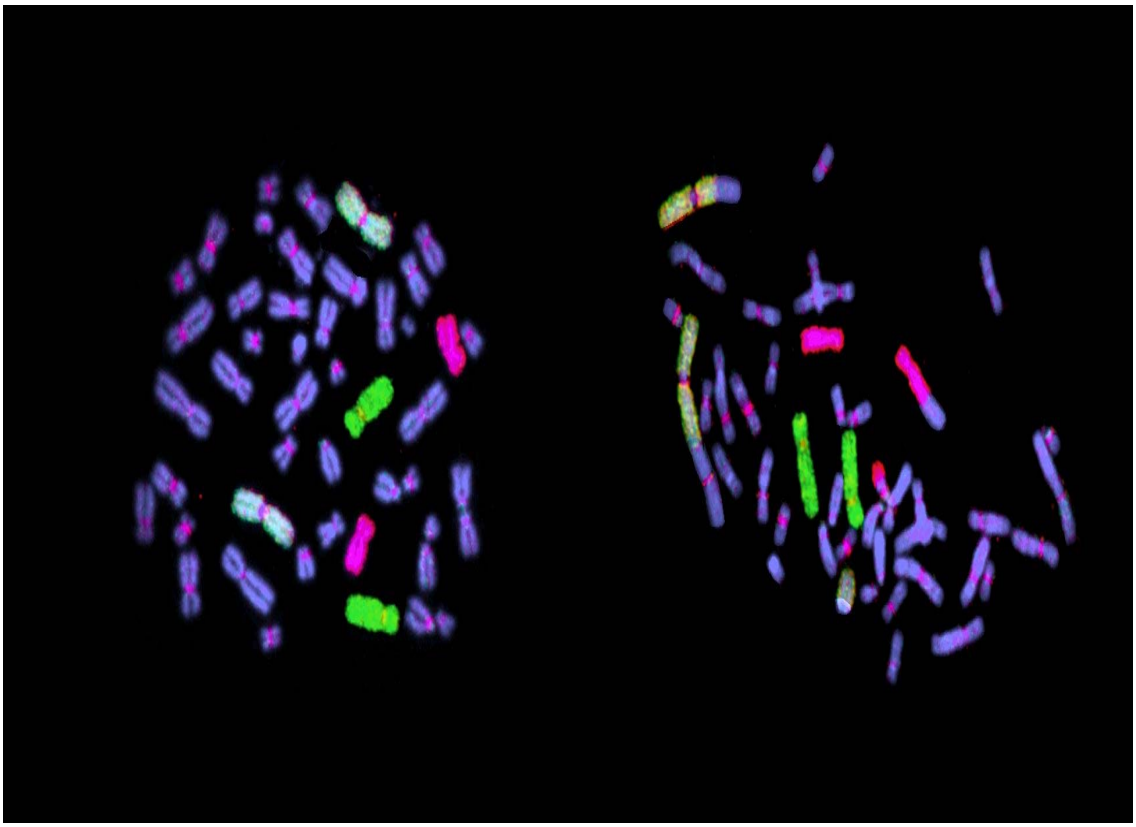
- Molecular cytogenetic analysis of hematological neoplasms: characterization of genomic rearrangements, amplification of specific genes, exploration of genetic recombinations for the identification of critical mechanisms involved in leukemogenesis.
- Interindividual differences in susceptibility to leukemia and neurological diseases: polymorphisms of genes involved in the detoxification of xenobiotic compounds after genotoxic exposures.

Specialized scientific services offered to major hospitals and private clinics for the improvement of diagnostic and prognostic evaluation of leukemic diseases. During the year 2007 bone marrow biopsies obtained from 2850 patients were analyzed and characterized using cytogenetic methodologies.

Education

Doctoral dissertations

1. Rigana Heleni (2007): «Cytogenetic analysis of Myelodysplastic Syndromes in relation to gene polymorphismus of the detoxifying enzymes glutathione S-transferase T1 (GSTT1) and M1 (GSTM1) and NAD(P)H quinine oxidoreductase (NQO1).



Cytogenetics of hematological neoplasms

ENVIRONMENTAL RESEARCH LABORATORY (EREL)

Head: Dr. A. Stubos

Personnel:

Researchers and Functional Scientific Personnel	6
Other Scientists:	6
Co-operating Researchers:	0
Scholarships:	2
Technicians:	1

General Description

The Environmental Research Laboratory (EREL) is part of the Institute of Nuclear Technology-Radiation Protection of the National Centre for Scientific Research "Demokritos" (NCSRD). EREL with its over 20-years experience and its highly specialised scientific staff is one of the leading environmental research laboratories in the country with strong scientific links to many Research and Academic Organizations worldwide. The general aim of EREL is the production of scientific know-how and innovative tools for research and provision of services in the fields of environment and energy. The Laboratory is equipped with modern facilities for the measurement of air pollution and powerful computing equipment and provides high-level services in a wide range of issues related to environment and energy (air quality and environmental impact assessment, nanoporous materials characterization, gas storage). The Laboratory has been awarded ISO 9001 for software development in atmospheric applications while accreditation according to EN 17025 for specific gas pollutant measurements is underway (particulate matter, volatile organics, etc). EREL carries out several research projects with substantial external funding (mainly from EC), in several of which acts currently as coordinator of European consortia of universities, research institutions and industries. In the framework of these activities, EREL has developed a broad range of cooperation with Public and Private Organisations both within and outside Greece, while actively participating in international scientific networks (e.g. ENERO, ERCOFTAC, MESAEP).

Research activities

In line with current international trends, EREL places emphasis in R&D activities relevant to hydrogen technology (safety and storage), simulation of atmospheric pollutant dispersion in realistic conditions, diagnostic and prognostic meteorological modelling, contribution of anthropogenic and biogenic pollutants to global warming and urban pollution, simulation of underground hydrocarbon and water reservoirs and characterization of nanoporous materials for environmental (gas separations, storage of CO_2 and H_2) and bio-medical applications (controlled release systems, transdermal drug delivery).
In parallel, EREL continues to produce and publish original methods and results in the wider area of computational fluid mechanics, with applications in pollutant dispersion, influence of meteorology and pollutant sources distribution in urban pollution, tropospheric ozone concentrations due to anthropogenic and biogenic pollutants in the Mediterranean area, turbulence simulation, transport phenomena in porous media, and flow and mass transport in multiphase systems.
The high R&D performance of EREL is deduced from: (i) its wide experience in carrying out (not only as participating research organisation but also as coordinator) large scale research projects, (ii) the large number of scientific publications in international journals and conferences, (iii) the successfully accomplished contracts of service provision to Public and Private Bodies, (iv) the organisation of international conferences, (v) the participation in International networks and (vi) acting as national representative in various international organisations.

Achievements

In addition to the above, important achievements of the Laboratory include the following:

- Coordination of the NESSHY FP6 Integrated Project on Hydrogen Storage in Solids
- Development of methodology and software for hydrogen safety simulations
- Development of state-of-the-art software for diagnostic and prognostic meteorological simulations, atmospheric dispersion of pollutants (toxic, radioactive, flammable, photochemical, heavier or lighter than air) in complex terrains
- Development of software for the simulation of sorption, flow and diffusion in porous materials
- Development of computational and experimental methods for the characterization of porous materials
- Fully equipped laboratory for organic pollutant measurements with high sensitivity analytical chemistry devices (GC/FID/FPD, GC/MS with Thermal Desorption Unit, HPLC)
- Highly specialised portable unit for field measurements of atmospheric pollutants
- Development and use of RODOS (Real-time On-line DecisiOn Support for nuclear emergencies in Europe) system
- Participation in the "Nuclear Technology" Group of the Emergency Plan of the Greek Atomic Energy Commission
- National representation in COST Senior Official Committee and in Advisory Committee for Radioactive Waste Management (ACPM) of the EU.

Education

Doctoral Dissertations

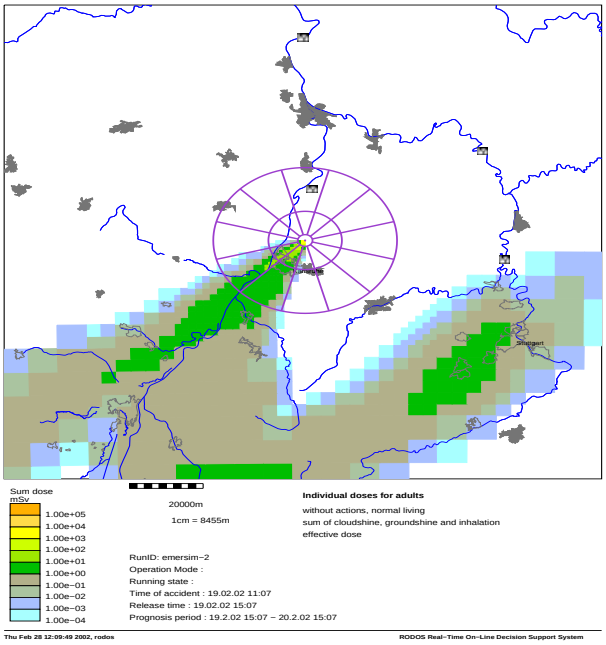
1. Pantatosaki E (2007) «Simulation of gas sorption processes in nanoporous media» in collaboration with the School of Chemical Engineering, National Technical University of Athens
2. Maggos Th. (2007) «Photocatalytic decomposition of atmospheric pollutants using TiO2 enriched structural materials» in collaboration with the Department Energy Resources Management & Engineering, University of West Macedonia
3. Davakis S. (2007) "Simulation of gas pollutant dispersion in complex topographies using Lagrangian particle model based on the Langevin equation" in collaboration with the Department of Chemical Engineering, Aristotle University of Thessaloniki

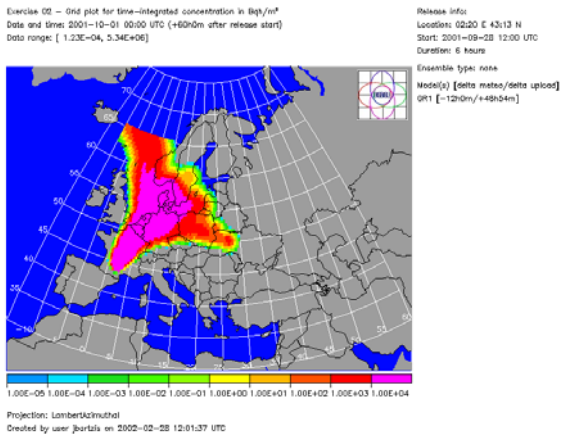
Post graduate diploma theses

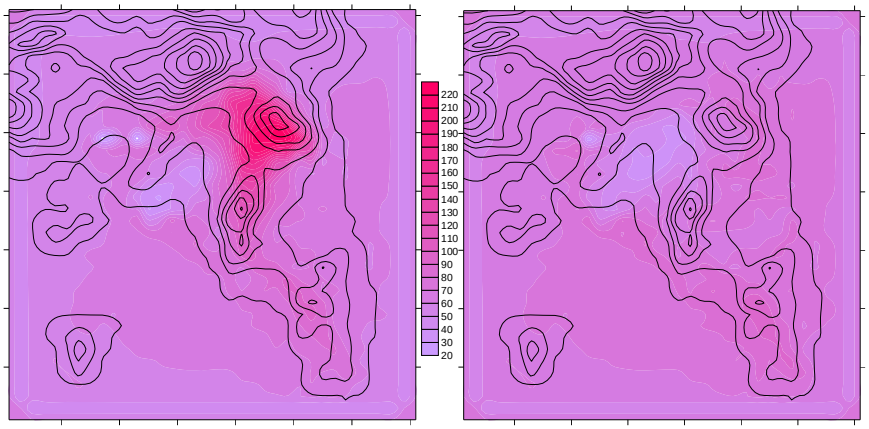
1. Papadimitriou N. (2007) Postgraduate Diploma: "Energy Production and Management" in collaboration with the National Technical University of Athens

Diploma Theses

1. Fotineas P. (2007), «A study on the effect of smoking on the concentration and quantity of particulate matter in the indoor (office) air» in collaboration with the University of the Aegean, School of the Environment, Department of Marine Science
2. Gouva E. (2007), «A study on the effect of smoking on the concentration of VOCs and carbonyl compounds in the indoor (office) air» in collaboration with the University of the Aegean, School of the Environment, Department of Marine Science







Prediction of maximum ozone concentrations in Athens area for the years 1990 (left) and 2004 (right)

SYSTEM RELIABILITY AND INDUSTRIAL SAFETY LABORATORY (SRISL)

Head: Ioannis A. Papazoglou

Personnel

Researchers and Functional Scientific Personnel	5
Other Scientists:	1
Co-operating Researchers:	-
Scholarships:	-
Technicians:	-

Objectives

Development of methodology and associate software tools in the areas of:

- Reliability of large systems with complex stochastic behavior
- Quantitative Risk Assessment of complex technological systems
- Health and Environmental Consequence Assessment of alternative Electrical Power generating systems
- Virtual reality in use of human factor assessment and plant safety enhancement

Recently research and development has been focused in the:

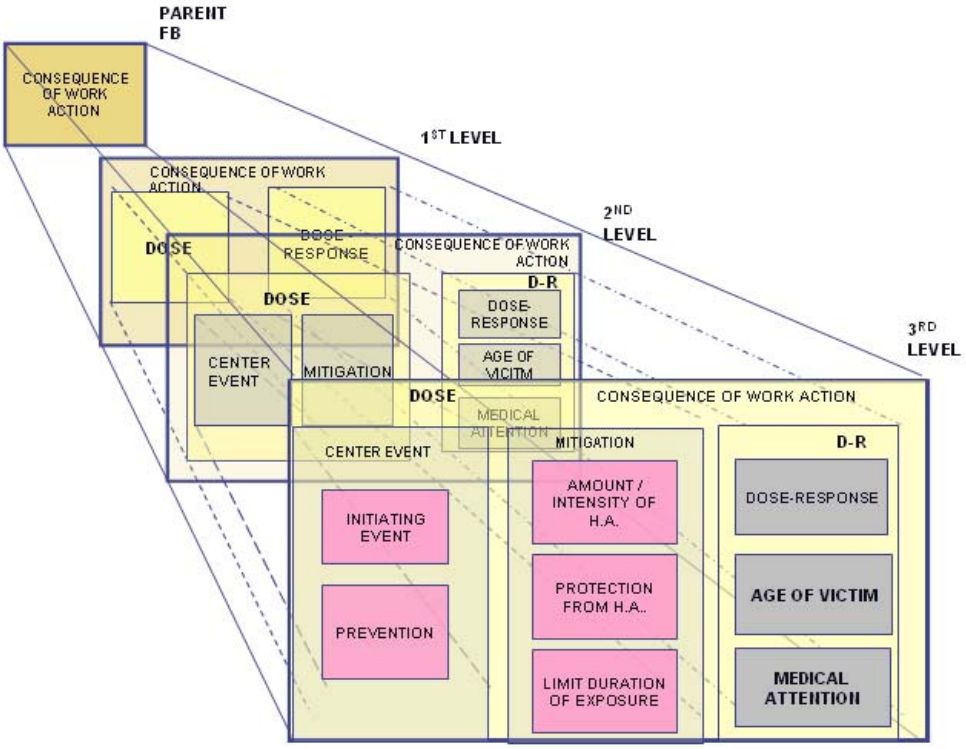
- Development of quantified risk models for occupational risks from accidents and tools for multicriteria optimization of occupational risk management strategies
- Quantification of uncertainties about the models simulating technological systems, physical phenomena and processes.
- Optimization Algorithm development in discrete decision spaces with multiple criteria
- Decision Support System development for risk management as well as emergency response policy selection in major hazard accidents in nuclear and chemical installations.
- System-state diagnostics using soft computing (artificial neural networks, genetic algorithms, fuzzy expert systems) and novel signal processing techniques (e.g. wavelets).
- Safety enhancement in the process industry through the use of virtual reality tools.
- Development of a simulator to assess the success ratio in operations where multiple teams undertake the mitigation of the consequences of a natural disaster.

Achievements

The laboratory for System Reliability and Industrial Safety (SRISL) was founded in 1988, with initial objective the development of an integrated capability for the quantitative risk assessment of large nuclear and non-nuclear systems. During the last fifteen years the laboratory has contributed to the state-of-the art of system reliability, quantified risk assessment, the development of Decision support systems with multiple criteria and under uncertainty and system diagnostics. Furthermore, the laboratory has developed an integrated methodology and the associated computer tools for the safety analysis and the quantification of uncertainty in installations handling hazardous material.

These achievements were accomplished through the active participation in the framework programmes of the European Commission in the area of Major Industrial Hazards and Risk Assessment (1 project in Framework Programme II, 1 project in Framework Programme III, 3 projects in the Framework Programme IV, 2 projects in Framework Programme V). In these projects SRISL has collaborated with leading European organizations paving the way to the introduction of new risk based approaches to the regulatory framework for installations handling hazardous materials and subject to the SEVESO directive. Such organizations are: the

Health and Safety Executive of the UK, The Ministry of Environment and the ministry of Labor of the Netherlands (VROM, SZW), and the Joint Research Center at Ispra of the EC.
Based on the developed methodology and the associated tools the SRISL in collaboration with the above and other European research organizations focused its research efforts in problems addressing the support of decisions concerning the management of risk, the land use planning around dangerous sites, and the evaluation of the role of the organizational and management system of a company on the safety of the installations. These two elements constitute the fundamental changes incorporated in the second updated version of the SEVESO directive (SEVESO II).
The SRISL is one of the main consultants of the Greek ministries of Environment and Development in issues concerning the regulation of Greek chemical installations subject to the SEVESO directive and it has reviewed and reassessed the safety cases of half the Greek industry with respect to the external risk, and almost the totality of the Greek industry with respect to the frequency assessment of the major accidents.
In the area of reliability analysis SRISL's work has resulted in a number of methodological developments in the assessment of the reliability of dynamic systems, the mathematical foundation of the Event Tree approach and other results published in international scientific journals.



Fundamental FBD for overall event "Consequence from a Work Action"

SOLAR & OTHER ENERGY SYSTEMS LABORATORY (SESL)

Head: V. Belessiotis

Personnel

Researchers and Functional Scientific Personnel	3
Other Scientists:	1
Co-operating Researchers:	1
Scholarships:	3
Technicians:	5

General Description

The Laboratory started its activities in 1980 and has ever since been pursuing applied research and technology development in the fields of Solar Thermal Energy Utilization & Energy Savings Systems and Thermal Distillation-Desalination. It is equipped with excellent measurement facilities and along with experimental investigations it uses as basic analytical tools the Metrology of Energy Quantities and Numerical Simulation, Computational Fluid Dynamics in particular.
The aforementioned activities, financed to a great extent by third means have had as a result a wide field of technical accomplishments. The Laboratory is organized and has been accredited according to the EN ISO/IEC 17025 standard, having developed a Quality Assurance System for performing tests based on ISO and EN standards

Areas of Applied Research

The laboratory conducts mainly applied research and experimental development, arising from the needs of the productive sector, the ties with which have been built through the services offered by the laboratory in a wide field of applications and over a number of years. However, in this effort the laboratory personnel is often faced with the need to answer questions that concern fundamental physical phenomena and expand the current knowledge, especially in the fields of fluid flow, heat/mass transfer and thermodynamics. Therefore, problems are often dealt with at the basic research level, by using suitable analytical methods (modelling and simulation) along with experimental methods.

The specific research areas of SESL are:

- **Solar collectors and systems**
  - Design improvements of solar thermal collectors aiming at higher efficiencies, investigation of new materials for better performance, longer life cycles and better quality.
  - New technologies such as those based on heat pipes and Dewar-type evacuated tubes (with water or air as the working fluid), concentrating collectors, "4th generation" solar collectors using nanofluids as the working fluid.
  - New methodologies for the modelling of collectors and systems, development of tools for the integrated design of large-scale solar heating plants
  - Solar-air conditioning, cooling technologies utilizing a thermal source (such absorption and desiccant cooling systems).

- **Analysis & design of thermal storage systems**
  - Energetic behavior of in-ground storage tanks of non-metallic liner, estimation of heat losses (experimental work and numerical simulation). Temperature fields (inside and around the tank), numerical simulation of hydrodynamic phenomena coupled with ground heat transfer. Static and dynamic (charging-discharging) modes of operation.

- Phase-change materials (PCM) as storage media, for low and high temperatures.
- Studies of liner properties of in-ground water tanks, particularly mechanical strength, thermal-insulating and water-tight properties, aiming at long-term reliability under real operating conditions of strong thermal cycling.
- Optimal design of water inlet-outlet systems for main types of commercial storage tanks, using fluid-dynamics and heat-transfer principles.

▪ **Metrology of energy quantities**

- Methods-equipment for evaluation of the energy performance, the measurement of thermophysical properties of materials (with emphasis on nanofluids),
- Development-implementation of complex measurement systems and error propagation for complex measuring architectures
- Estimation of uncertainty of results in a generalized-uncertainty environment.

▪ **Thermal distillation - desalination**

- System design and the development of new types of stills, coupled with solar collectors and the modelling (simulation and experimental validation) of the systems developed.
- Design of new, more efficient desalination units based on the humidification-dehumidification principle, use of micro-porous membranes.
- Hybrid systems aiming at improvements of overall process efficiency through integration in a multi-source, multi-use environment.

▪ **Mechanical/solar-assisted drying processes & systems**

- Design optimization of hot-air mechanical dryers through the numerical simulation of flow and heat/mass transport phenomena for attainment of uniform drying conditions
- Implementation of large-scale practical applications and pilot-type installations
- Investigation of the optimum drying conditions for various products (drying curves), development of models for the drying process.
- Further promotion of solar energy as a heat source for drying, using solar air collectors

Achievements

▪ Completion of the energy-autonomous building named "Prometheus Pyrphoros" ("Prometheus the Fire-Bringer"), which integrates state-of-the-art energy savings technologies by exploiting , in particular, solar energy and geothermy.

▪ Two international patent applications for : a) New-Type Solar Collectors and b) Storage tank of non-metal liner based on concrete and carrying internal thermal insulation.

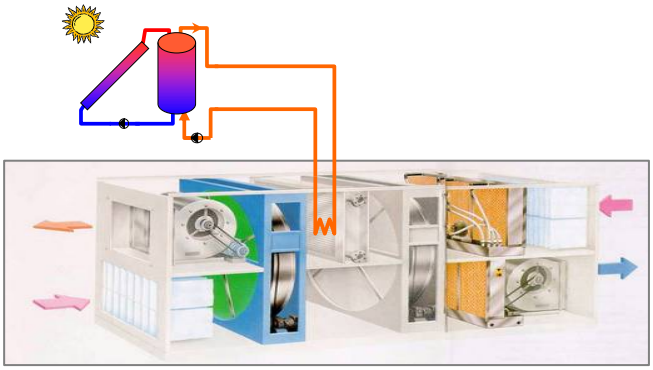
▪ Successful completion of the project AKMON, under the COMMUNITY SUPPORT FRAMEWORK Program, with the participation of 17 industrial companies and aiming at the extension of material and non-material infrastructure of the Laboratory towards a more competitive, reliable and efficient provision of scientific services.

- Key contribution of the Laboratory into the development and application of the Solar Keymark (SKM) European Certification Scheme at a national level, in cooperation with the Greek solar product manufacturing branch.

Specialized Services

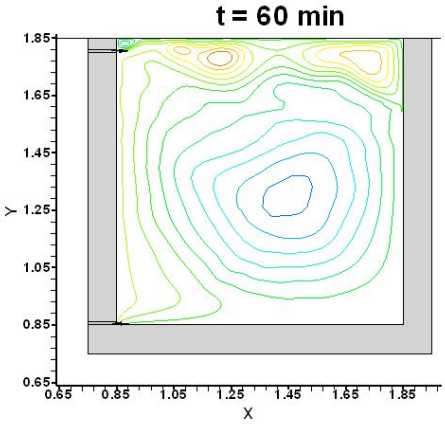
- Efficiency and qualification tests for solar collector and systems according to European and International Standards (EN 12975-2, EN 12976-2, ISO 9806-1, ISO 9806-2, ISO 9459-2) and certification of prediction of annual collector energy output
- Measurements of optical properties of materials (ASTM E 424, ASTM E 408)
- Rating and performance tests for non-ducted air conditioners and heat pumps according to international standards (ISO 5151)
- Performance characterization of stores for solar heating systems (EN 12977-3 standard) and heat exchangers
- Determination of the thermal resistance of thermal insulation and construction materials (ISO 8302, DIN 52615) and of the density of cellular plastics and rubbers (EN ISO, ISO 2896845)
- Specialized studies and consulting in the areas of optimal energy design, manufacturing processes for solar collectors and systems, design and development of new products, energy savings, development and organization of specialized laboratories, metrology
- Modelling of energy systems and processes, particularly by means of fluid flow and heat transfer analysis. Development of relevant design criteria

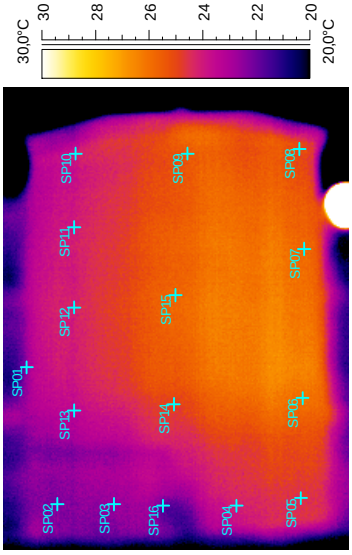
General view of the outdoor measurement and testing facilities



Schematic diagram of a solar desiccant air-conditioning system

The energy-autonomous building "Prometheus"





ComputersSimulation of flow in underground thermal storage tanks (left) and infrared thermography application in heat loss estimation from a cylindrical storage tank (right)

THERMAL HYDRAULICS AND MULTIPHASE FLOW LABORATORY (THEMLAB)

Head: C. Housiadas

Personnel

Researchers and Functional Scientific Personnel	1
Other Scientists:	1
Co-operating Researchers:	1
Scholarships:	2
Technicians:	1
Post-doc fellows:	1
Graduate students (diploma):	2

Subject

THEMLAB is the newest Laboratory of INTRP. It was created recently (in 2006) with the scope of exploiting the longstanding experience of INT-RP in the field of Thermal–Hydraulics and Multiphase Flows and shape them according to the needs and challenges of current R&D applications requiring similar scientific know-how. THEMLAB conducts basic and applied research covering seemingly distant and diverse topics such as nuclear safety, nanotechnology and health sciences. This is achieved by taking advantage of common underlying physical phenomena: we are developing quite versatile, common methods and corresponding tools for the numerical simulation of multiphase flows. The focus is on dispersed multiphase flows (aerosol flows) and computational fluid mechanics. With such "in-silico" investigations we are able to provide scientific knowledge to a broad range of current applications, in fields like nuclear safety, industrial hygiene, environmental health, aerosol medicine, bio-fluid mechanics.

Activities

The activities of THEMLAB include:

- Reactor Safety
- Aerosol Flows
- Multiphase Systems
- Scientific Computing
- Computational Fluid Dynamics
- Bio-fluid Mechanics
- Fundamental Fluid Mechanics (transition to asymmetry of symmetric flows)

The computer cluster THALES (THermofluid & Aero-bio-colloidal Large-scale Engineering Simulations).

Achievements

The basic equipment of the Laboratory is computing infrastructure. During 2007 an advanced IBM computer cluster (CPU farm) was purchased and installed, following a conduct of a public supply procedure. The cluster is named THALES (THermofluid & Aero-bio-colloidal Large-scale Engineering Simulations), and is designed to serve the needs of not only the THEMLAB laboratory, but also of the Institute. THALES permits about 100 parallel processes (in 2008 we envisage to upgrade it to more than 120 processes). Important to say that the system is compatible with the requirements of the grid. THALES has been connected (with a dedicated optical fibre), and is a major component, of the grid site GR-05-Demokritos maintained by the Institute of Nuclear Physics the. THALES is intended to serve primarily as a computational fluid dynamics (CFD) platform, which, besides in-house developed tools, will be also equipped with state-of-the-art commercial software. In 2007 floating, multi-user licenses of two major commercial packages were purchased: the ANSYS-CFX CFD package, and the Portland Group parallel Fortran (the PGI cluster development kit).

FACTS AND FIGURES 2007

4. PERSONNEL OVER THE LAST TEN YEARS

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Researchers and Functional Scientific Personnel	27	27	27	25	24	24	26	22	22	24	31
Co-operating Researchers	1	6	6	5	3	4	2	2,25	2,25	4	7
Technicians	30	27	26	23	23	25	25	27	28	30	32
Under contract	28	21	29	33	38	31	30	38	38	22	23
Administrative	6	2	4	6	4	2	2	2	2	3	2
Other Scientists	5	4	5	6	5	15	15	11	11	14	15
Scolarships	14	21	19	11	8	11	11	8	9	14	14
TOTAL	**111**	**108**	**116**	**109**	**105**	**112**	**111**	**110,25**	**112,25**	**111**	**124**

TABLE I

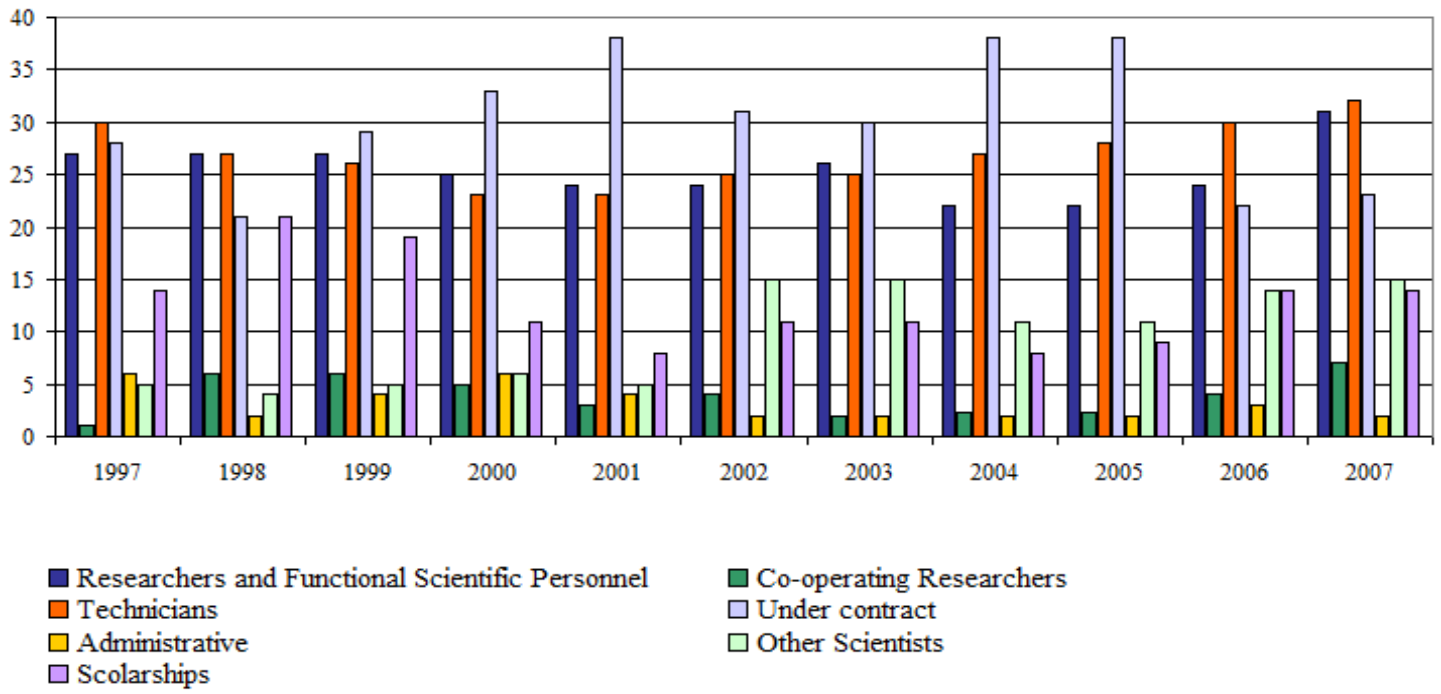


CHART I

5. FUNDING 2007

Laboratories	Funding (in Euro)					
	Competitive Programs	Matching Funds	Provision of Services	I.A.E.A	Structural Programs	**Total**
Nuclear Research Reactor	657.704	1.446	0	0	1.900.000	**2.559.150**
Enviromental Radioactivity	52.100	0	83.800	15.000	88.000	**238.900**
Health Physics & Enviromental Hygiene	7.300	0	250.000	0	60.000	**317.300**
Enviromental Research	702.442	131.938	66.505	0	0	**900.885**
System Reliability & Industrial Safety	190.323	9.621	57.650	0	0	**257.594**
Solar & other Energy Systems	96.995	15.755	146.658	0	0	**259.408**
Thermal-Hydraulicus & Multiphase Flow	58.755	7.806	0	0	0	**66.561**
Plasma Physics						
Total	**1.765.619**	**166.566**	**604613**	**15000**	**2.048.000**	**4.599.798**

TABLE II

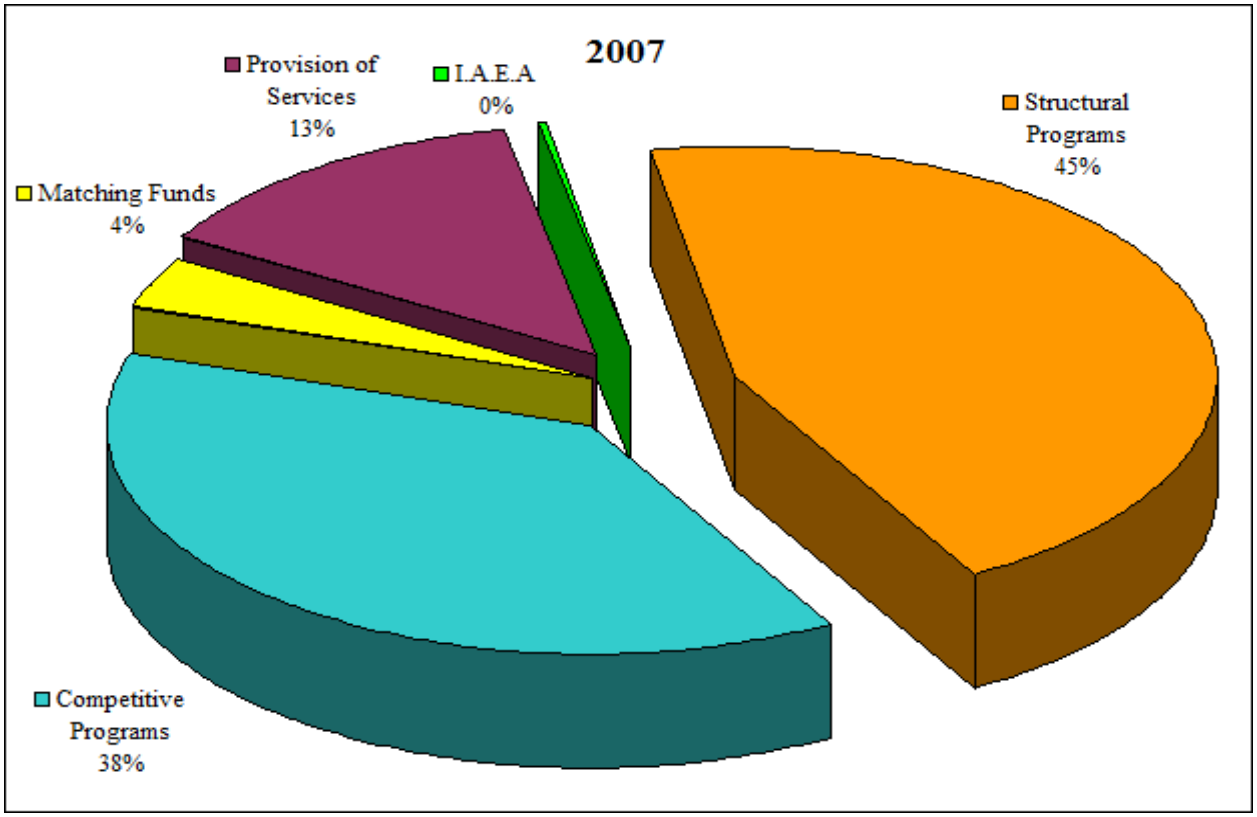


CHART II

FUNDING 1997-2007

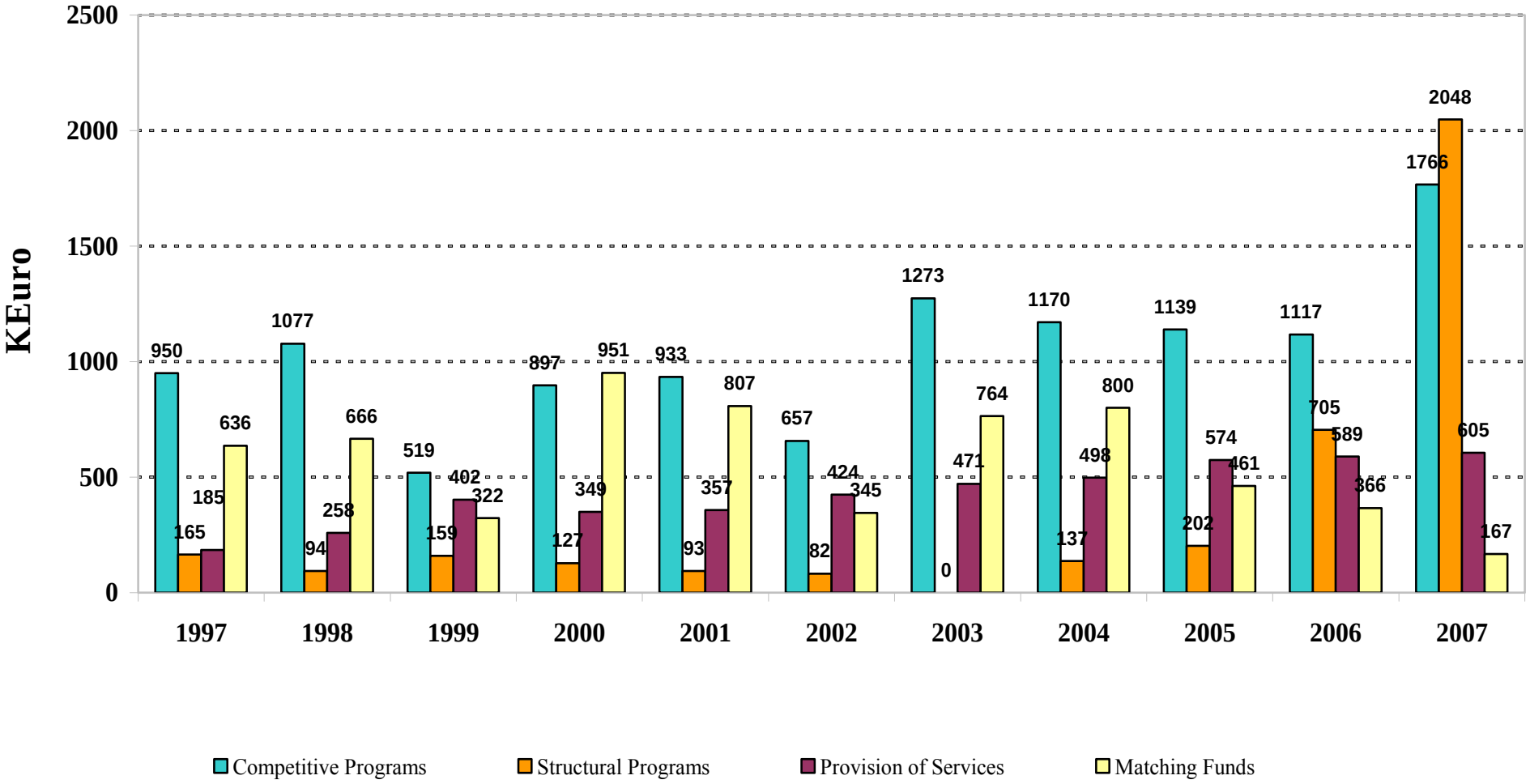


Figure 2

INSTITUTE ACCOUNT – EXPENDITURE 2007

CATEGORY	AMOUNT	CATEGORY TOTAL	%
Transfer of Funds			
Installation Upgrade of ERL.	12.000,00		
Transfer to GSRT	1.099,85		
Transfer to EE-836	55.000,00		
Transfer to EE-151	240,00		
Category Total		**68.339,85**	**27,50**
Loans			
Loan to EE-1419	13.725,15		
Loan to EE-1387	15.000,00		
Category Total		**28.725,15**	**11,50**
Payment			
University Professors	651,00		
I.T. Support	1.800,00		
Employment on Contract	13.786,70		
Other	8.382,44		
Category Total		**24.620,14**	**10,00**
Travel			
INT-RP Personnel	7.331,16		
Invitations - Committees	2.003,12		
Category Total		**9.334,28**	**4,00**
Consumables			
STATIONERY - CHEMICALS	27.392,77		
GENERAL EXPENCES	25.164,94		
Category Total		**52.557,71**	**21,00**
Equipment			
Scientific Instruments – Furniture – Computers & Software - Tools	64.730,74		
Category Total		**64.730,74**	**26,00**
General Total	**248.307,87**	**248.307,87**	**100,00**

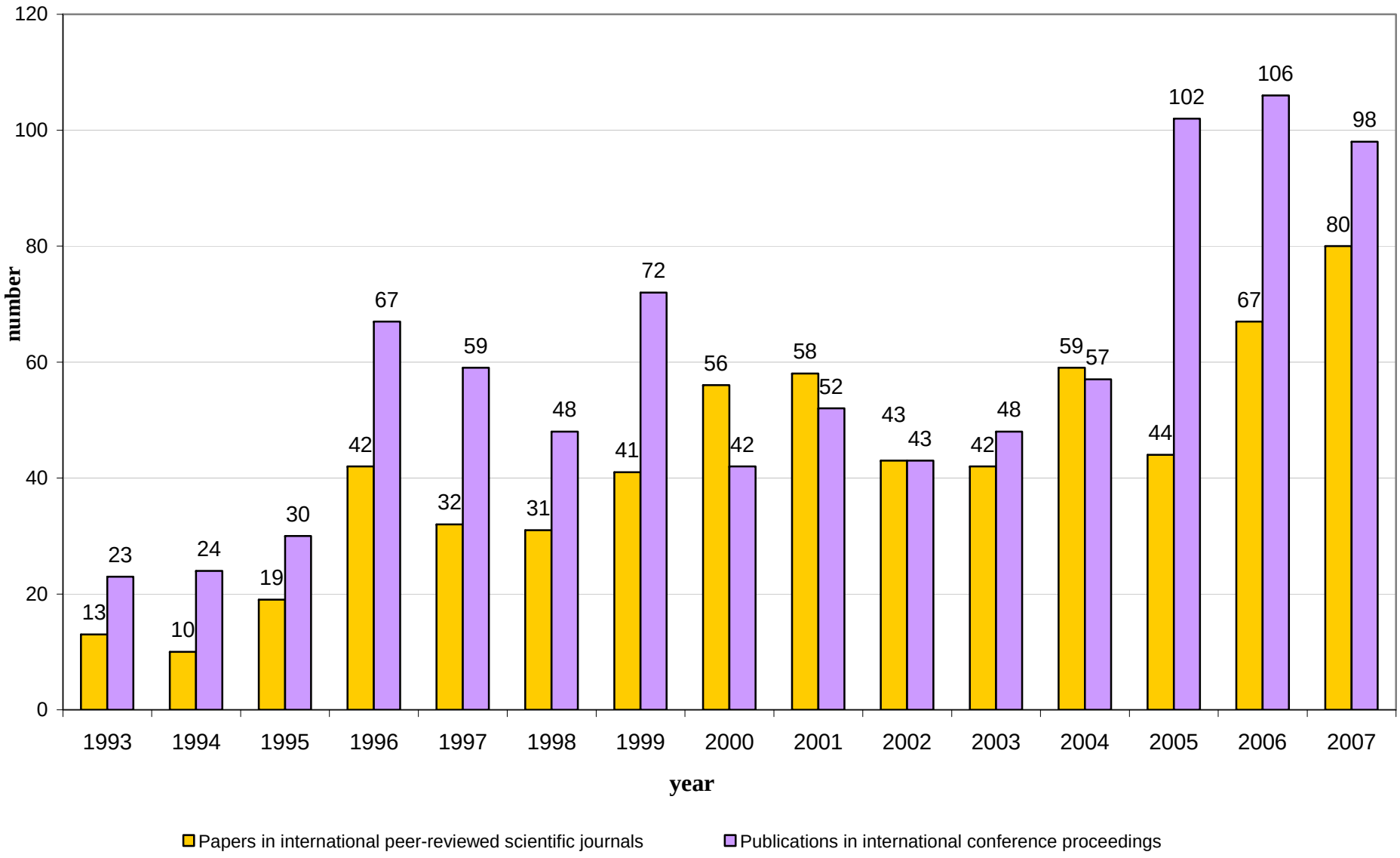
7. PUBLICATIONS 2007

IMPACT FACTOR – 2007

LABORATORY	PUBLICATIONS		IMPACT FACTOR
	*Papers (in refereed Scientific Journals)	**Papers (in Conference Proceedings)	
Nuclear Research Reactor	22	20	22,1
Environmental Radioactivity	7	7	10,5
Health Physics & Environmental Hygiene	6	13	20,6
Environmental Research	24	41	42,4
System Reliability & Industrial Safety	10	4	6,2
Solar & Other Energy Systems	4	7	3,2
Plasma Physics	-	-	-
Thermal-Hydraulic & Multiphase Flow	7	6	10,6
Total	**80**	**98**	

***** **2 of them are counted by two laboratories**
****** **2 of them are counted by two laboratories**

TABLE IV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year
Papers in international peer-reviewed scientific journals
Publications in international conference proceedings

Figure 1

PUBLICATIONS 2007

1. Nuclear Research Reactor Laboratory (NRRL)

1. PEER-REVIEWED JOURNALS

1. K. Mergia and N. Boukos Structural, thermal, electrical and magnetic properties of Eurofer 97 steel, 2008, J. Nucl. Mater., 373 (1-3) 1-8

2. C. Cristides, P.P Deen, N. Moutis, E. Houssakou, L. Bouchenoire and K. Prassides, Effect of epitaxial strain on the exchange-bias properties of [La0.67Ca0.33MnO3/La0.33Ca0.67MnO3]15 multilayers: Resonant x-ray scattering measurements, 2007, Physical Review B - Condensed Matter and Materials Physics 75

3. M. Tsalas, D. Coster, C. Fuchs, A. Herrmann, A. Kallenbach, H.W. Mueller, J. Neuhauser, V. Rohde, N. Tsois and The ASDEX Upgrade Teamb In-out divertor flow asymmetries during ELMs in ASDEX Upgrade H-mode plasmas , 2007, J. Nucl. Mater., 363-365, 1093-1098

4. H.W. Muller, V. Bobkov, A. Herrmann, M. Maraschek, J. Neuhauser, V. Rohde, A. Schmid, M. Tsalas and ASDEX Upgrade Team , Deuterium plasma flow in the scrape-off layer of ASDEX Upgrade, 2007, J. Nucl. Mater., 363-365, 605-610

5. A. Herrmann, A. Kirk, A. Schmid, B. Koch, M. Laux, M. Maraschek, H.W. Mueller, J. Neuhauser, V. Rohde, M. Tsalas, E. Wolfrum and ASDEX Upgrade Team, The filamentary structure of ELMs in the scrape-off layer in ASDEX Upgrade, 2007, J. Nucl. Mater., 363-365, 528-533

6. A.V. Chankin, D.P. Coster, R. Dux, Ch. Fuchs, G. Haas, A. Herrmann, L.D. Horton, A. Kallenbach, M. Kaufmann, A.S. Kukushkin, K. Lackner, H.W. Muller, J. Neuhauser, R. Pugno, M. Tsalas and ASDEX Upgrade Team , Comparison between measured divertor parameters in ASDEX Upgrade and SOLPS code solutions, 2007, J. Nucl. Mater. 363-365, 353-340

7. M Tsalas, A Herrmann, A Kallenbach, H W Muller, J Neuhauser, V Rohde, N Tsois, M Wischmeier and the ASDEX Upgrade Team, Divertor plasma flow near the lower x-point in ASDEX Upgrade, 2007, Plasma Physics and Controlled Fusion, 49, 857-872

8. I.E. Stamatelatos, M. Varvayanni, F. Tzika, A.B.F. Ale, N. Catsaros, Monte Carlo simulation of the Greek Research Reactor neutron irradiation facilities, 2007, Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, 263, 136-139

9. K. Kasviki, I.E. Stamatelatos, E. Yannakopoulou, P. Papadopoulou, J. Kalef-Ezra, On the accuracy of protein determination in large biological samples by prompt gamma neutron activation analysis, 2007, Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, 263, 132-135

10. I.E. Stamatelatos, F. Tzika, Large sample neutron activation analysis: A challenge in cultural heritage studies, 2007, Annali di Chimica, 97, 505-512

11. K. Kasviki, I.E. Stamatelatos, J. Kalef-Ezra, Evaluation of spatial sensitivity of a prompt gamma neutron activation analysis facility for the in vivo determination of nitrogen in small animals, Journal of Radioanalytical and Nuclear Chemistry, 271, 225-231

12. F. Tzika, I.E. Stamatelatos, J. Kalef-Ezra, Neutron activation analysis of large volume samples: The influence of inhomogeneity, 2007, Journal of Radioanalytical and Nuclear Chemistry, 271, 232-240

13. F. Tzika, A. Savidou, I.E. Stamatelatos, Non-Destructive Characterization of Radioactive Waste Drums by Gamma Spectrometry: A Monte Carlo Technique for Efficiency Calibration, 2007, Health Physics. Operational Radiation Safety 93, S174-S179

14. N. Moutis, D. Suarez-Sandoval and D. Niarchos, Voltage-induced modification in magnetic coercivity of patterned Co50Fe50 thin film on piezoelectric substrate, 2007, J. Magn. Magn. Mater. (in press)

15. G. Apostolopoulos, On-line statistical processing of radiation detector pulse trains with time-varying count rates, 2007, Submitted to Nuc. Instr. Meth. A

16. G. Apostolopoulos, K. Mergia, A. Salevris, and S. Messoloras, Time-of-flight reflectometer utilizing a thermal neutron beam, 2007, Submitted to Nuc. Instr. Meth. A

17. K. Mergia, D. Lafatzis, N Moutis, A Speliotis, G Apostolopoulos and F Cousin Oxidization of SiC coatings, 2007, Submitted to Appl. Phys. A

18. G. Apostolopoulos, K. Mergia, and S. Messoloras Venetial blinds" type stacked neutron mirrors, 2007, Accepted for publication in Nuc. Instr. Meth. A

19. K. Mergia and S. Messoloras, Small Angle Neutron Scattering Study of the Amorphous Fe90Nd3Zr7 Spin-Glass Alloy, 2007, J. Cond. Matter. Phys. (in press)

20. C. Ohms, R.C. Wimpory, M. Hofmann, R. Schneider, D.E. Katsareas, A.G. Youtsos, “NET TG1: Residual Stress Measurements by Neutron Diffraction on a Single Bead Weld on a Steel Plate at the HFR-Petten”, submitted for special issue of International Journal of Pressure Vessels and Piping

21. R.C. Wimpory, C. Ohms, M. Hofmann, R. Schneider, A.G. Youtsos, “Problems in the averaging of neutron diffraction stress data from round-robin campaigns”, submitted for publication in Materials Science Forum

22. D. Neov, C. Ohms, R.C. Wimpory, A.G. Youtsos, “Residual stress analyses by neutron diffraction in irradiated double-V butt welded steel plates”, submitted for publication in Materials Science Forum

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. G. Apostolopoulos, K. Mergia and A.G. Youtsos, Neutron scattering techniques as a tool for non-destructive testing, Proceedings of the 4th International Conference of Non-Destructive Testing, Chania, Greece, 11-14 October 2007

2. G. Apostolopoulos, K. Mergia, F. Koch, H. Bolt, S. Messoloras and F. Cousin, Neutron reflectivity study of W-Si compounds oxidized coatings, European Congress on Advanced Materials and Processes, Nuremberg, Germany, 10-13 September 2007

3. C. Jimenez, K. Mergia, Th. Speliotis, N. Moutis and S. Messoloras Metal ceramic joining using sputtering and diffusion bonding techniques, European Congress on Advanced Materials and Processes, Nuremberg, Germany, 10-13 September 2007

4. K. Mergia and S. Messoloras, Small Angle Neutron Scattering Study of the Amorphous Fe90Nd3Zr7 Spin-Glass Alloy, European Conference on Neutron Scattering, Lund, Sweden, 25-29 June 2007

5. K. Mergia, K.L. Stefanopoulos, Inmaculada López-Galilea and C. Garcia-Rosales Small-Angle Neutron Scattering Study of Doped Graphites, European Conference on Neutron Scattering, Lund, Sweden, 25-29 June 2007

6. K. Mergia, D. Lafatzis, N Moutis, A Speliotis, G Apostolopoulos and F Cousin, A neutron reflectivity study of the oxidization of SiC coatings, European Conference on Neutron Scattering, Lund, Sweden, 25-29 June 2007

7. D. Lafatzis, K. Mergia, A. Speliotis, N. Moutis and S. Messoloras Study of the oxidization of SiC coatings, Proceedings of the 4th International Workshop on "Nanosciences & Nanotechnologies" (NN07), Thessaloniki, Greece, 16-18 July 2007

8. G. Apostolopoulos , K. Mergia and S. Messoloras, Venetian blinds' type stacked neutron mirrors, European Workshop on Neutron Optics NOP '07, Villigen, Switzerland, 5-7 March 2007

9. M. Wischmeier, D. Coster, A. V. Chankin, C. Fuchs, M. Groth, J. Harhausen, A. Kallenbach, H. W. Mueller, M. Tsalas, E. Wolfrum, ASDEX Upgrade Team Simulating divertor detachment of ohmic discharges in ASDEX Upgrade using SOLPS: the role of carbon, EPS Conference, July 2007, Warsaw, Poland

10. I.E. Stamatelatos, F. Tzika, Monte Carlo simulation of GRR-1 core and neutron irradiation positions using MCNP, Proceedings International Conference on Research Reactors Safe Management and Effective Utilization, IAEA-CN-156, Sydney, Australia, 5-9 November 2007

11. F. Tzika, A. Savidou, I.E. Stamatelatos Radiological Characterization of the GRR-1 pool, Proceedings International Conference on Research Reactors Safe Management and Effective Utilization, IAEA-CN-156, Sydney, Australia, 5-9 November 2007

12. A. Savidou, F. Tzika, I.E. Stamatelatos Further developments in characterization of radioactive waste drums by non-destructive gamma spectrometry at GRR-1, Proceedings International Conference on Research Reactors Safe Management and Effective Utilization, IAEA-CN-156, Sydney, Australia, 5-9 November 2007

13. I.E. Stamatelatos, F. Tzika, Monte Carlo simulations for non-destructive elemental analysis of large samples by neutron activation analysis, Proceedings of the 4th International Conference of Non-Destructive Testing, Chania, Greece, 11-14 October 2007

14. A. Savidou, F. Tzika, I.E. Stamatelatos, Characterization of radioactive waste drums by non destructive gamma spectrometry, Proceedings of the 4th International Conference of Non-Destructive Testing, Chania, Greece, 11-14 October 2007

15. I.E. Stamatelatos, D.K. Nanopoulos, K. Kasviki, F. Tzika, A.G. Youtsos, Non destructive characterization of bulk concrete samples using prompt gamma neutron activation analysis, Proceedings of the 4th International Conference of Non-Destructive Testing, Chania, Greece, 11-14 October 2007

16. C. Ohms, R.C. Wimpory, D. Neov, A.G. Youtsos, "Residual stress analysis by means of neutron diffraction at research reactors – facilities and applications at the HFR", in: IAEA-TECDOC-1545: "Characterization and Testing of Materials for Nuclear Reactors, Proceedings of a technical meeting held in Vienna, May 29-June 2, 2006", International Atomic Energy Agency, Vienna, March 2007, ISBN 92-0-103007-X, ISSN 1011-4289, pp. 69-8

17. C. Ohms, R.V. Martins, O. Uca, A.G. Youtsos, P.J. Bouchard, M. Smith, M. Keavey, S.K. Bate, P. Gilles, R.C. Wimpory, L. Edwards, The European Network on Neutron Techniques Standardization for Structural Integrity – NeT, accepted for presentation at ASME-PVP 2008.

18. M. Varvayanni, D. Grigoriadis, N. Catsaros, E. Stakakis, Neutronic Calculations for the Conversion to LEU of a Research Reactor Core, RERTR Int. Conf., Sept. 23-27, Prague, Czech Republic, 2007

19. D. Grigoriadis, M. Varvayanni, N. Catsaros, E. Stakakis, Thermal-Hydraulic Calculations for the Conversion to LEU of a Research Reactor Core, RERTR Int. Conf., Sept. 23-27, Prague, Czech Republic, 2007

GREEK CONFERENCES

1. Δ.Η. Κατσαρέας, Λ.Κ. Κέππας, Ν.Κ. Ανυφαντής, Α. Γ. Γιούτσος, Αριθμητική Προσομοίωση και Υπολογισμός Παραμενουσών Τάσεων σε Επισκευαστικές Συγκολλήσεις Χαλυβδίνων Πλακών, 3ο Πανελλήνιο Συνέδριο Μεταλλικών Υλικών, 06-07 Δεκεμβρίου 2007 - Πάτρα (Πανεπιστήμιο Πατρών)

2. Environmental Radioactivity Laboratory (ERL)

1. PEER-REVIEWED JOURNALS

1. Florou H., Trabidou G., Nikolaou G., 2007. "Radiological impact assessment in some areas of εlevated natural radioactivity in Greece by use of simple models". Journal of Environmental Radioactivity 93 (2007) pp:74-83.

2. Karanasiou AA, Sitaras IE, Siskos PA, and Eleftheriadis K, 2007, Size distribution and sources of trace metals and n-alkanes in the Athens urban aerosol during summer, ATMOSPHERIC ENVIRONMENT 41 (11): 2368-2381

3. Mitsakou C, Housiadas C, Eleftheriadis K, S. Vratolis, C. Helmis, D. Asimakopoulos, 2007, Lung deposition of fine and ultrafine particles outdoors and indoors during a cooking event and a no activity period, INDOOR AIR 17 (2): 143-152 APR 2007

4. A. Karanasiou, K. Eleftheriadis, S. Vratolis, P. Zarbas, N. Mihalopoulos, C. Mitsakou, C. Housiadas, M. Lazaridis, J. Ondracek and L. Dzumbova, 2007, Size Distribution of Inorganic Species and Their Inhaled Dose in a Detergent Industrial Workplace, WATER AIR &SOIL POLLUTION FOCUS, DOI 10.1007/s11267-007-9160-8

5. Thébault Hervé, Alessia M. Rodriguez y Baena, Bruno Andral, José Benedicto Albaladejo, Alexandru Bologa, Victor Egorov, Heleni Florou, Tahar El Khoukhi Goran Kniewald, Abdelkader Noureddine, Mai Pham, Sayhan Topcuoglu and Michel Warnau, 2007. 137Cs baseline levels in the Mediterranean and Black Sea: A cross-basin survey of the CIESM Mediterranean Mussel Watch Programme. Marine Pollution Bulletin (in press).

6. Evangeliou N., P. Bokoros, H. Florou and M. Scoullos, 2007. Seasonal distribution of 137Cs in eastern Mediterranean Sea: Horizontal and vertical dispersion in two regions. Marine Chemistry (in press).

7. C.T.Michael, A.Hein, N.Zacharias and P.Kritidis, Disequilibrium estimations in the Uand Th series by using thick source alpha-particle spectroscopy. Science Direct (in press)

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Papathoedorou G., H. Papaefthymiou H., H. Florou, A. Koutsodedris, K. Moustakli, 2007. Natural radionuclides and 137Cs in marine sediments from two gulfs of Central Greece. Rapp. Comm. int Mer Medit. 38, 2007.

2. Florou H. and Tsytsugina V., 2007. Comparative radiological and conventional pollution impact recording in the aquatic environment by use of a cytogenetic tool. Proc.: 6th LOWRAD Int. Conf. on Low Dose radiation Effects on Human health and environment. Int. J. of Low Radiation, WONUC, HBS, Budapest 17-20 October 2007.

3. Papayannis, R.E. Mamouri, A. Nenes, G. Avdikos, G. Chourdakis, G. Georgoussis, C. Böckmann, Kirsche, K. Eleftheriadis, G. Tsaknakis, and L. Schneidenbach, (2007), «Retrieval of water vapor and of the optical-microphysical-chemical properties of tropospheric aerosols using a compact 6-wavelength Raman-lidar system», European Aerosol Conference 2007, Abstract T13A010

4. A.A Karanasiou, P.A. Siskos, and K. Eleftheriadis, Source apportionment of fine and coarse aerosol in the Athens Metropolitan area, (2007), European Aerosol Conference, Abstract T19A033

5. C. Mitsakou, A. Karanasiou, S. Vratolis, K. Eleftheriadis, M. Lazaridis, and C. Housiadas (2007), The effect of hygroscopicity on inhaled dose for aerosol species measured in an industrial workplace, European Aerosol Conference 2007, Abstract T17A014

6. S. Vratolis, C. Mitsakou, K. Eleftheriadis, A. Karanasiou, C. Housiadas, and M. Lazaridis, (2007), Gravimetric and optical aerosol measurements in an industrial workplace and the impact of the measurement uncertainty on the calculated inhaled dose European Aerosol Conference 2007, Abstract T07A015

7. K. Eleftheriadis, A.A. Karanasiou, P.A. Siskos, and C. Psomiadou. (2007). On the comparison of 7Be activity, trace metal and aerosol mass size distributions European Aerosol Conference 2007, Abstract T07A015

TECHNICAL REPORTS

1. Regular reports of environmental monitoring data to the GAEC.

2. Proc.: RER/7/003 Marine environmental assessment of the Mediterranean Sea (IAEA)

LECTURES

1. Florou H., Environmental Radioactivity, Post-graduate course, University of Athens

2. P. Kritidis, Environmental Radioactivity, IAEA post-graduate course, GAEC.

3. Health Physics and Environmental Hygiene Laboratory (HPEHL)

1. PEER-REVIEWED JOURNALS

1. Iliakis G, Wu W., Wang M., Terzoudi G.I., and G.E. Pantelias (2007). Backup pathways of non-homologous end joining may have a dominant role in the formation of chromosome aberrations. In: Chromosomal Alterations: Importance in Human Health, G. Obe and Vijayalaxmi (eds.), Springer Berlin Heidelberg, 67-85.

2. Manola K.N., Stavropoulou C., Georgakakos V.N., Zoi K., Fisfis M., Evmorfiadis I., Zoi C., Pantelias G.E., Stefanoudaki K. and C Sambani (2007). Switch in X-inactivation in a JAK2 V617F-negative case of polycythemia vera with two acquired X-autosome translocations. Leukemia Research, 31, 1009-1014.

3. Hatzi V.I., Terzoudi G.I., Pantelias G.E., Spiliopoulou C., and V. Makropoulos (2007). The benzene metabolite hydroquinone enhances G2-chromosomal radiosensitivity by affecting the G2-checkpoint in irradiated lymphocytes. International Journal of Oncology, 31, 145-152.

4. Manola K.N., Georgakakos V.N., Marinakis T., Stavropoulou C., Paterakis G., Anagnostopoulos N.I., Pantelias G.E. and C. Sambani (2007). Translocation (X;12)(p11;p13) as a sole abnormality in biphenotypic acute leukemia. Cancer Genetics and Cytogenetics, 173, 159-163.

5. Stavropoulou C., Korakaki D., Rigana H., Voutsinas G., Polyzoi M., Georgakakos V.N., Manola K.N., Karageorgiou C.E. and C. Sambani (2007). Glutathione-S-transferase T1 and M1 gene polymorphisms in Greek patients with multiple sclerosis: a pilot study. European Journal of Neurology, 14, 572-574.

6. Manola K.N., Sambani C., Karakasis D., Kalliakosta G., Harhalakis N. and M. Papaioannou (2007). Leukemias associated with Turner syndrome: Report of three cases and review of the literature. Leukemia Research, Epub ahead of print.

IN PRESS

1. Hatzi V.I., Terzoudi G.I., Makropoulos V., Maravelias C., and G.E. Pantelias, (2007). Pre-irradiation exposure of peripheral blood lymphocytes to glutaraldehyde induces radiosensitization by increasing the initial yield of radiation-induced chromosomal aberrations. Mutagenesis, in press.

2. Manola K.N., Georgakakos V.N., Margaritis D., Stavropoulou C., Panos C., Kotsianidis I., Pantelias G.E. and C. Sambani (2007). Disruption of ETV6 gene as a consequence of a rare translocation t(12;12)(p13;q13) in treatment-induced acute myeloid leukemia after breast cancer. Cancer Genetics and Cytogenetics, in press.

3. Sambani C., Stavropoulou C., Rigana H., Georgakakos V.N., Voutsinas G., Manola K.N., Pantelias G.E., Makropoulos V. and The Hellenic MDS Study Group (2007). Significant underrepresentation of GSTT1 null genotype in patients with primary myelodysplastic syndrome and 5q deletion. Leukemia, in press.

4. Stavropoulou C., Georgakakos V.N., Manola K.N., Pagoni M, Garofalaki M, Pantelias G.E., and C.Sambani (2007). 5΄ RARα submicroscopic deletion in a case of acute promyelocytic leukemia with a new variant translocation involving chromosomes 15, 17 and 18. Cancer Genetics and Cytogenetics, in press.

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Stavropoulou C., H. Rigana, V.N. Georgakakos, K.N. Manola and C. Sambani (2007). Polymorphisms of glutathione S-transferase T1 and M1 in Greek patients with myelodysplastic syndrome in relation to patient characteristics and cytogenetic subgroups. 9th International Symposium on Myelodysplastic Syndromes, May 16-19 2007, Florence, Italy. Leukemia Research 2007; Vol. 31 (suppl.1): abstr. 58, P71.

2. Crescenzi B., La Starza R., Sambani C., Parcharidou A., Brandimarte L., Matteucci C., Martelli M.F. and C. Mecucci (2007). Del(20q), a benign clonal abnormality, involves totipotent stem cells in Shwachman Diamond Syndrome. 9th International Symposium on Myelodysplastic Syndromes, May 16-19 2007, Florence, Italy. Leukemia Research 2007; Vol. 31 (suppl.1): abstr. 18, S32.

3. Georgakakos V.N., C. Stavropoulou, A. Parcharidou, K.N Manola, V. Papadakis, S. Polychronopoulou, E. Patsouris, G.E. Pantelias and C. Sambani (2007). Karyotypic and fluorescence in situ hybridization (FISH) analyses of childhood acute lymphoblastic leukemia at diagnosis: the Greek profile. 12th Congress of the European Hematology Association June 7-10, 2007, Vienna, Austria. Haematologica 2007; Vol. 92, (suppl.1).

4. Terzoudi G.I., Hatzi V.I., Makropoulos V., Pantelias G.E. The use of cytogenetic methodologies for biomonitoring and identification of hypersensitive individuals to genotoxic exposure. Διεθνές Συνέδριο, «Επαγγελματικοί κίνδυνοι για τους εργαζόμενους στον τομέα της υγείας: προκλήσεις για την πρόληψη», Αθήνα 4-6 Ιουνίου 2007.

5. Hatzi V.I., Terzoudi G.I., Demokritos, Makropoulos V., Pantelias G.E. Pre-irradiation-exposure glutaraldehyde increases G2-chromosomal radiosensitivity in human peripheral blood lymphocytes. Διεθνές Συνέδριο, «Επαγγελματικοί κίνδυνοι για τους εργαζόμενους στον τομέα της υγείας: προκλήσεις για την πρόληψη», Αθήνα 4-6 Ιουνίου 2007.

6. Hatzi V.I., Terzoudi G.I., Pantelias G.E., Spiliopoulou Ch., Makropoulos V. The benzene metabolite hydroquinone enhances G2-chromosomal radiosensitivity by inducing a less-efficient G2-M checkpoint in irradiated lymphocytes. Διεθνές Συνέδριο, «Επαγγελματικοί κίνδυνοι για τους εργαζόμενους στον τομέα της υγείας: προκλήσεις για την πρόληψη», Αθήνα 4-6 Ιουνίου 2007.

7. Manola K.N., V.N. Georgakakos, D. Margaritis, C. Stavropoulou, C. Panos, I. Kotsianidis, G.E. Pantelias and C. Sambani (2007). Disruption of ETV6 gene as a consequence of a rare translocation t(12;12)(p13;q13) in treatment-induced acute myeloid leukemia after breast cancer. 6th European Cytogenetic Conference, June 7-10, 2007, Istanbul, Turkey.

8. La Starza R., Gorello P., Crescenzi B., Pierini V., Brandimarte L., Wlodarska I., Haferlach C., Sambani C., Aventin A., Fonatch C., and C. Mecucci (2007). New insights in NUP98 gene rearrangements in hematological malignancies using a combined cytogenetic approach. 3rd ELN (European LeukemiaNet) Workshop "Genetics of MDS" September 25-26, 2007, Vienna, Austria.

9. Stavropoulou C., V.N. Georgakakos, H. Rigana, K.N. Manola and C. Sambani (2007). Glutathione S-transferase T1 and M1 gene polymorphisms in Greek patients with primary MDS: a study in relation to patients' clinical and cytogenetic features. 3rd ELN (European LeukemiaNet) Workshop "Genetics of MDS" September 25-26, 2007, Vienna, Austria.

GREEK CONFERENCES

1. Σταυροπούλου Χ., Β.Ν. Γεωργακάκος, Κ.Ν. Μανωλά, Γ.Ε. Παντελιάς και Κ. Σαμπάνη (2007). Μοριακή κυτταρογενετική διερεύνηση ασθενών με μυελοδυσπλαστικό σύνδρομο και μερική ή ολική έλλειψη του χρωμοσώματος 5. 18ο Πανελλήνιο Αιματολογικό Συνέδριο, 14-17 Νοεμβρίου 2007, Θεσσαλονίκη. Haema 2007; Vol. 10 (suppl.1).

2. Manola K.N., V.N. Georgakakos, M. Papaioannou, C. Belessi, C. Stavropoulou, L. Kyriazopoulou, H. Gatsa and C. Sambani (2007). An extra copy of RARA-PML fusion gene as a consequence of isochromosome of the long arm of der(17)t(15;17) in acute promyelocytic leukemia. 18ο Πανελλήνιο Αιματολογικό Συνέδριο, 14-17 Νοεμβρίου 2007, Θεσσαλονίκη. Haema 2007; Vol. 10 (suppl.1).

3. Γεωργακάκος Β.Ν., Α. Παρχαρίδου, Κ.Ν. Μανωλά, Χ. Σταυροπούλου, Σ. Πολυχρονοπούλου και Κ. Σαμπάνη (2007). Μηχανισμοί γένεσης δευτερογενών αλλοιώσεων όπως αναδεικνύονται από την κυτταρογενετική ανάλυση περίπτωσης TEL/AML1+ παιδικής ΟΛΛ. 18ο Πανελλήνιο Αιματολογικό Συνέδριο, 14-17 Νοεμβρίου 2007, Θεσσαλονίκη. Haema 2007; Vol. 10 (suppl.1).

4. Τσιρογιάννη Μ., Μ. Παγώνη, Μ. Γαροφαλάκη, Σ. Γιγάντες, Σ. Δελήμπαση, Μ. Βάγια, Φ. Πανίτσας, Α. Μανάκα, Ι. Αποστολίδης, Δ. Καρακάσης, Ι. Μπαλταδάκης, Θ. Καρμίρης, Μ. Μπακίρη, Κ. Σαμπάνη, Ν. Χαρχαλάκης και Ε. Νικηφοράκης (2007). Ανταπόκριση της ΧΜΛ σε 1η χρόνια φάση στο imatinib mesylate ως θεραπεία 1ης γραμμής. Η εμπειρία ενός ελληνικού κέντρου. 18ο Πανελλήνιο Αιματολογικό Συνέδριο, 14-17 Νοεμβρίου 2007, Θεσσαλονίκη. Haema 2007; Vol. 10 (suppl.1).

LECTURES

1. C. Sambani, "Glutathione S-transferase T1 and M1 gene polymorphisms in Greek patients with primary MDS: a study in relation to patients' clinical and cytogenetic features". In 3rd European LeukemiaNet Workshop "Genetics of MDS", Medical University of Vienna (MUW), Austria, Sept. 25-26, 2007.

4. Environmental Research Laboratory (EREL)

1. PEER-REVIEWED JOURNALS

1. Psihogios, J.; Kainourgiakis, M.E.; Yiotis, A.G.; Papaioannou, A. & Stubos, A.K.: A Lattice-Boltzmann study of non-Newtonian flow in digitally reconstructed porous domains. Transport in Porous Media, 70(2), 279-292 (2007) (IF 0,742)

2. Yiotis, A.G.; Psihogios, J.; Kainourgiakis, M.E.; Papaioannou, A. & Stubos, A.K.: A Lattice-Boltzmann study of viscous coupling effects in immiscible two-phase flow in porous media. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 300(1-2), 35-49 (2007) (IF 1,499)

3. Yiotis, A.G., Tsimpanogiannis, I.N., Stubos, A.K., Yortsos, Y.C., "Coupling between internal and external mass transfer during drying of a porous medium", Water Resources Research, 43, W06403, doi:10.1029/2006WR005558 (2007) (IF 1,939)

4. Bourlinos, A.; Steriotis, Th.; Karakassides, M.; Sanakis, Y.; Tzitzios, V.; Trapalis, C.; Kouvelos, E. & Stubos, A.K.: Synthesis, characterization and gas sorption properties of a molecularly-derived graphite oxide-like nanofoam. Carbon, 45, pp 852-857, 2007 (IF 3,419)

5. Katsaros, F.K.; Steriotis, Th.A.; Romanos, G.E.; Konstantakou, M.; Stubos, A.K. & Kanellopoulos, N.K.: Preparation and Characterisation of Gas Selective Microporous Carbon Membranes. Microporous and Mesoporous Materials, 99, pp 181-189, 2007 (IF 3,355)

6. Konstantakou, M.; Steriotis, Th.A.; Papadopoulos, G.K.; Kainourgiakis, M.E.; Kikkinides, E.S. & Stubos, A.K.: Characterization of Nanoporous Carbons by Combining CO2 and H2 Sorption Data with Monte Carlo Simulations. Applied Surface Science, 253, pp 5715-5720, 2007 (IF 1,263)

7. Pantatosaki, E.; Papaioannou, A.; Stubos, A.K. & Papadopoulos, G.K.: Atomistic simulation of sorption in model pores with reduced spatial periodicity. Applied Surface Science, 253, pp 5606-5609, 2007 (IF 1,263)

8. Galani, A.N.; Kainourgiakis, M.E.; Papadimitriou, N.I.; Papaioannou, A. & Stubos, A.K.: Investigation of transport phenomena in porous structures containing three fluid phases. Colloids and Surfaces A: Physicochem. Eng. Aspects, 300, pp 169-179, 2007 (IF 1,499)

9. Papadimitriou, N.I.; Romanos, G.E.; Charalambopoulou, G. Ch.; Kainourgiakis, M.E.; Katsaros, F.K. & Stubos, A.K.: Experimental Investigation of Asphaltene Deposition Mechanism During Oil Flow in Core Samples. Journal of Petroleum Science and Engineering, 57/3-4, pp 281-293, 2007 (IF 0,566)

10. A. Lambropoulos, G. Romanos, Th. Steriotis, J. Nolan, F. Katsaros, E. Kouvelos, G. Charalambopoulou, N. Kanellopoulos, “Application of an innovative mercury intrusion technique and relative permeability to examine the thin layer pores of sol–gel and CVD post-treated membranes”, Microporous and Mesoporous Materials 99 (1-2): 206-215 Sp. Iss. SI FEB 1 2007 (IF 3,355)

11. A. De Stefanis, A.A.G. Tomlinson, Th.A. Steriotis, G.Ch. Charalambopoulou, U. Keiderling, “Study of structural irregularities of smectite clay systems by Small-Angle Neutron Scattering and Adsorption”, Applied Surface Science 253 (13): 5633-5639 APR 30 2007 (IF 1,263)

12. T. Petäjä, V.-M. Kerminen, M. Dal Maso, H. Junninen, I. K. Koponen, T. Hussein, P. P. Aalto, S. Andronopoulos, D. Robin, K. Hämeri, J. G. Bartzis, M. Kulmala (2007) “Sub-micron atmospheric aerosols in the surroundings of Marseille and Athens: physical characterization and new particle formation”. Atmospheric Chemistry and Physics, 7, 2705-2720 (IF 3,495)

13. I. Mavroidis, S. Andronopoulos, J.G. Bartzis and R.F. Griffiths (2007) “Atmospheric dispersion in the presence of a 3-dimensional cubical obstacle: modelling of mean concentration and concentration fluctuations”. Atmospheric Environment, 41, 2740-2756 (IF 2,724)

14. Davakis E., Andronopoulos S., Kovalets I., Gounaris N., Bartzis J.G., Nychas S.G. (2007) “Data assimilation in meteorological preprocessors: effects on atmospheric dispersion simulations”. Atmospheric Environment, 41, 2917-2932 (IF 2,724)

15. Venetsanos A.G., Bartzis J.G. (2007), CFD modelling of large-scale LH2 spills in open environment, Int. J. Hydrogen Energy, 32, 2171-2177 (IF 1,904)

16. Gallego E., Migoya E., Martin-Valdepenas J.M., Crespo A., Garcia J., Venetsanos A.G., Papanikolaou E., Kumar S., Studer E., Dagba Y., Jordan T., Jahn W., Oíset S., Makarov D. (2007), An Inter-comparison Exercise on the Capabilities of CFD Models to Predict Distribution and Mixing of H2 in a Closed Vessel, Int. J. Hydrogen Energy, 32, 2235-2245 (IF 1,904)

17. A. Sfetsos, L. Kalyvas, “Are conditional Value-at-Risk models justifiable?”, Applied Financial Economics Letters, 3, 2, pp 129-132, 2007 (IF ???)

18. Maggos Th., Bartzis J.G., Liakou M., Gobin. Photocatalytic degradation of NOx gases using TiO2-containing paint: A real scale study. Journal of Hazardous Materials, 146 (2007) 668-673 (IF 1,544)

19. Maggos Th., Bartzis J.G., Leva P. and Kotzias D. 2007, ″Application of photocatalytic technology for NOx removal ″ Applied Physics A, 89, 81-84 (IF 1,99)

20. Ch. Vassilakos, D. Veros, J. Michopoulos, Th. Maggos, M. O’ Connor "Estimation of selected heavy metals and arsenic in PM10 aerosols in the ambient air of the Greater Athens Area, Greece" (2007) Journal of Hazardous Materials, 140, 389-398 (IF 1,544)

21. Th. Maggos, A. Plassais, J.G Bartzis, Ch. Vasilakos, N. Moussiopoulos, L. Bonafous “Photocatalytic degradation of NOx in a pilot street canyon configuration using TiO2-mortar panels” Environmental Monitoring and Assessment, (2007), DOI 10.1007/s10661-007-9722-2 (IF 0,687)

22. Ch. Vassilakos, St. Pateraki, D. Veros, Th. Maggos, J. Michopoulos, D. Saraga, C.G. Helmis. (2007) "Temporal determination of heavy metals in PM2.5 aerosols in a suburban site of Athens, Greece" Journal of Atmospheric Chemistry, 57 (1), pp. 1-17 (IF 1,41)

23. Ch. Vassilakos, N. Levi, Th. Maggos, J. Hatzianestis, J. Michopoulos, C. Helmis "Gas-particle concentration and distribution of PAHs in the atmosphere of sub urban area in Athens, Greece. Journal of Hazardous Material (2007), 140, 45-51 (IF 1,544)

24. M. Theophanides, J. Anastasopoulou, Ch. Vassilakos, T. Maggos, T. Theophanides, "Mortality and pollution in several Greek cities" Journal of Environmental Science and Health, part A (2007) 42, 741-746 (IF 0,786)

IN PRESS

1. I.V. Kovalets, S. Andronopoulos, A.G. Venetsanos, J.G. Bartzis (2008) "Optimisation of the numerical algorithms of the ADREA-I mesoscale prognostic meteorological model for real-time applications". Environmental Modelling and Software, 23, 96-108 (IF 1,351)

2. J.G. Bartzis, A. Sfetsos, S. Andronopoulos "On the individual exposure from airborne hazardous releases. The effect of atmospheric turbulence". Journal of Hazardous Materials , Vol. 150, No. 1, pp. 76-82, 2008 (IF 1,544)

3. Ranjeet S Sokhi, Hongjun Mao, Srinivas T Srimath, Shiyuan Fan, Nutthida Kitwiroon, Lakhumal Luhana, Jaakko Kukkonen, Mervi Haakana, K Dick van den Hout, Paul Boulter, Ian S McCrea, Steinar Larssen, Karl I Gjerstad, Roberto San Jose, John Bartzis, Panagiotis Neofytou, Peter van den Breemer, Steve Neville, Anu Kousa, Blanca M Cortes and Ingrid Myrtveit, "An integrated multi-model approach for air quality assessment: development and evaluation of the OSCAR air quality assessment system", Environmental Modelling and Software 2008; 23:268-281 (IF 1,351)

4. Politis, M.G.; Kikkinides, E.S.; Kainourgiakis, M.E.; & Stubos, A.K.: A hybrid process-based and stochastic reconstruction method of porous media. Microporous and Mesoporous Materials, doi 10.1016/j.micromeso.2007.09.024, in press (IF 3,355)

5. Mavrandonakis, A.; Tylianakis, E.; Stubos, A.K. & Froudakis, G.E: Why Li doping in MOFs enhances H2 storage capacity? A multi-scale theoretical study. Journal of Physical Chemistry C, in press (IF 4,033)

6. Venetsanos A.G., Baraldi D., Adams P., Heggem P.S., Wilkening H. (2007), CFD Modelling of Hydrogen Release, Dispersion and Combustion for Automotive Scenarios, Journal of Loss Prevention in the Process Industries, in press (IF 0,402)

7. Neofytou, M. Haakana, A. G. Venetsanos, A. Kousa, J. Bartzis and J. Kukkonen, "Computational Fluid Dynamics modelling of the pollution dispersion and comparison with measurements in a street canyon in Helsinki", Environmental Modeling & Assessment. in press (IF 0,654)

8. P. Maniadis, I. N. Tsimpanogiannis, E. M. Kober and T. Lookman, Phase segregation of diblock copolymers in nanopore geometries, Europhysics Letters, accepted (IF 2,237)

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. I. Mavroidis, S. Andronopoulos, J.G. Bartzis "Computational simulation of the residence of airborne pollutants in the wake of a 3-dimensional cube", 6th International Conference on Urban Air Quality, 27-29/3/2007, Cyprus

2. J.G. Bartzis, S. Andronopoulos, M. Kulmala, B. Larsen, M. Lazaridis, C. Lohse, P. Mirable, C. Pilinis "Biogenic Aerosols and Air Quality in the Mediterranean Area. The BOND Project", 6th International Conference on Urban Air Quality, 27-29/3/2007, Cyprus

3. V. Tsiouri, I. Kovalets, S. Andronopoulos, J.G. Bartzis "Development and first tests of a data assimilation algorithm in a Lagrangian puff atmospheric dispersion model", 11th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Cambridge, UK, 2-5 July 2007

4. Davakis E., Andronopoulos S., Kastrinakis E.G., Nychas S.G., Bartzis J.G. "The Inertial Subrange Kolomogorov Constant Co in Stochastic Dispersion Models: Assessment Based on Wind Tunnel Experimental Data", 11th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Cambridge, UK, 2-5 July 2007

5. J.G. Bartzis, A. Sfetsos, G. Efthimiou, S. Andronopoulos, A. Venetsanos "Validation Exercise Utilizing ADREA and STAR-CD Codes in Urban Scale. The MUST Experiment", 11th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Cambridge, UK, 2-5 July 2007

6. J.G. Bartzis, A. Sfetsos, S. Andronopoulos "Predicting the individual exposure from airborne hazardous releases by RANS CFD models", 11th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Cambridge, UK, 2-5 July 2007

7. D. Vlachogiannis, A. Sfetsos, N. Gounaris, J.G. Bartzis, Compilation of Air emission inventories for Western Macedonia, Greece, UAQ 2007, Cyprus.

8. A. Sfetsos, J. Bartzis, Real time, high resolution Regional Weather and Air Quality Forecasting System in West Macedonia, Greece, 11th Int. Conf. on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Cambridge UK, July 2007.

9. J.G. Bartzis, A. Sfetsos, S. Andronopoulos, New approaches on prediction of maximum individual exposure from airborne hazardous releases, NATO 29th International Technical Meeting (ITM) on "Air Pollution", Portugal 2007.

10. Maggos Th., Leva P., Bartzis J.G., Vassilakos Ch. Kotzias D. 'Environmental application of photocatalytic technology' First conference on Environmental Management, Engineering, Planning and Economics (CEMEPE), 24-28 June 2007, Skiathos Greece. p.1236

11. J. Michopoulos, Th. Maggos, S. Pateraki, D. Saraga, K. Bairachtari, Ch. Vasilakos. ″Indoor air quality in printery industry in Athens, Greece″. 14th International Symposium on Environmental Pollution and its impact on life in the Mediterranean Region, Seville, 10-14 October 2007 p.315

12. Th. Maggos, P. Leva, J.G. Bartzis, Ch. Vasilakos and D. Kotzias . ″Emission of inorganic intermediates during the photocatalytic oxidation of NOx over TiO2-containing paints″ 14th International Symposium on Environmental Pollution and its impact on life in the Mediterranean Region, Seville, 10-14 October 2007. p.241

13. D. Saraga, Th. Maggos, J. Michopoulos, C.G. Helmis, J.G. Bartzis, Ch. Vasilakos. ″ PM2.5, PM1 ionic composition and VOCs concentration in residential environment in Athens, Greece ″ CEST2007 10th International conference on environmental science and technology- Kos 5-7/9/2007 p.169

14. V.D. Assimakopoulos, D. Saraga, C.G. Helmis, O.I. Stathopoulou and C.H. Halios. ″An experimental study of the indoor air quality in areas of different use.″ CEST2007 10th International conference on environmental science and technology- Kos 5-7/9/2007 p.15

15. St. Pateraki, Th. Maggos, J. Michopoulos, D. N. Asimakopoulos and Ch. Vasilakos 'Chemical characterization and seasonal variation of the ionic composition of PM 1.0 and PM2.5 aerosols', 6th International Conference on Urban Air Quality, Cyprus, 27-29 March 2007 p. 303

16. A.G. Venetsanos, E. Papanikolaou, M. Delichatsios, J. Garcia, O.R. Hansen, M. Heitsch, A. Huser, W. Jahn, T. Jordan, J-M. Lacome, H.S. Ledin, D. Makarov, P. Middha, E. Studer, A.V. Tchouvelev, A. Teodorczyk, F. Verbecke, M.M. van der Voort, An Inter-Comparison Exercise On the Capabilities of CFD Models to Predict the Short and Long Term Distribution and Mixing of Hydrogen in a Garage, Second International Conference on Hydrogen Safety, San Sebastian, Spain, 11-13 September, 2007

17. T. Jordan, J. García, O. Hansen, A. Huser, S. Ledin, P. Middha, V. Molkov, J. Travis, A. Venetsanos, F. Verbecke, J. Xiao, Results of the HySafe CFD Validation Benchmark SBEPV5, 2nd International Conference on Hydrogen Safety, San Sebastian Spain, September, 2007

18. Papanikolaou E.A. and Venetsanos A.G., CFD simulations of hydrogen release and dispersion inside the storage room of a hydrogen refuelling station using the ADREA-HF code, 2nd International Conference on Hydrogen Safety, San Sebastian Spain, September, 2007

19. P. Neofytou, M. Haakana, A. G. Venetsanos, A. Kousa, J. Bartzis and J. Kukkonen, "A measurement campaign in a street canyon in Helsinki and comparison of results with predictions of the CFD model ADREA-HF" Proc. of the 6th Int. Conference on Urban Air Quality, Limassol, Cyprus, 27-29 March, 2007

20. N.I. Papadimitriou, I.N. Tsimpanogiannis, A.Th. Papaioannou, A.K. Stubos, "Investigation of the hydrogen storage capacity of hydrates with Monte Carlo simulations", to be presented at: 6th International Conference on Gas Hydrates, 6-10 July 2008, Vancouver, Canada.

21. L.J. Florusse, C.J. Peters, N.I. Papadimitriou, A.K. Stubos, "Experimental and computational investigation of promoter-stabilized clathrate hydrates of noble gases", to be presented at: 6th International Conference on Gas Hydrates, 6-10 July 2008, Vancouver, Canada.

22. Th. A. Steriotis, A.K. Stubos, "Recent Advances in Hydrogen Storage Processes", Invited lecture, 2nd International School & Workshop of INSIDE-POReS NoE, 24-28 February 2007, Thessaloniki, Greece.

23. G. Lelong, D.L. Price, S. Bhattacharyya, J.W. Brady, T. Steriotis, G. Charalambopoulou, A. Brandt, M.-L. Saboungi, "Neutron Scattering: A tool to probe structure and dynamics in porous silica", 2nd International School & Workshop of INSIDE-POReS NoE, 24-28 February 2007, Thessaloniki, Greece.

24. A. De Stefanis, A.A.G. Tomlinson, Th.A. Steriotis, G.Ch. Charalambopoulou, U. Keiderling, "Characterisation of the nanostructure of smectite clay systems based on SANS and adsorption data", BENSC User's Meeting, Hahn-Meitner Institute, Berlin-Germany, 23-24 May 2007

25. Stamatakis E., Chatzichristos C., Muller J., Brendsal E., Sagen J., Stubos A.K., "Calcium carbonate scale prediction in liquid flow through porous media", 3rd International Conference on Diffusion in Solids and Liquids, Algarve, Portugal, 4 – 6 July, 2007

26. Baujard C., Kohl T., Mégel T., Rosener M., Bruel D., Portier S., Stamatakis E., Sulzbacher H., Kühn M., Rachez X., Rabinowicz M., "Modelling of the Soultz Reservoir: Different Approaches and Possible Benefits", European Hot Dry Rock Association (EHDRA) Scientific Meeting, Soultz-Sous-Forêts, France, 28-29 June 2007

27. Stamatakis E., Stubos A., Chatzichristos C., Muller J., "Nuclear techniques for the in-situ detection of mineral scale in geothermal systems", Mid-Term Conference of the European Project: Enhanced Geothermal Innovative Network for Europe (ENGINE), Potsdam, Germany, 9-12 January 2007.

GREEK CONFERENCES

1. Ν.Ι. Παπαδημητρίου, Ε.Α. Παπανικολάου, Ε. Σταματάκης, Μ. Κωνσταντάκου, Α.Κ. Στούμπος, «Αποθήκευση Υδρογόνου: Παρούσα κατάσταση και προοπτικές», 2ο Πανελλήνιο Συνέδριο Εναλλακτικών Καυσίμων και Βιοκαυσίμων, 26-27 Απριλίου 2007, Λίμνη Πλαστήρα, Νεοχώρι Καρδίτσας.

2. Ν.Ι. Παπαδημητρίου, Ι.Ν. Τσιμπανογιάννης, Α.Γ. Γιώτης, Α.Θ. Παπαϊωάννου, Α.Κ. Στούμπος, «Αποθήκευση υδρογόνου: Η περίπτωση των υδριτών», 6ο Πανελλήνιο Επιστημονικό Συνέδριο Χημικής Μηχανικής, 31 Μαΐου-2 Ιουνίου 2007, Αθήνα.

3. Α. Γιώτης, Ι. Ψυχογιός, Μ. Καινουργιάκης, Α. Παπαϊωάννου, Α. Στούμπος, «Μελέτη μη-Αναμίξιμης Διφασικής Ροής σε Πορώδεις Δομές με τη Μέθοδο Lattice-Boltzmann», 6ο Πανελλήνιο Επιστημονικό Συνέδριο Χημικής Μηχανικής, 31 Μαΐου-2 Ιουνίου 2007, Αθήνα.

4. Α. Γιώτης, Μ. Καινουργιάκης, Α. Στούμπος, «Εφαρμογή της Παράλληλης Μεθόδου Lattice-Boltzmann στη Μελέτη Ροής σε Πορώδη Υλικά», 6ο Πανελλήνιο Επιστημονικό Συνέδριο Χημικής Μηχανικής, 31 Μαΐου-2 Ιουνίου 2007, Αθήνα.

5. Ε. Σταματάκης, Α. Στούμπος, Χ. Χατζηχρήστος, «Ανίχνευση Επικαθίσεων Μεταλλικών Αλάτων σε Γεωθερμικά Συστήματα με Χρήση Πυρηνικών Τεχνικών», 6ο

Πανελλήνιο Επιστημονικό Συνέδριο Χημικής Μηχανικής, 31 Μαΐου-2 Ιουνίου 2007, Αθήνα, εκδόσεις ΕΜΠ, 1085-1088, 2007

6. Ν.Ι. Παπαδημητρίου, Ι.Ν. Τσιμπανογιάννης, Α.Θ. Παπαϊωάννου, Α.Κ. Στούμπος, «Αποθήκευση υδρογόνου σε πορώδη υλικά: «Η περίπτωση των υδριτών», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

7. Α. Γκότζιας, Θ. Στεριώτης, Μ. Καινουργιάκης, «Συγκριτική μελέτη ρόφησης υδρογόνου σε απομονωμένους νανο-σωλήνες και νανο-κώνους άνθρακα», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

8. A. De Stefanis, A.A.G. Tomilnson, Θ.Α. Στεριώτης, Γ.Χ. Χαραλαμποπούλου, U. Keiderling, «Συνδυασμός δεδομένων ρόφησης και μικρογωνιακής σκέδασης νετρονίων για το χαρακτηρισμό της νανοδομής σμεκτιτών», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

9. Φ.Κ. Κατσαρός, Θ.Α. Στεριώτης, Σ.Κ. Παπαγεωργίου, Α.Κ. Στούμπος, Ν.Κ. Κανελλόπουλος, «Χρήση αλγινικού νατρίου για την παρασκευή άνθρακα με ρυθμιζόμενο μέγεθος πόρων», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

10. Μ.Γ. Πολίτης, Ε.Σ. Κικκινίδης, Μ.Ε. Καινουργιάκης, Α.Κ. Στούμπος, «Υβριδική μέθοδος ψηφιακής ανακατασκευής πορωδών υλικών», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

11. Μ. Κωνσταντάκου, Θ.Α. Στεριώτης, Μ. Καινουργιάκης, Γ.Κ. Παπαδόπουλος, Ε.Σ. Κικκινίδης, Α.Κ. Στούμπος, «Συνδυασμός πειραματικών ισοθέρμων προσρόφησης με θεωρητικά αποτελέσματα προσομοίωσης Monte Carlo για το χαρακτηρισμό νανοπορωδών ανθράκων», 3ο Πανελλήνιο Συμπόσιο Πορωδών Υλικών, 1-2 Νοεμβρίου 2007, Θεσσαλονίκη.

12. Ν.Ι. Παπαδημητρίου, Μ. Κωνσταντάκου, Α. Γκότζιας, Ι.Ν. Τσιμπανογιάννης, Θ.Α. Στεριώτης, Α.Κ. Στούμπος, «Αποθήκευση υδρογόνου σε νανοπορώδη υλικά», 3ο Εθνικό Συνέδριο Τεχνολογιών Υδρογόνου, 19-20 Νοεμβρίου 2007, Πάτρα.

13. Α. Γκότζιας, Θ. Στεριώτης, Μ. Καινουργιάκης, «Αποθήκευση υδρογόνου σε κωνικές νανοδομές άνθρακα», 3ο Εθνικό Συνέδριο Τεχνολογιών Υδρογόνου, 19-20 Νοεμβρίου 2007, Πάτρα.

14. Μ. Κωνσταντάκου, Θ.Α. Στεριώτης, Μ. Καινουργιάκης, Γ.Κ. Παπαδόπουλος, Ε.Σ. Κικκινίδης, Α.Κ. Στούμπος, «Χαρακτηρισμός νανοανθράκων από δεδομένα ρόφησης υδρογόνου», 3ο Εθνικό Συνέδριο Τεχνολογιών Υδρογόνου, 19-20 Νοεμβρίου 2007, Πάτρα.

TECHNICAL REPORTS

1. Μετρήσεις αερίων ρύπων στις εγκαταστάσεις της AIR LIQUIDE_ΑΘΗΝΑ

2. Μετρήσεις αερίων ρύπων στις εγκαταστάσεις της AIR LIQUIDE_ΘΕΣΣΑΛΟΝΙΚΗ

3. Μετρήσεις εκπομπών αερίων ρύπων σε αποτεφρωτήρα νοσοκομειακών αποβλήτων

4. Μελέτη ποιότητας αέρα σε γραφείο της εταιρίας PHILIPS στον δήμο Αμαρουσίου_Μετρήσεις οξειδίων του αζώτου (NOχ), οργανικών πτητικών ενώσεων (VOC's), καρβονυλικών ενώσεων και αιωρούμενης σωματιδιακής ύλης

5. Δειγματοληψία σωματιδιακής και αέριας φάσης στο κτίριο GOETHE στην Αθήνα

6. Μετρήσεις ολικών πτητικών υδρογονανθράκων και ολικού οργανικού άνθρακα στα καμιναέρια και σε επιλεγμένους εσωτερικούς χώρους της βιομηχανίας χρωμάτων ΒΙΒΕΧΡΩΜ Α.Ε

7. Μετρήσεις πτητικών οργανικών ενώσεων (βενζολίου, τολουολίου, ξυλολίων, φορμαλδεϋδη, ακεταλδεϋδη, ακετόνη), θειούχων ενώσεων (μέθυλο-μερκαπτάνης, διθειάνθρακα) και αμμωνίας (NH3) στην μονάδα κομποστοποίησης ορνιθοτροφείου στα Οινόφυτα

8. Μετρήσεις πτητικών οργανικών ενώσεων (βενζολίου, τολουολίου, ξυλολίων, φορμαλδεϋδη, ακεταλδεϋδη, ακετόνη) και θειούχων ενώσεων (μέθυλο-μερκαπτάνης, διθειάνθρακα) σε αντλιοστάσιο του βιολογικού καθαρισμού Χαλκίδας

9. Μετρήσεις πτητικών οργανικών ενώσεων (βενζολίου, τολουολίου, ξυλολίων, φορμαλδεϋδη, ακεταλδεϋδη, ακετόνη) και θειούχων ενώσεων (μέθυλο-μερκαπτάνης, διθειάνθρακα) σε βιολογικούς σταθμούς στην ευρύτερη περιοχή της Θεσσαλονίκης

10. Μετρήσεις πτητικών οργανικών ενώσεων (βενζολίου, τολουολίου, ξυλολίων, φορμαλδεϋδη, ακεταλδεϋδη), και θειούχων ενώσεων (μέθυλο-μερκαπτάνης) σε επιλεγμένα σημεία του βιολογικού καθαρισμού Κερατέας

11. Μετρήσεις Φορμαλδεΰδης και Ολικών Οργανικών Πτητικών Ενώσεων (TVOCs) σε κατοικία στην περιοχή του Μενιδίου Αττικής

12. Μετρήσεις Φορμαλδεΰδης και Ολικών Οργανικών Πτητικών Ενώσεων (TVOCs) σε κατοικία στην περιοχή της Ανθούσας Αττικής.

13. Μελέτη της ποιότητας αέρα σε περιοχή του δήμου Δοξάτου Δράμας_Μετρήσεις Πολυκυκλικών Αρωματικών Υδρογονανθράκων σε Σωματιδιακή - Αέρια φάση καθώς και σε Σωματίδια PM10

14. Μελέτη της ποιότητας αέρα στο εσωτερικό των εγκαταστάσεων του Εθνικού Τυπογραφείου - Μετρήσεις αιωρούμενων σωματιδίων (PM10, PM2.5), ανόργανων ενώσεων (NO2, NO, SO2, O3), φορμαλδεΰδης (HCHO), οργανικών πτητικών ενώσεων (Βενζολίου, Τολουολίου και Ξυλολίων) και χημικής σύστασης ολικών αιωρούμενων σωματιδίων (TSP) ως προς το As και τον Pb

15. Έκθεση αποτελεσμάτων μετρήσεων ανόργανων ενώσεων (NO2, NO, SO2), οργανικών (φορμαλδεϋδη, ακεταλδεϋδη), και σωματιδιακής ύλης στο Μουσείο Μπενάκη και στο Εγκληματολογικό Μουσείο

LECTURES

1. A.K Stubos, "EC Hydrogen Storage Activities" EU-Russia H2+FC workshop, Moscow, 25 Sept 2007

2. A.G. Venetsanos, "CFD for RCS" 2nd International Conference on Hydrogen Safety, San Sebastian Spain, September, 2007

5. System Reliability and Industrial Safety Laboratory (SRISL)

1. PEER-REVIEWED JOURNALS

1. Hale AR, Ale BJM, Goossens LHJ, Heijer T, Bellamy LJ, Mud ML, Roelen A, Baksteen H, Post J, Papazoglou IA, Bloemhoff A, Oh JIH "Modeling accidents for prioritizing prevention", RELIABILITY ENGINEERING & SYSTEM SAFETY 92 (12): 1701-1715 DEC 2007 (IF 0.747)

2. Georgiadou PS, Papazoglou IA, Kiranoudis CT, Markatos NC "Modeling emergency evacuation for major hazard industrial sites", RELIABILITY ENGINEERING & SYSTEM SAFETY 92 (10): 1388-1402 OCT 2007 (IF 0.747)

3. Bellamy LJ, Ale BJM, Geyer TAW, Goossens LHJ, Hale AR, Oh J, Mud M, Bloemhof A, Papazoglou IA, Whiston JY, "Storybuilder - A tool for the analysis of accident reports", RELIABILITY ENGINEERING & SYSTEM SAFETY 92 (6): 735-744 JUN 2007 (IF 0.747)

4. Papazoglou IA, Ale BJM, "A logical model for quantification of occupational risk", RELIABILITY ENGINEERING & SYSTEM SAFETY 92 (6): 785-803 JUN 2007 (IF 0.747)

5. O.N. Aneziris, I.A. Papazoglou, H. Baksteen, M. Mud, B.J. Ale, L.J. Bellamy, A.R. Hale, A. Bloemhoff, J. Post and J. Oh, "Quantified risk assessment for fall from height", Safety Science, In Press, Corrected Proof, Available online 19 November 2007 (IF 0.606)

6. L.J. Bellamy, B.J.M. Ale, J.Y. Whiston, M.L. Mud, H. Baksteen, A.R. Hale, I.A. Papazoglou, A. Bloemhoff, M. Damen and J.I.H. Oh, " The software tool storybuilder and the analysis of the horrible stories of occupational accidents", Safety Science, In Press, Corrected Proof, Available online 23 October 2007 (IF 0.606)

7. B.J.M. Ale, H. Baksteen, L.J. Bellamy, A. Bloemhof, L. Goossens, A. Hale, M.L. Mud, J.I.H. Oh, I.A. Papazoglou, J. Post and J.Y. Whiston, "Quantifying occupational risk: The development of an occupational risk model", Safety Science, In Press, Corrected Proof, Available online 25 May 2007 (IF 0.606)

8. B.J.M. Ale, L.J. Bellamy, H. Baksteen, M. Damen, L.H.J. Goossens, A.R. Hale, M. Mud, J. Oh, I.A. Papazoglou and J.Y. Whiston, "Accidents in the construction industry in the Netherlands: An analysis of accident reports using Storybuilder", Reliability Engineering & System Safety, In Press, Corrected Proof, Available online 21 September 2007 (IF 0.747)

9. Nijs Jan Duijm, Cécile Fiévezb, Marko Gerbecc, Ulrich Hauptmannsd and Myrto Konstandinidou, "Management of health, safety and environment in process industry", Safety SCIENCE, In Press, Corrected Proof, Available online 21 December 2007 (IF 0.606)

10. M. Konstandinidou, Z. Nivolianitou, C. Kiranoudis, and N. Markatos, "Evaluation of significant transitions in the influencing factors of human reliability", Journal of Risk and Reliability, Proceedings of the Institution of Mechanical Engineers – Part O, accepted for publication on 27July 2007 (New Journal)

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Zoe Nivolianitou , Jari Schabel, A-M Heikkilae, A. Adolph, “Safety Health and Environment (SHE) and Management of Change (MOC) Assessment Methodology applied as a web-based S2S tool.”, ESREL: 2007 conference book of proceedings, pp.1909-1914, June, Stavenger, Norway.

2. Z. Nivolianitou, “Technological innovation as an SDI for the minerals industry”, SDIMI, Milos, 2007

3. P.W.H. Chung1, X. Shang1 and Z. Nivolianitou, “Improving Process Safety Training Through the Use of VR and Knowledge-based Technologies”, ART17, April 2007, Loughborough, England.

4. Sara Brambilla, Sabrina Montagna, Massimiliano Spano, Zoe Nivolianitou and Davide Manca, "A DECISION-MAKING TOOL FOR THE QUANTIFICATION OF FLOOD RISK", EFRM 2007 Symposium, poster session, February 2007, Dresden, Germany.

TECHNICAL REPORTS

1. Ι. Γιακουμάτος, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου, «Αξιολόγηση Μελέτης Ασφαλείας ΕΑΣ (πρώην ΕΒΟ) Εγκαταστάσεις Λαυρίου», Φεβρουάριος 2007

2. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της BP HELLAS A.E. Εγκατάσταση Θεσσαλονίκης», Σεπτέμβριος 2007.

3. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της BP HELLAS A.E. Εγκατάσταση Μυτιλήνης», Σεπτέμβριος 2007.

4. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της BP HELLAS A.E. Εγκατάσταση Καλαμάτας», Σεπτέμβριος 2007.

5. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της BP HELLAS A.E. Εγκατάσταση Καβάλας» . Σεπτέμβριος 2007.

6. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της BP HELLAS A.E. Εγκατάσταση Ηγουμενίτσας». Σεπτέμβριος 2007.

7. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της CABI GAS. Εγκατάσταση Ιωαννίνων». Σεπτέμβριος 2007.

8. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της CABI GAS. Εγκατάσταση Λάρισας». Σεπτέμβριος 2007.

9. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της CABI GAS. Εγκατάσταση Ρεθύμνου». Σεπτέμβριος 2007.

10. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της CHIPITA INTERNATIONAL». Σεπτέμβριος 2007.

11. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της ΙΟΝΙΑΝ ΟΙΛ Α.Ε. Εγκατάσταση Αργοστόλι Κεφαλληνίας». Σεπτέμβριος 2007.

12. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της Μ.Γ. ΚΥΡΓΙΑΣ ΑΒΕΕ. Σεπτέμβριος 2007.

13. Ο.Ν. Ανεζίρη, Μ. Χ. Κωνσταντινίδου, Ι.Α.Παπάζογλου. «Αξιολόγηση Κοινοποίησης της ΕΚΡΗΚΤΙΚΑ ΒΟΡΕΙΟΥ ΕΛΛΑΔΟΣ». Σεπτέμβριος 2007.

GREEK CONFERENCES

1. Χ. Δ. Αργυρόπουλος, Μ. Χριστόλης, Ζ. Νιβολιανίτου, Ν. Χ. Μαρκάτος, «Προσομοίωση διασποράς τοξικών ρύπων από πυρκαγιές σε δεξαμενές καυσίμων για την εφαρμογή της οδηγίας SEVESO II", 6ο ΠΣΧΜ, Αθήνα Ιούνιος 2007.

2. Μ. Κωνσταντινίδου, Χ. Κυρανούδης, Ζ. Νιβολιανίτου, «Εκτίμηση ανθρώπινης αξιοπιστίας με χρήση ασαφούς λογικής", 6ο ΠΣΧΜ, Αθήνα Ιούνιος 2007.

3. Νιβολιανίτου Ζ., Συνοδινού Β., Παραλίκας Α., "Σημαντικοί δείκτες στη μελέτη καταστάσεων έκτακτης ανάγκης", 8ο Πανελλήνιο Γεωγραφικό Συνέδριο, Οκτώβρης 2007, Αθήνα.

4. Β.Συνοδινού, Ζ. Νιβολιανίτου, «Συμμετοχή των εθελοντικών οργανώσεων πολιτικής προστασίας στην πρόληψη και αντιμετώπιση καταστάσεων έκτακτης ανάγκης», 8ο Πανελλήνιο Γεωγραφικό Συνέδριο, Οκτώβρης 2007, Αθήνα.

6. Solar & Other Energy Systems Laboratory (SESL)

1. PEER-REVIEWED JOURNALS

1. Papanicolaou E. and Belessiotis V., “Patterns of double-diffusive natural convection with opposing buoyancy forces : comparative study in asymmetric trapezoidal and equivalent rectangular enclosures”, ASME J. Heat Transfer (accepted for publication), 2007.

2. Panaras G., Mathioulakis E., Belessiotis V., "Achievable working range for solid all-desiccant air-conditioning systems under specific space comfort requirements", Energy and Buildings, vol. 39(9), pp. 1055-1060, 2007

3. Mathioulakis E., Belessiotis V., Delyannis E. "Desalination by using alternative energy: Review and state of the art", special issue of Desalination, Vol. 203, pp 346-365, 2007

4. Belessiotis V., Delyannis E., "Solar Drying", accepted for publication in Adnances in Solar Energy Vol. 18, xxx-xxx, 2007

2. PEER-REVIEWED CONFERENCE PROCEEDINGS

1. E. Papanicolaou, V. Belessiotis, X.Li and Z. Wang, “Study of the thermal performance and air-flow features of a solar air heater with evacuated tubes”, proceedings of the ISES 2007 Solar World Congress, Beijing - China, 18-21 September 2007.

2. S. Babalis, E. Papanikolaou and V. Belessiotis, “Investigation of the solar energy utilization for meeting part of the thermal demands of agricultural-product mechanical dryers”, proceedings of the ISES 2007 Solar World Congress, Beijing - China, 18-21 September 2007.

3. Belessiotis V., Mathioulakis E., Panaras G., A new approach of the collector area in solar collector testing standards, proceedings of the ISES 2007 Solar World Congress, Beijing - China, 18-21 September 2007.

4. Belessiotis V., Mathioulakis E., An identification approach for performance characterization and simulation of large solar heating systems, proceedings of the ISES Solar World Congress 2007, Beijing - China, 18-21 September 2007.

5. Mathioulakis E. and Belessiotis V., Calibration and recalibration of measuring instruments: A Bayesian perspective, 13th International Metrology Congress, Lile – France, June 2007.

GREEK CONFERENCES

1. Γ. Πανάρας, Ε. Μαθιουλάκης, Β. Μπελεσιώτης, "Μοντέλα μέτρησης υγρασίας και διάχυση σφαλμάτων σε ψυχρομετρικές εφαρμογές", 2ο Τακτικό Εθνικό Συνέδριο Μετρολογίας, Θεσσαλονίκη, 19-20 Οκτωβρίου 2007

2. Ε. Μαθιουλάκης, Β. Μπελεσιώτης, "Εκτίμηση μετρούμενου μεγέθους από επαναλαμβανόμενες παρατηρήσεις: Bayesian ερμηνεία της Τύπου Α αβεβαιότητας", 2ο Τακτικό Εθνικό Συνέδριο Μετρολογίας, Θεσσαλονίκη, 19-20 Οκτωβρίου 2007.

7. Thermal Hydraulics and Multiphase Flow Laboratory (THEMLAB)

1. PEER-REVIEWED JOURNALS

1. Aleksandropoulou V., Mitsakou C., Housiadas C., Lazaridis M., "Particulate Matter exposure and dose relationships derived from realistic exposure scenarios", Indoor and Built Environment, Accepted, 2007.

2. Mitrakos D., Hinis E., Housiadas C., "Sectional Modeling of Aerosol Dynamics in Multi-Dimensional Flows", Aerosol Sci. Tech., 41, 1076-1088, 2007.

3. Mitsakou C., Mitrakos D., Neofytou P., Housiadas C., "A Simple Mechanistic Model of Deposition of Water-Soluble Aerosol Particles in the Mouth and Throat", J. Aerosol Medicine, 20, 519-529, 2007.

4. Karanasiou A., Eleftheriadis K., Vratolis S., Zarbas P., Mihalopoulos N., Mitsakou C., Housiadas C., Lazaridis M., Ondracek J., Dzumbova L., "Size Distribution of Inorganic Species and their Inhaled Dose in a Detergent Manufacturing Facility", Water Air Soil Poll. Focus, in press, doi 10.1007/s11267-007-9140-z, 2007.

5. Mitsakou C., Housiadas C., Eleftheriadis K., Vratolis S., Helmis C., Asimakopoulos D., "Lung deposition of fine and ultrafine particles outdoors and indoors during a cooking event and a no activity period", Indoor Air, 17, 143–152, 2007.

6. S. Tsangaris, C. Nikas, G. Tsangaris and P. Neofytou , "Couette Flow of a Bingham plastic in a channel with equally porous parallel walls", Journal of Non-Newtonian Fluid Mechanics, 144:42-48, 2007.

7. P. Neofytou, "Revision of the characteristics-based scheme for incompressible flows", Journal of Computational Physics, 222:475-484, 2007.

2. PEER REVIEWED CONFRENCE PROCEEDINGS

1. C. Housiadas, P. Papazafiri, K. Eleftheriadis, M. Lazaridis, "Important parameters for integrated assessment of the toxicity of nanoparticles and fine particles present in the industrial microenvironment", ESF-EMBO Symposium: Probing Interactions between Nanoparticles/Biomaterials and Biological Systems, Sant Feliu de Guixols (Costa Brava), Spain, 3-8 November (2007).

2. C. Mitsakou, D. Mitrakos, C. Housiadas, "The effect of particle hygroscopicity on mouth and throat deposition", European Aerosol Conference, Salzburg, Austria, September 9-14, (2007).

3. C. Mitsakou, A. Karanasiou, S. Vratolis, K. Eleftheriadis, M. Lazaridis, C. Housiadas, "The effect of hygroscopicity on inhaled dose for aerosol species measured in an industrial workplace", European Aerosol Conference, Salzburg, Austria, September 9-14, (2007).

4. S. Vratolis, Mitsakou C, K. Eleftheriadis, A. Karanasiou, C. Housiadas, M. Lazaridis, "Gravimetric and optical aerosol measurements in an industrial workplace and the impact of the measurement uncertainty on the calculated inhaled dose", European Aerosol Conference, Salzburg, Austria, September 9-14, (2007).

5. D. Mitrakos, E. Hinis, C. Housiadas, "CFD-based sectional modeling of aerosol dynamics: particle formation in an aerosol reactor", 6th International Conference on Multiphase Flow (ICMF 2007), Leipzig, Germany, July 9 – 13, (2007).

6. C. Housiadas, P. Papazafiri, K. Eleftheriadis, M. Lazaridis, "Practical integrated assessment of physicochemical, dosimetric and toxicological characteristics of airborne particulate matter in an industrial workplace", 2nd Nanotoxicology Conference, Venice, Italy, April 19-21, (2007).

8. SCIENTIFIC AND OTHER PROJECTS

Research Reactor Laboratory

1. MTR+I3, *Integrated Infrastructure Initiatives for Material Testing Reactors Innovations,* Contract number 036440 (FI60).

2. ΑΚΜΩΝ, *Αναβάθμιση παροχής περιβαλλοντικών υπηρεσιών από το ΙΠΤ-Α,* Αριθ. Προγρ. Γ.Γ.Ε.Τ. 66.

3. GSRT Greece-Montenegro bilateral S&T cooperation project: Comparison of computational codes for the analysis of radioctivity in environmental samples (2006-2008) - Αριθ. Προγρ. Γ.Γ.Ε.Τ. 143-ε.

4. European Fusion Program

5. Integrated Project EXTREMAT "New Materials for Extreme Environments" (2004-2009)

6. Επιχειρησιακό Πρόγραμμα Ανταγωνιστικότητας (ΕΠΑΝ), Έργο «Ολοκληρωμένο Εθνικό Κέντρο Περιβαλλοντικής Τεχνολογίας».

Health Physics & Environmental Health Laboratory

1. ΑΚΜΩΝ - ΕΠΑΝ (Μέτρο 4.2, Δράση 4.2.2) "Εργαστήριο Ακτινοπροστασίας ΕΚΕΦΕ 'Δ': Αναβάθμιση παροχής υπηρεσιών κυτταρογενετικής ανάλυσης λευχαιμικών και προλευχαιμικών νοσημάτων" (04ΑΚΜΩΝ144) (1/12/2006 – 30/6/2008) (Χρηματοδότηση από ΓΓΕΤ 374.400 EURO)

2. "Καρυοτυπική ανάλυση μεσοφασικών κυττάρων εφαρμόζοντας πολυχρωματικό φθορίζοντα in situ υβριδισμό (multicolor FISH) σε πρόωρα συμπυκνωμένα χρωμοσώματα (PCC): Μια νέα μεθοδολογία για την κυτταρογενετική μελέτη προλευχαιμικών και λευχαιμικών νοσημάτων" (1-1-2006 – 31-12-2007) (Χρηματοδότηση από Υπουργείο Υγείας, Κεντρικό Συμβούλιο Υγείας, Επιτροπή Ογκολογίας 14.650 EURO)

3. "Βιοδοσιμετρία ακτινοβολιών και κυτταρογενετική μελέτη λευχαιμικών νοσημάτων". Αυτοχρηματοδοτούμενο έργο παροχής υπηρεσιών (Εισροές: ≈280.000 €/έτος).

4. "Ηλεκτρομαγνητικές ακτινοβολίες: Μετρήσεις φυσικών παραμέτρων και εκτίμηση επιπτώσεων σε βιολογικά συστήματα". Αυτοχρηματοδοτούμενο έργο παροχής υπηρεσιών.

5. "Εξειδικευμένες Υπηρεσίες Ακτινοπροστασίας". Αυτοχρηματοδοτούμενο έργο παροχής υπηρεσιών.

Environmental Radioactivity Laboratory

1. RER/7/003 Marine environmental assessment of the Mediterranean Sea (IAEA) (15 000 ΕΥΡΩ)

2. Mussel Watch (CIESM) (4 000 ΕΥΡΩ)

3. MYTIMED (INTERREG) (5 000 ΕΥΡΩ)

4. Radioactivity measurements of consuming goods, materials, and other samples (third party services) (40 000 ΕΥΡΩ)

5 Design and evaluation of environmental studies (10 000 ΕΥΡΩ)

6 GSRT PEP Artiki (AEROMETRISI) Development of an operational mapping system of the atmospheric particulate matter concentration and the estimated population exposure in Attica", within the structural funds programme "Consortiums for Research and Technological Developement in High Priority Areas" with has a CEC contribution of 75%. (2/7/06 - 31/5/08) (Total 230 000 €)

7 GSRT:Research on Indoor Particulate Matter Pollution in Industrial Facilities. Period 2003-2006 (Total 750,000 Euro)

8 GSRT-NONEU-"Evaluation of Aerosol and Ozone Photochemical Models over Athens using in situ sensors (DOAS) and lidar techniques combined with health indicators". Period-2007-2008 (Total 13000 €)

9 GSRT: Upgrade of Environmental Technology Srvices from the Institute of Nuclear Technology& Radiation Protection "AKMON" 2005-2008 (Total 275359€)

10 GSRT: Environmental Research Infrastructure
Co-operation of Institute of Physical Chemistry and INT-RP (Total 1.772.500 €)

11 Services to Industrial and Public authority clients for:
Calibration and validation of aerosol/particulate matter (PM_{10} $PM_{2.5}$ PM_1) measurement infrastructure according to EN12341 standard, isokinetic sampling of aerosol and gases from stacks under regulation 2000/76/EC, Analysis of trace and earth metallic elements in aerosol samples, Environmental impact assessment for arsenic, cadmium, mercury, nickel in ambient air regulated under DIRECTIVE 2004/107/EC (Total 29800 €)

Environmental Research Laboratory

1. NoE-HYSAFE - Safety of Hydrogen as an Energy Carrier, (SES6-CT-2004-502630), (1/3/04-28/2/09) (Total NCSR "D" Budget 314,394 EURO, EC Funding 55%).

2. IP-STORHY - Hydrogen Storage Systems for Automotive Application, (SES6-CT-2004-502667), (1/3/04-31/8/08) (Total NCSR "D" Budget 252,300 EURO, EC Funding: 50%)

3. IP-EURANOS - European Approach to nuclear and radiological emergency management and rehabilitation strategies (FI6R-CT-2004-508843) (1/4/04-31/3/09) (Total NCSR "D" Budget 170,108 EURO, EC Funding: 50%).

4. STREP - HYAPPROVAL – Handbook for Approval of Hydrogen Refueling Stations, (019813) (1/10/2005-30/9/2007) (Total NCSR "D" Budget 90,003EURO, EC Funding 43,002EURO).

5. CA - ENGINE – Enhanced geothermal innovative network for Europe (019760) (1/11/2005, duration: 30 months) (Total NCSR "D" Budget 38,400 EURO, EC Funding 100%)

6. STREP - TESTNET Towards European Sectorial Testing Networks for Environmental Technologies (018311) (1/9/2005 – 31/8/2008) (Total NCSR "D" Budget 104,220 EURO, EC Funding 50%).

7. IP-NESSHY – Novel Efficient Solid Storage for Hydrogen (SES6-CT 2005-518271) (1/1/2006-31/12/2010) (Total NCSR "D" Budget 1,413,000 EURO, EC Funding 889,000)
8. STREP-FP6, HYPER Installation Permitting Guidance for Hydrogen and Fuel Cells Stationary Applications, 039028 (1/11/06-30/10/08) (Total NCSR "D" Budget 83,200 EURO, EC Funding 50%)

9. FP7-NANOHY Novel nanostructured materials for hydrogen storage, Grant Agreement No 210092, (1/1/2008, duration: 45 months) (Total NCSR "D" Budget 28,5800 EURO, EC Funding 214,350)

10. SSA-HYSIC Enhancing International Cooperation in running FP6 Hydrogen Solid Storage Activities, Contract No 038941(SES6), (1/1/07-31/12/08) (Total NCSR "D" Budget 25,000 EURO, EC Funding 100%)

11. ΑΚΜΩΝ - ΕΠΑΝ (Μέτρο 4.2, Δράση 4.2.2) Αναβάθμιση παροχής περιβαλλοντικών υπηρεσιών από το ΙΠΤΑ (04ΑΚΜΩΝ66) (19/5/2005 – 31/5/2008) (Χρηματοδότηση από ΓΓΕΤ 74,000 EURO)

12. ΠΙΣΤΟΠΟΙΗΣΗ - ΕΠΑΝ (Μέτρο 1.2 'ΕΘΝΙΚΟ ΣΥΣΤΗΜΑ ΠΟΙΟΤΗΤΑΣ', Δράση 1.2.2 ΠΙΣΤΟΠΟΙΗΣΗ) Ενίσχυση της υφισταμένης υποδομής του εργαστηρίου Περιβαλλοντικών Ερευνών (ΕΠΕΡ) του Ινστιτούτου Πυρηνικής Τεχνολογίας – Ακτινοπροστασίας του ΕΚΕΦΕ «ΔΗΜΟΚΡΙΤΟΣ» για την παροχή υπηρεσιών δοκιμών (Κωδ ΟΠΣ 102250) (19/9/2005 – 31/10/2008) (Χρηματοδότηση από ΥΠΑΝ 180,000 EURO)

13. ΕΛΛΗΝΟΣΛΟΒΕΝΙΚΗ ΔΙΑΚΡΑΤΙΚΗ Ε&Τ ΣΥΝΕΡΓΑΣΙΑ Νέα Διαμεταλλικά υλικά στερεάς κατάστασης για απορρόφηση υδρογόνου και ιδιαίτεροι χαρακτηρισμοί (Κωδ ΓΓΕΤ 043-γ) (1/10/2005-29/3/2007) (Χρηματοδότηση από ΓΓΕΤ 11,700 EURO)

14. ΔΗΜΙΟΥΡΓΙΑ ΠΕΡΙΦΕΡΕΙΑΚΩΝ ΠΟΛΩΝ ΚΑΙΝΟΤΟΜΙΑΣ (ΠΠΚ) (Μέτρο 4.6, Δράση 4.6.1) Πόλος Καινοτομίας Δυτικής Μακεδονίας Synenergia (Κωδ 04ΠΠΚ06) (1/11/06-31/10/08) (Χρηματοδότηση από ΓΓΕΤ 50,000 EURO)

15. ΔΙΕΘΝΗΣ ΣΥΝΕΡΓΑΣΙΑ «Ολοκληρωμένη μεθοδολογία για τη μελέτη της επίδρασης των εκπομπών αερίων του θερμοκηπίου από την πετρελαική βιομηχανία» ΑΙΘΗΡ (Κωδ 05 ΔΣΒΕΠΡΟ-47) (1/6/06-31/12/07) (Χρηματοδότηση από ΓΓΕΤ 40,000 EURO)

16. ΔΙΕΘΝΗΣ ΣΥΝΕΡΓΑΣΙΑ «Ολοκληρωμένη προσέγγιση και λογισμικό για την ποσοτική εκτίμηση τοξικών οργανικών σε υδατικά λύματα εγκαταστάσεων παραγωγής υδρογονανθράκων» ENVIRON (Κωδ 05 ΔΣΒΕΠΡΟ-49) (1/6/06-31/12/07) (Χρηματοδότηση από ΓΓΕΤ 40,000 EURO)

17. ΔΙΕΘΝΗΣ ΣΥΝΕΡΓΑΣΙΑ «Ανάπτυξη ειδικού τύπου πολυεστέρων για τη εφαρμογή σε επιστρώματα θερμο-ευαίσθητων επιφανειών» ΦΑΕΘΩΝ (Κωδ 05 ΔΣΒΕΠΡΟ-48) (1/6/06-31/12/07) (Χρηματοδότηση από ΓΓΕΤ 40,000 EURO)

18. ΠΑΒΕ «Πολυδραστικά πολυμερικά νανογαλακτώματα για τη βιομηχανία επιστρωμάτων και συγκολλητικών» (Κωδ ΠΑΒ-96) (1/6/06-31/12/07) (Χρηματοδότηση από ΓΓΕΤ 40,000 EURO)

19. ΠΕΠ ΑΤΤΙΚΗΣ – Μέτρο 1.2 «Ανάπτυξη επιχειρησιακού συστήματος αποτύπωσης (χαρτογράφησης) των επιπέδων συγκέντρωσης αιωρούμενων σωματιδίων και της εκτιμούμενης έκθεσης πληθυσμού στην Αττική» (Κωδ ΑΤΤ-111) (1/4/2006-31/3/2008) (Χρηματοδότηση από ΓΓΕΤ 63,000 EURO)

20. ΠΕΠ ΔΥΤΙΚΗΣ ΕΛΛΑΔΑΣ - Μέτρο 3.4 «Μοντελοποίηση και προσομοίωση των φυσικοχημικών διαδικασιών στην ατμόσφαιρα για τον έλεγχο και τη δυνατότητα πρόβλεψης της ατμοσφαιρικής ρύπανσης (Κωδ ΔΕΛ-18) (1/4/2006-31/1/2008) (Χρηματοδότηση από ΓΓΕΤ 41,632.11 EURO)

System Reliability and Industrial Safety Laboratory

1. “WORM Metamorphosis Phase”, (RIVM, Netherlands) (€ 116.000)

2. VIRTHUALIS “Virtual reality and human factors”, (FP6-IP, DG Research, 2005-2009) (€ 53.325)

3. PRE-EMERGENCIES (FP6, DG Environment, 2006-2007) (€ 21.000)

4. Reliability assessment of Hellenic Defense System plant, N.C.S.R. “DEMOKRITOS”, (2005-2008) (€ 32.650)

5. «Εκπόνηση και ιεράρχηση δράσεων για την υγιεινή και ασφάλεια στην εργασία στο πλαίσιο του νέου Ε.Π. «ΑΝΘΡΩΠΙΝΟΙ ΠΟΡΟΙ 2007-2013» (2007-2008), (€ 25.000)

Solar &Other Energy Systems Laboratory

1. ΑΚΜΩΝ/ΕΠΑΝ/ΙΙΙ ΚΠΣ, "Ανάπτυξη υποδομών και διαδικασιών για Παροχή Διαπιστευμένων Δοκιμών και Βελτιστοποίηση Προϊόντων ΑΠΕ", 2003-2007, προϋπολογισμός 452.580 €, (Έργο ΓΕΛ 1114)

2. ΑΚΜΩΝ/ΕΠΑΝ/ΙΙΙ ΚΠΣ , "Παροχή εξειδικευμένων Υπηρεσιών στον τομέα ΑΠΕ, στα πλαίσια υλοποίησης του Προγράμματος ΑΚΜΩΝ" , 2003-2007, προϋπολογισμός 452.580 €, (Έργο ΓΕΛ 1102)

3. ΕΠΑΝ (ΓΓΕ-Τ) / Μέτρο 4.5, ΕΘΝΙΚΗ ΠΡΟΤΕΡΑΙΟΤΗΤΑ, "Ενταξη Θερμικών ηλιακών συστημάτων σε κτίρια – νέοι ηλιακοί συλλέκτες υψηλής απόδοσης, βέλτιστος ενεργειακός σχεδιασμός και ολοκληρωμένη ενεργειακή διαχείριση

αυτόνομου κτιρίου με ηλιακό κλιματισμό'', 2003-2007, προϋπολογισμός 293.000 €, (Έργο ΓΕΛ 1090)

4. Δράση 3.1.2/ Μ 3.1/ΕΠΑΝ, "Βέλτιστος ενεργειακός σχεδιασμός και χαρακτηρισμός προϊόντων ηλιακής ενέργειας και διατάξεων αποθήκευσης θερμότητας", 2007-2009, προϋπολογισμός 336.030 €, (ΕΡΓΟ ΓΕΛ 1456)

5. Π.Υ., Παροχή Εξειδικευμένων Επιστημονικών & Τεχνολογικών Υπηρεσιών στον τομέα των ΑΠΕ, 2003-2009, προϋπολογισμός 450.000 €, (ΕΡΓΟ ΓΕΛ 1103)

6. MEDA , "Autonomous desalination system concepts for sea water and brackish water in rural areas with renewable energies – Potentials, Technologies, Field Experience, Socio-technical and Socio-economic impacts – ADIRA", 2003-2008, προϋπολογισμός 240.255 €, (ΕΡΓΟ ΓΕΛ 1111)

7. CHINA- GREECE JOINT R & T PROGRAMMES 2004 – 2006 , « Solar air-heaters with evacuated tubes for mechanical drying facilities", 2005-07, προϋπολογισμός 11.740 €, (ΕΡΓΟ ΓΕΛ 1270)

8. ΠΕΝΕΔ 2003 (ΕΠΑΝ / Μ 8.3 / ΙΙΙ ΚΠΣ), "Ανάπτυξη και ενεργειακή βελτιστοποίηση αυτόνομου ξηραντηρίου γεωργικών προϊόντων με χρήση ηλιακής ενέργειας", 2005-2008, προϋπολογισμός 46.758 €, (ΕΡΓΟ ΓΕΛ 1262)

9. NEGST, "New Generation of Solar Thermal Systems – NEGST", 2004-2007, προϋπολογισμός 30.720 €, (ΕΡΓΟ ΓΕΛ 1178)

10. Intelligent Energy – Europe, "SolarKeymark-II - Large open EU market for solar thermal products" 2006-2008, προϋπολογισμός 47.160 €, (ΕΡΓΟ ΓΕΛ 1288)

11. Διακρατική Συνεργασία ΕΛΛΑΔΑ – ΤΥΝΗΣΙΑ, "Autonomous Low Visual Impact Solar Hot Water System", 2006-2008, προϋπολογισμός 15.740 €, (ΕΡΓΟ ΓΕΛ 1373)

ΕΞΕΙΔΙΚΕΥΜΕΝΕΣ ΜΕΛΕΤΕΣ

12. "Ειδικός Κανονισμός Πιστοποίησης Θερμικού Ηλιακού Συστήματος", σύμφωνα με τα πρότυπα ISO 9459 – 2 και EN 12976-2 για λογαριασμό του ΕΛΟΤ.

13. "Preliminary study for a solar-system testing facility according iso 9459-2 (en 12976-2) standard" για λογαριασμό του "Solar Energy Laboratory of the Institute of Engineering Thermophysics (Chinese Academy of Sciences)"

Thermal Hydraulics And Multiphase Flow Laboratory

1. FP6 NoE, FI6O-CT-2004-509065 (SARNET): Network of Excellence for a Sustainable Integration of European Research on Severe Accident Phenomenology (2004-2008).

2. FP6 CA, GOCE-Contract No 037019 (HENVINET): Health and Environment Network (2006-2009).

3. OP COMPETITIVENESS (ΕΠΑΝ), GSRT, ΦΠ5 (INDOOR-HEALTH): Characterisation of Air Quality in Industrial Buildings – Mechanisms Controlling the

Indoor/Outdoor Particulate Matter Chemical Characteristics and their Effects to Human Exposure and Inhaled Dose, (2003-2007). (jointly with ERL Laboratory).

4. OP COMPETITIVENESS (ΕΠΑΝ), GSRT, GR-USA scientific and technological cooperation project: Evaluation of Aerosol and Ozone Photochemical Models over Athens using in situ sensors (DOAS) and lidar techniques combined with health indicators, (2006-2008), (jointly with ERL Laboratory).

5. OP COMPETITIVENESS (ΕΠΑΝ), GSRT (AEROMETRISI): Development of an operational information system for the particulate matter concentrations and the associated exposure and doses to the population of the Greater Athens Area, (2006-2008), (jointly with ERL and EREL Laboratories).

6. FP7-HEALTH-2007-A, CP Project No 201335 (NANOTEST): Development of methodology for alternative testing strategies for the assessment of the toxicological profile of nanoparticles used in medical diagnostics (2008-2011).

7. FP7-NMP-2007-CSA-1, CSA Project No 218539 (NanoIMPACTnet): Europe-wide Cooperation and Coordination in the Study of the Health and Environmental Impact of Nanomaterials (2008-2012).