

**LABORATORY OF ENVIRONMENTAL CHEMISTRY,
DEPARTMENT OF CHEMISTRY
NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS
(LEC-UoA)**

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INTRODUCTION

The research entity of the Laboratory of Environmental Chemistry of the National and Kapodistrian University of Athens was created in 1982 as part of the Inorganic and Environmental Chemistry and Technology Division of the Chemistry Department but the current Director Prof. Scoullos was a founding member of the first Greek post-graduate course on Ocean Studies established in the University of Athens in 1982. The Laboratory of Environmental Chemistry has been an independent entity since 2003.

The permanent staff of LEC-NKUA comprises of:

Dr. Michael J. Scoullos (Prof. - Director)

Dr. Dimitrios Nikolelis (Prof.)

Dr. Manos Dassenakis (Assoc. Prof.)

Ms. Vassiliki Mantzara (M.Sc., Researcher)

Dr. Fotini Botsou (Researcher)

Dr. Sotirios Karavoltsos (Researcher)

Dr. Vassiliki Paraskevopoulou (Researcher)

Dr. Aikaterini Sakellari (Researcher)

Dr. Eleni Stathopoulou (Researcher)

Dr. Christina Zeri (Researcher at HCMR, Collaborative Scientist) ---

Dr P.A. Siskos (Em. Prof.)

Furthermore LEC maintains a permanent collaboration in research activities with the following staff of the Department of Chemistry:

Dr. Athanasios Valavanidis (Assoc.Prof.–Dept.of Chemistry/NKUA, Organic Chemistry)

Dr. Evangelos Bakeas (Lecturer – Dept. of Chemistry/NKUA, Analytical Chemistry)

Dr. Nikolaos Thomaidis (Lecturer – Dept. of Chemistry/NKUA, Analytical Chemistry)

And the following members of Departments of the School of Sciences

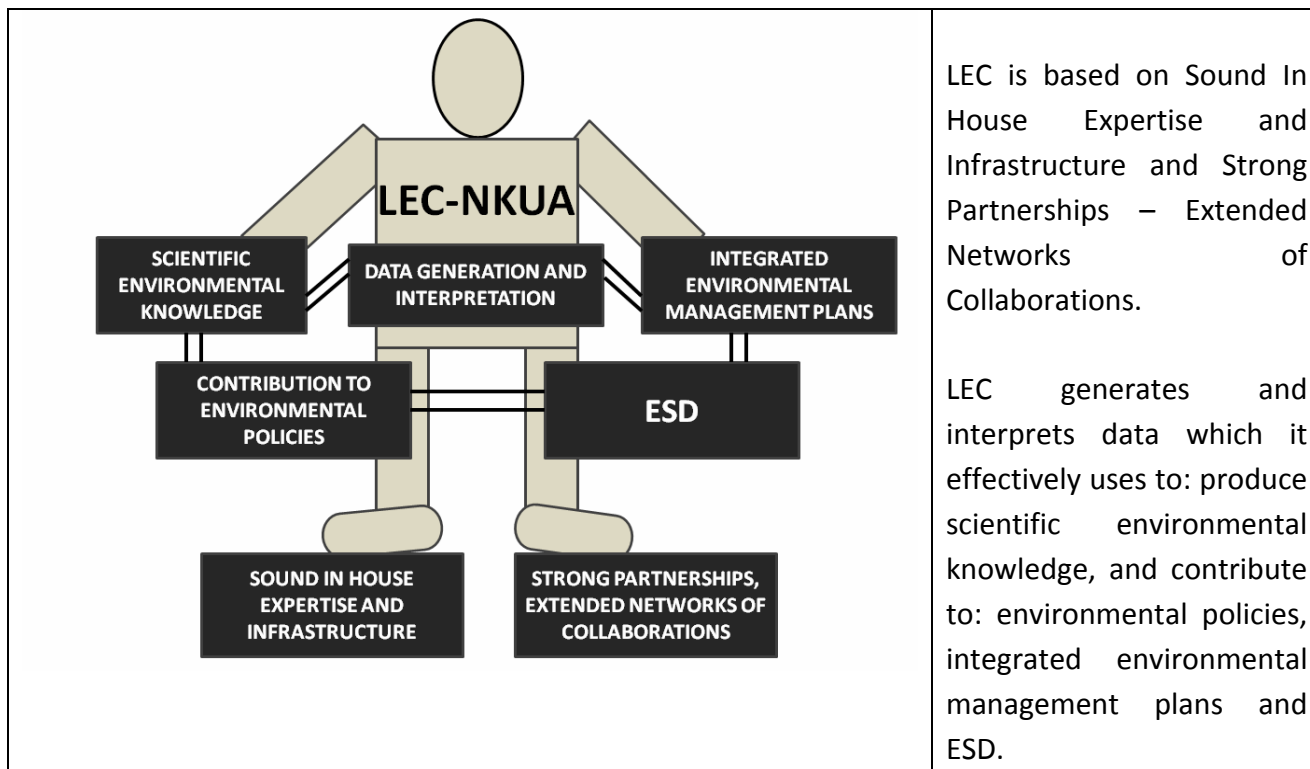
Dr. Vassilios Roussis (Prof. – Dept. of Pharmacy/NKUA, Pharmacognosy)

Dr. Serafim Poulos (Assist. Prof. – Dept. of Geology/NKUA, Geomorphology)

Dr. Artemis Nikolaidou (Assoc. Prof. – Dept. of Biology/NKUA, Zoology)

Dr. Andriani Pantazidou (Assist. Prof. – Dept. of Biology/NKUA, Botany)

At this point 4 PhD and 20 MSc students are part of LEC-NKUA.



LEC-NKUA scientific and technical potential is based on the high expertise of the staff in certain domains of research and technology as well as on equipment facilities of advanced technology providing opportunities for several research activities of different fields. Focusing on environmental chemistry the perspective of the Laboratory includes an integrated and holistic approach of the environment, which has contributed to its very high reputation and the efficient handling of a large number of various types of programs and projects of nearly all aspects of environmental science, technology, management and education.

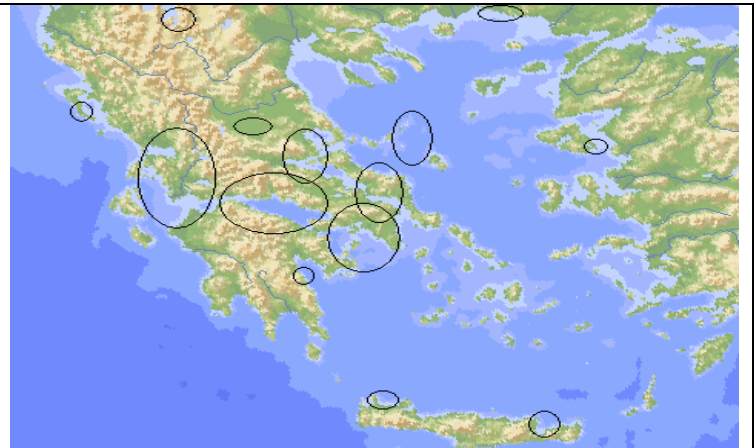
The Laboratory of Environmental Chemistry has a long-term experience in environmental matters and environmental analytical techniques and is accredited according to ISO/EN 17025. Its research activity and programs are related to the following major directions:

- Investigation of the chemistry of aqueous systems, including surface and ground waters, as well as coastal and generally marine waters and sediments. This research tasks focuses on the circulation, chemical behaviour and distribution of heavy metals, nutrients and organic pollutants. Of particular importance is also the study of the different forms (speciation) under which various elements occur in natural systems and which are responsible for their biological activity and impact, as well as the study of the transfer of pollutants from the land to the sea (e.g. estuaries).
- Research related to the chemistry of the atmospheric environment, including the determination of the concentrations and the distributions of various pollutants in aerosols
- Research on the isolation, determination-characterization and/or study of properties of various chemical substances originating from aquatic organisms
- Environmental management studies for aqueous and marine ecosystems
- Application of anti-polluting technologies, study of sewage treatment plant and solid wastes recycling facilities and their products, studies of environmental impact and determination of environmental limitations in industrial sectors
- Ecotoxicological studies related to the toxicity of free radicals in ecosystems as well as bioaccumulation studies in organisms and foodstuffs
- Investigation of the environmental impacts of coastal aquaculture in eastern Mediterranean coasts
- Study – validation on environmental analytical techniques

Research activities are carried out in the framework of environmental programs both at national and international levels. Progress elaborated is characteristically reflected in LEC-NKUA statistics: the number of PhD (27), MSc's (139), peer-reviewed research publications (169), University publications/books (24), Environmental education publications (70), Monographs/books (13), Publications in Conference Proceedings (>250), produced since the beginning of LEC-NKUA research activities. Significant is the contribution of the cooperation, in which the laboratory participates, with several local and international institutes. Through these collaborations effective transfer of know-how is achieved. The major research programs of the laboratory are based on the following scientific topics:

- Marine pollution in waters and sediments and particularly in coastal areas of limited circulation
- Chemical oceanography in pelagic areas
- Aquaculture-marine environment
- Study of specific "microenvironments"
- Determination of heavy metals in environmental matrices
- Determination of PAHs and PCBs in various environmental samples

Figure 2
Areas in Greece studied by
LEC-NKUA



COLLABORATIONS WITH OTHER INSTITUTES

National Institutes

Universities
Hellenic Centre for Marine Research (H.C.M.R.)
General State Chemical Laboratory
“Democritus” Research Centre
National Agricultural Research Foundation
(N.AG.RE.F.)

International Organizations

GWP-MED
MIO-ECSDE
IUPAC
EFMS
UNEP-MAP

International Institutes

European Environment Agency
(EEA)
Ruder Boskovic Institute of Zagreb
Univ. of Liverpool
Univ. of Dresden
PAP/RAC
Agricultural University of Carthagen,
Spain
Marine Environmental Laboratory
of Monaco
Bulgarian Academy of Science,
Institute of Inorganic Chemistry

EDUCATIONAL ACTIVITIES

A major part of the work of the Laboratory of Environmental Chemistry is devoted to its educational activities focused both on undergraduate and post graduate courses offered within the Chemistry Department and the School of Sciences of the University of Athens.

Undergraduate Course - Chemistry Department

Courses offered: Environmental Chemistry (6th Semester - obligatory)
Atmospheric Chemistry (7th Semester – by choice)
Chemical Oceanography (7th Semester – by choice)
Ecotoxicology (8th Semester – by choice)
Chemistry - Management of Aquatic Environment (8th
Semester – by choice)

Post Graduate Courses

A) Inter-Departmental Post-Graduate Course on Oceanography.

The Laboratory is responsible for the section of Chemical Oceanography

Courses offered: General Chemical Oceanography

Marine Chemical Pollution

Analytical Chemical Oceanography

Special Chapters of Chemical Oceanography

Methodology-Compilation of Results in Chemical Oceanography

Management of the Marine Environment

Marine Resources and Technology

B) Post-Graduate Course of Chemistry Department: Chemistry and Technology of the Environment

Courses offered: Chemistry of Aquatic Systems

Atmospheric Chemistry

Ecology - Ecotoxicology

Environmental Technology

Energy Production

C) Post-Graduate Course on Education for Environment and Sustainable Development within the Inter-University Post Graduate course on Science (Chemistry) Education.

The post graduate courses aim at the training of young scientists in order to become specialized in the study, management and protection of the environment, in order to be capable of contributing to the development of the environmental science and of covering the demand both locally and internationally.

AVAILABLE EQUIPMENT AND INFRASTRUCTURE

Rooms – Laboratories

- Students Laboratory with 48 working places 200 m²
- 4 rooms specially designed for specific analytical determinations and installation of the appropriate instrumentation exceeding 200 m
- Office space for the permanent staff and post graduate Students
- Storing rooms
- Clean room
- Teaching room (48 seats, with ceiling based projector system)

Scientific Equipment

- ICP-MS Thermo Scientific
- Varian, SpectrAA-200 Flame Atomic Absorption Spectrometer with Vapour Generator Accessory 77.
- Varian, SpectrAA-640Z Graphite Furnace Atomic Absorption Spectrometer with GTA-100 Furnace and Zeeman background correction
- Polarographer Ecochemie μ -AUTOLAB
- Total mercury analyzer and methyl mercury analyzer CV – GC - AFS (based on distillation, ethylation, purge and trap desorption and quantification with Cold Vapour Atomic Fluorescence Spectrometry)
- Module for in situ determination of Hg fluxes (Dissolved Gaseous Mercury DGM) at the air-water interface
- HPLC 600 Controller, Waters with PDA 996 detector and fluorescence 474 detector
- Shimadzu TOC-5000 carbon analyzer with an SSM-5000 sampler
- VELP, UDK-30 automatic distillator
- Yellow Springs Instruments, Model 63 portable submersible conductivity meter
- Yellow Springs Instruments Model 550 A oxygen meter
- ORION-231 pH meter
- CEM MARS-5X microwave digester
- Varian, Cary-1E double beam spectrophotometer
- Infiltrax-100 sampling system, in situ pump
- Water and sediment sampler of various kinds (Hydro bios, Makereth, Go Flo)
- AQUA 16, system for CTD and D.O. measurements
- Lyophilizator Lab Congo
- Thermal desorption unit
- Soxhlet extraction devices
- Ultra-sound baths
- Purification and isolation systems for semi-volatile organic compounds with columns of liquid/solid chromatography

MAIN RESEARCH PROGRAMMES

- ARISTEIA I Project 640, Integrated Study of Trace metals biogeochemistry in the coastal marine environment (ISMET-COMAREN), 2012-2015, Team Leader –Co-ordinator Prof. M. Scoullos)
- Horizon 2020 Capacity Building Mediterranean Environment Programme (2009-2012), Team Leader –Co-ordinator Prof. M. Scoullos)
- Combination of chemical analytical measurements and remote sensing techniques for coastal water monitoring. The cases of Eastern Mediterranean and Black Sea (2007-2009, Funding: IUPAC, Co-ordinator Assoc. Prof. M. Dassenakis)
- Investigation of the environmental state of the gulf of Souda (2007-2008, Funding: Municipality of Souda, Team leaders: Assoc. Prof M. Dassenakis collaboration with Assoc. Prof. M. Thessalou, Dept. Of Biology)
- Study of the transport and chemical behavior of toxic pollutants in a marine area affected by industrial activities. Application of mild catalytic antipolluting technologies (2005-2008, Funding: General Secretariat of Research and Technology and MOTOR-OIL, Co-ordinator Assoc. Prof. M. Dassenakis)
- Researchers' nights: A night on the beach with oceanography researchers (ANOBOR) – Researchers against degrading environment (RADE) – Research web in the society (REWEBIS) (2006-2007-2008, Funding: E.U. Specific Support Action projects, Human resources, Marie Curie actions and mobility FP6 –FP7, Co-ordinator Assoc. Prof. M. Dassenakis)
- Integrated study of coastal organosedimentary forms, plan for protection – management (, 2005-2007, Pythagoras II, Funding: Ministry of Education-EU, Co-ordinator Assoc. Prof. M. Dassenakis)
- Quality characteristics of the municipal solid wastes of the region of Epirus (2008, Funding: Periphery of Epirus, Co-ordinator Prof. M. Scoullos)
- Chemical characterisation of the dehydrated and dried sludge of the Athens/Psittalia Sewage Treatment Plant in order to be used as alternative fuel in the cement factory. Examination of the air emissions before and after the use of the sludge as a fuel (F4nd5ng- TITAN cement factory, Co-ordinator Prof. M. Scoullos)
- Examining pollutant leaching from the fly and bottom ashes obtained from the Hospital Waste Incinerator in Attica, in order to propose their safe disposal (Funding: ACMAR, Co-ordinator Prof. M. Scoullos)
- Heavy metals in the leachates of the Athens landfills at Ano Liosia (Funding: ACMAR, Co-ordinator Prof. M. Scoullos)
- General coordination of the program for determination of physicochemical parameters and qualitative composition of wastes of Attica (2006-08, Funding: Association of Communities and Municipalities in the Attica Region – ACMAR, Co-ordinator Prof. M. Scoullos)
- Model making of river estuaries endangered by eutrophication phenomena (2005-2007, Funding: Min. of Educ.-EU, Co-ordinator Prof. M. Scoullos)
- Nitrogen and phosphorus cycles in the Maliakos gulf (2004-07, Funding: Min. of Educ.-EU, Co-ordinator Assoc. Prof. M. Dassenakis)
- Biogeochemical study of heavy metals (2004-07, Min. of Educ.-EU, Co-ordinator Assoc. Prof. M. Dassenakis)
- General coordination of the Network of Laboratories for the monitoring of environmental quality of Greek seas (2004-6, (Min. of Environment-EU, Co-ordinator Prof. M. Scoullos)
- Monitoring of ground water quality of lake Koumoundourou and the nearby marine area in relation to the Waste Treatment Plant of western Attica (2003-04, Funding: Association of Communities and Municipalities in the Attica Region – A.C.M.A.R., Team Leader: Assoc. Prof.M. Dassenakis)

- Study of water pollution by hydrocarbons and heavy metals in strata of the Thrasio field (2003-06, Funding: General Secretariat of Research and Technology, EU, Co-ordinator Prof. M. Skoullou)
- Activities of monitoring and information in the delta of Sperchios river and Maliakos gulf (2002-3, Funding: Min. of Environment, Team leader: Assoc. Prof. M. Dassenakis.)
- Study of pollutants' transport to the sea by land based sources (2000-02, Cooperation with Georgia, Funding: General Secretariat of Research and Technology, Co-ordinator: Assoc. Prof. M. Dassenakis)
- Network of scientific and professional sectors focusing on the marine environment (2000-01, Funding: General Secretariat of Research and Technology, Co-ordinator: Assoc. Prof. M. Dassenakis)
- Study of toxic chemical substances circulation in the drainage basin of river Asopos and the coastal zone of south Evoikos (1999-2001, Funding: General Secretariat of Research and Technology, Co-ordinator: Assoc. Prof. M. Dassenakis)
- Actions of information- activation and education of citizens and students for the greek marine environment (1999-2003, Funding: Min. of Environment, Co-ordinator: Prof. M. Skoullou)
- Pollutants' transport to the sea by small polluted rivers. (1999-2000 Funding: INTAS –EC, Cooperation with Georgia and Spain, Co-ordinator: Assoc. Prof. M. Dassenakis)
- General coordination of the EUPHEMET Project of the European Union in collaboration with the Imperial College-England and the IEEP-Belgium for the study of the environmental impact of heavy metals (Hg, Cd, Pb) (1998-2000, Funding: EU, Co-ordinator: Prof. M. Skoullou).
- Metal Pollution monitoring program of the Saronikos gulf by heavy metals (1986-2000, Funding: Min. of Environment, Co-ordinator: Prof. M. Skoullou.)
- Metal Pollution monitoring of the Elefsis gulf by land based sources (1995-1999, Funding Min. of Environment, Co-ordinator: Prof. M. Skoullou)
- Pollution study of the Elefsis gulf, study of Prespes lakes (Funding: Elliniki Etaireia/National Trust for Greece/WWF, Co-ordinator: Prof. M. Skoullou)
- Assessment of the state of pollution of the Mediterranean Sea by zinc, copper and their compounds and proposed measures (1996, Funding, UNEP/FAO/WHO, Co-ordinator: Prof. M. Skoullou)
- Study of the biochemical mechanism of heavy metal transport from the dissolved phase to sediment through the green alga *Ulva lactuca* and determination of secondary metabolism products (1994-95, Funding: General Secretariat of Research and Technology, Co-ordinator: Assoc. Prof. M. Dassenakis)
- Elimination of industrial pollution of small rivers passing through cities (1993-94, Funding: EC, Co-ordinator: Prof. M. Skoullou)
- Pollution of the Mediterranean Sea (1993, Funding: European Parliament/STOA, Co-ordinator: Prof. M. Skoullou)
- Study of environmental legislation enforcement in Greece. Environmental politics proposals (Funding: Institute of European Environmental Policy, Co-ordinator: Prof. M. Skoullou)
- Integrated environmental management of Mitrikos lake (Funding: EC, Co-ordinator: Prof. M. Skoullou)
- Integrated environmental management of Amvrakikos gulf (1992, Funding: EC, Co-ordinator: Prof. M. Skoullou)
- Integrated environmental management of Salamis isl. (1991-92, Funding: EC, Co-ordinator: Prof. M. Skoullou)
- Integrated management of wetlands complex of Aitoliko-Messolongi of Aitolokarnania Prefecture (1991-92, Funding: EC, Co-ordinator: Prof. M. Skoullou)
- European River Ocean Systems- NW Mediterranean Sea, EROS 2000 (1988-1993, Funding: EC, Co-ordinator: Prof. M. Skoullou)

- Study of estuarine sediments of Patraikos gulf - Acheloos estuaries, Amvrakikos gulf – Louros estuaries, Maliakos gulf – Sperchios estuaries (1986-88, Funding: General Secretariat of Research and Technology, Co-ordinator: Prof. M. Skoullou)
- Chemical studies of main estuaries and coastal areas of Greece (1986-87, Funding: DG XI, Project GEC-ENV-560-GR, Co-ordinator: Prof. M. Skoullou)
- Pollution study of the gulf of Gera (1980, Funding: Min. of Environment, Co-ordinator: Prof. M. Skoullou)
- Quality of coastal waters of Greece (1976-1980: Funding: DG XI, Co-ordinator: Prof. M. Skoullou).

RESEARCH SCIENTIFIC ACTIVITIES

The research scientific activities of the Laboratory of Environmental Chemistry are focusing on the following subjects:

Biogeochemical studies of metals in the coastal zone.

LEC-NKUA studies deal with the distribution, speciation and transport of heavy metals in aquatic systems, including surface and underground fresh water, coastal and marine waters and sediments and biota.

The study of trace metals' chemical speciation in seawater has been carried out with the application of schemes featuring electrochemical measurements in the mode of Differential Pulse Anodic Stripping Voltammetry (DPASV). In parallel, the fractionation of dissolved organic matter interacting with metals and providing active complexing sites for metal binding has also been studied.

Mercury determinations in LEC have been conducted since 1998 by means of Varian CVAAS and since 2004 by dual Au trap CVAFS instrumentation. A large sample variety are analyzed including groundwater and seawater, biota, sediments and soils, as well as sludge, wastewater, coal from emission abatement technology of incinerators, bauxite. Mercury species studied in water (coastal and open sea) are total mercury (THg), particulate and dissolved, dissolved gaseous mercury (DGM), reactive mercury (RHg). In addition, LEC's staff has experience in handling, pretreatment and analysis of monomethylmercury (MMHg), and dimethylmercury (DMHg) although the analysis was conducted in other research institutions.

In collaboration with Department of Biology of University of Athens a large population of shark tissues is studied (flesh, liver, gonads, branchia) for total mercury and recently some OrgHg by extraction and CVAFS determination are tested along with Se measurements.

In collaboration with National Observatory of Athens atmospheric mercury species are sampled and measured: gaseous elemental mercury (GEM), and mercury associated with particles (Hg-P on PM_{2.5} and PM₁₀). Reactive gaseous mercury (RGM) analysis in the atmosphere by the use of denuders was conducted just very recently in collaboration with CNR at Italian sampling stations. We are in the phase of setting aerosol solubility measurements, which will demonstrate the relative importance of atmospheric deposition (dry and wet) to the biogeochemical cycle of mercury in the sea.

In sediments, various experimental protocols have been applied, including single step and sequential extraction schemes. Research work on biogeochemical processes concerning trace elements (Cd, Hg, Pb, Fe, Mn) at the sediment–water interface is also conducted, in order to estimate the benthic fluxes of metals and the role of sediments to act as sources or sinks of pollutants, under various anthropogenic pressures. This is done through chemical analyses of metal concentrations, in overlying waters, porewaters and sediments supported by appropriately designed microcosms that allow further monitoring of the water – sediment systems in specific time intervals and under controlled conditions. Metal analysis has been also assessed with the employment of Diffusive Gradients in Thin Films (DGT). With this *in situ* procedure high resolution metal profiles in pore water are obtained together with information on the potential re-supply of the pore water in metals from the solid phase. The potential fluxes of metals at the sediment–water interface are also calculated.

In coastal marine environments with shallow, warm and calm waters organosedimentary cyanobacterial - algal mats have been studied in order to assess the bioaccumulation of metals by cyanobacteria isolated from the mats in an attempt to understand their behaviour in polluted marine environments, their ability for metal biosorption and the possibility of using them for bioremediation purposes.

Studies of chemical substances in the food chain and various marine organisms and on chemical changes in coastal waters where biota is involved. Indicative specific research themes on which work has been carried out include: Bioaccumulation of metals in macroalgae and the role of the latter in transferring metals to the sediment under various oxidative conditions employing mesocosms and benthic chambers, determination of metals, PCBs etc., along the food chain; also in foodstuffs for human consumption and in drinking waters; study of oxidative stress on marine biota; impact of aquacultures in the marine environment (employing “chambers”, laboratory simulations etc.); extraction of natural products of potential interest from marine organisms, calculation of fluxes and budgets (including through biota) of various substances (e.g. Cd) for specific regions.

Management studies for wetlands and marine eco-systems and processes. Research activities related to this topic are run under the perspective of a holistic approach towards the sustainable development of the coastal zone and furthermore the relationship between ICZM and IWRM (Integrated Water Resources Management) since the two, in many cases, cannot and should not be separated. It is noteworthy that the first and till now most complete survey on the “Quality of Coastal waters of Greece” was commissioned by the European Commission to our team already in 1980. Management studies of LEC-NKUA address two major aspects: a) to recognize environmental pressures on the coastal marine environment and transitional waters arising from Land-Based Sources (LBS), b) to formulate plans and propose strategies in order to reduce the negative impact of LBS and related processes on the coastal zone. Specific contributions of LEC-NKUA in this topic include translation of scientific results into policies for the protection of the coastal and further marine environment from pollution deriving from LBSs; reduction of adverse impacts of intensive aquacultures; maintenance of biodiversity/ protection of habitats of threatened species; sustainability of the tourism sector; planning of awareness- raising activities and educational programs in cooperation with local Authorities, NGO’s and International Organizations and Institutes.

Atmospheric pollution studies focussing on heavy metals. Major pollution inputs to the coastal zone are the atmospheric wet and dry depositions. In a study carried out by LEC/ NKUA, on behalf of MED/POL-UNEP-MAP it was found that the atmospheric inputs of Zn and Cu in coastal waters of the Mediterranean exceed considerably the riverine and runoff inputs. Moreover, in heavily urbanised or industrialised areas the investigated by LEC atmospheric emissions from stable and mobile sources were very important and could affect significantly the chemistry of certain substances in the aquatic environment and the food chain. In LEC-NKUA a large number of substances and properties have been studied in both gaseous and particulate phases, employing a great variety of sampling and analytical methods.

Studies of pollution dispersion from solid waste management schemes and the use of non-conventional resources. Solid waste management, particularly in the coastal zone, is a matter of increasing concern in Greece during the last five years. Municipal solid waste recycling is expanding in order to conform to the relevant European Directives. The LEC/ NKUA is already active in the field and covers critical society needs. As today, we move from a disposal-based system (which directly and indirectly pollutes surface, ground and transitional water), to that based on a combination of recovery options, it is important to know the physical and chemical characteristics of the wastes and of their recycling products. Four major contracts have been obtained by LEC-NKUA during the last three years concerning the physico-chemical characterisation of wastes and recycling products, control of the quality and composition of the compost and RDF deriving from recycling of urban solid wastes, selection of the proper waste disposal process based on our analysis, nitrilisation and safe disposal of toxic industrial wastes, use of stabilised dry sewage sludge as alternative fuel in the cement production.

Studies and work on Environmental Education (EE) and Education for Sustainable Development (ESD) and Capacity Building. LEC-NKUA has developed a very comprehensive educational programme addressing EE, awareness raising and ESD at various levels. In this field and in order to disseminate results of its research, but also in order to facilitate the formulation of environmentally friendly activities, the Laboratory collaborates closely with major NGOs e.g. MIO-ECSD (the Mediterranean Information Office for Environment, Culture and Sustainable Development), the EEB (European Environmental Bureau), RAED (Arab Network for Environment and Development) the GWP-Med (Global Water Partnership Mediterranean), WWF and the Hellenic Society for the Environment and Culture), and local authorities, schools, the press etc. LEC-NKUA participates in the Scientific group of MEDIES, the Mediterranean Educational Initiative for Education for Sustainability a type II Initiative formally announce in Johannesburg (led by Greece) and within the framework of MEDIES has produced a widely used (translated and produced already in 7 languages) educational package on water and another one (reproduced already in Greek and English) on urban wastes, particularly useful as information material within ICZM.

LIST OF PUBLICATIONS OF LEC-NKUA

Recent (2000-2013) Publications in Scientific Journals (Research)

- SAKELLARI A., KARAVOLTSOS S., THEODOROU D., DASSENAKIS M., SCOULLOS M., 2013. "Bioaccumulation of metals (Cd, Cu, Zn) by the marine bivalves *M. Galloprovincialis*, *P. Radiata*, and *C. Chione* in Mediterranean coastal microenvironments; Association with metal bioavailability", *Environmental Monitoring and Assessment* 185 (4) , 3383-3395.
- KALOGEROPOULOS N., KARAVOLTSOS S., SAKELLARI A., AVRAMIDOU DASSENAKIS M., SCOULLOS M., 2012. "Heavy metals in raw, fried and grilled Mediterranean finfish and shellfish, *Food Chemistry and Toxicology* 50, 3702-3708.
- BOTOY F and HATZIANESTIS I., 2012. "Polycyclic aromatic hydrocarbons (PAHs) in marine sediments of the Hellenic coastal zone, Eastern Mediterranean: Levels, sources and toxicological significance", *Journal of Soils and Sediments*, 12 (2): 265-277, DOI: 10.1007/s11368-011-0453-1.
- DASSENAKIS M., PARASKEVOPOULOU V., CARTALIS C., ADAKTILOU N., KATSIABANI K., 2012. "Remote Sensing in Coastal Water Monitoring: Applications in the Eastern Mediterranean Sea (IUPAC Technical Report)", *Pure and Applied Chemistry*, 84 (2), 335-375.
- THEODOROU D., MELITSOGLOU L., KARAVOLTSOS S., BURNETAS A., DASSENAKIS M., SCOULLOS M., 2011. "Comparison of ISO-GUM and Monte Carlo methods for the evaluation of measurement uncertainty: application to direct cadmium measurement in water by GFAAS", *Talanta* 83, 1568-1574 ,2011.
- TEPAVITCHAROVA S., TODOROV T., RABADJIEVA D., DASSENAKIS M., PARASKEVOPOULOU V., 2011. "Chemical speciation in natural and brine seawaters", *Environmental Monitoring and Assessment*, 180 (1-4), 217-227.
- BOTSOU F., KARAGEORGIS A.P., DASSENAKIS M., SCOULLOS M., 2011. *Marine Pollution Bulletin* 62, 547-563, "Assessment of heavy metal contamination and mineral magnetic characterization of the Asopos River sediments (Central Greece)", *Marine Pollution Bulletin*, 62:547-563.
- SAKELLARI A., PLAVSIC M., KARAVOLTSOS S., DASSENAKIS M., SCOULLOS M., 2010. "Assessment of copper, cadmium and zinc remobilization in Mediterranean marine coastal sediments", *Estuarine, Coastal and Shelf Science*, 91, 1-12.
 - VLASTARAS N., DASSENAKIS E., LIAPIS K.S., MILIADIS G.E., ANAGNOSTOPOULOS C.J., 2010. Validation of a multiresidue method for the determination of multiclass pesticides by using representative analytes by gas chromatography. *HELLENIC PLANT PROTECTION JOURNAL*, 3, 57-69.
- PARASKEVOPOULOU V., TRIANTAFYLLAKI S., GIANNIKOPOULOS N., DASSENAKIS M., 2010. Dissolved and particulate nickel distributions in a coastal marine area affected by geochemical and industrial processes. *FRESENIUS ENVIRONMENTAL BULLETIN*, 19(9), 1833-1840.
- LADAKIS M., DASSENAKIS M., ZEINI C., PARASKEVOPOULOU V., 2010. Study of the capability of the filamentous cyanobacteria in binding metal ions. *FRESENIUS ENVIRONMENTAL BULLETIN*, 19(9), 1950-1953.
- TEPAVITCHAROVA S., TODOROV T., DASSENAKIS M., PARASKEVOPOULOU V., 2010. Chemical speciation in waters influenced by lead-zinc metallurgical industry. *ENVIRONMENTAL MONITORING AND ASSESSMENT* 169(1), 27-36.
- DASSENAKIS M., GARCIA G., DIAMANTOPOULOU E., GARCIA-MARIN E.M., FILIPPI G., FIORAKI V., 2010. The effect of mining activities on the hypersaline Mar Menor lagoon. *DESALINATION AND WATER TREATMENT*, 13, 282-289.

- TSAKOVSKI S., KUDŁAK B., SIMEONOV V., WOLSKA L., SAGAJDAKOW A., GARCIA G., DASSENAKIS M., NAMIESNIK J., 2009. N-Way modelling of sediment monitoring data from Mar Menor lagoon, Spain. *TALANTA*, 80(2), 935-941.
- LADAKIS M., DASSENAKIS M., SCOULLOS M., BELIAS C., 2007. The chemical behaviour of trace metals in a small, enclosed and shallow bay on the coast of Attica, Greece. *DESALINATION*, 213, 29-37.
- RABADJIEVA D., TEPAVITCHAROVA S., TODOROV T., DASSENAKIS M., PARASKEVOPOULOU V., PETROV M., 2009, Chemical speciation in mining affected river waters, the case study of Asarel-Medet mine. *ENVIRONMENTAL MONITORING AND ASSESSMENT*, 159(1), 353-366.
- TEPAVICHAROVA S., TODOROV T., RABADJIEVA D., DASSENAKIS M., PARASKEVOPOULOU V., 2009. Chemical speciation of inorganic pollutants in river – estuary – seawater systems. *ENVIRONMENTAL MONITORING AND ASSESSMENT*, 149, 251-260.
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- SCOULLOS M., ALAMPEI A., BOULOUXI A., MALOTIDI B., VAZAIU S., 2002, ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, Special Issue 3, 124, "Water in the

Mediterranean: Educational package to facilitate education for environment and sustainability and promote integrated water resources management

- PAPADOPOULOS D., TRIKALITI A., SCOULLOS M., 2002, ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, Special Issue 3, 122-123, "Production of educational package on urban waste management and preliminary results of pilot application at secondary schools in Greece".
- SCOULLOS M., ALAMPEI A., BOULOUXI A., MALOTIDI V., VAZEOU S., 2001, "Water in the Mediterranean" Educational Package, MIO – ECSDE and GWP – Med, Athens 2001. ISBN: 960-86312-3-8.
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STAFF

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Director Professor Michael Scoullos

<http://www.chem.uoa.gr/personel/Laboratories/EnvironChem/pdf/Scoullos.pdf>

Academic Qualifications:

- D.Sc. in Chemistry (1976) Chemistry Dept., University of Athens
- Ph.D. in Oceanography (1980), University of Liverpool
- B.Sc. in Chemistry (1971) Chemistry Dept., University of Athens

Appointments:

- 2003-today: Prof., Chemistry Dept., University of Athens
- 1993-2003: Assoc. Prof., Chemistry Dept., University of Athens
- 1987-1993: Ass. Prof., Chemistry Dept., University of Athens
- 1981-1987: Lecturer, Chemistry Dept., University of Athens
- 1976-1980: University Fellow, Oceanography Dept., University of Liverpool
- 1972-1976: Research Associate, Chemistry Dept., University of Athens

Teaching Activities: (current)

Undergraduate courses

- Environmental Chemistry
- Atmospheric Chemistry
- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses

Inter-departmental postgraduate course in Oceanography

- General Chemical Oceanography
- Chemical Marine Pollution
- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography
- Management of the Marine Environment
- Methodology-Planning-Results of Research Programs of Chemical Oceanography
- Marine Chemical Technology – Marine Resources

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Technologies of Environmental Protection and Energy Production
- Atmospheric Pollution and Methods for its Abatement
- Environmental Management
- Pollution of Aquatic and Terrestrial Systems

Currently Supervisor of 5 Ph.D. and 6 M.Sc. dissertations

Research Interests/Activities: (last 10 years)

- Chemistry of the natural environment with emphasis on water and sediments
- Chemical studies of:
 - o Marine systems with emphasis on coastal ones
 - o Rivers and estuaries
 - o Wetlands and lagoons
 - o Lakes
- Pollution of the Mediterranean Sea
- Distribution of nutrients and heavy metals in waters, sediments and biota
- Bio-geochemical cycles and speciation of metals, nutrients and other substances in aquatic systems
- Study of mineral magnetic properties of particulate matter and sediments
- Application of methodologies including mesocosms and benthic chambers both in situ and in laboratory simulations
- Organic pollutants
- Environmental management and environmental policies
- Environmental education and awareness
- Environmental regulation and legislation

Scientific Publications/Citations:

- 58 publications in refereed journals
- More than 120 refereed international conference publications
- More than 70 refereed Greek conference publications
- More than 30 publications in specific editions
- Author/co-author of 20 university publications, 15 scientific books and 4 book chapters
- Author/co-author of more than 60 publications (articles, conferences, book chapters) in Environmental Education
- More than 600 citations (excluding self citations). (H-index 13)

Top five publications

- “Lead in coastal sediments” M. Scoullou, *The Science of the Total Environment*, 49 (1986), 199.
- “Determination of a variety of chemical classes of pesticides in surface and ground waters by off-line solid-phase extraction, gas chromatography with electron-capture and nitrogen-phosphorus detection and high performance liquid chromatography with post-column derivatization and fluorescence detection”, I. Vassilakis, D. Tsipi, M. Scoullou, *Journal of Chromatography A*, 823 (1998), 49.
- “Mercury – Cadmium – Lead, Handbook for sustainable heavy metals policy and regulation”, M. Scoullou, G.H. Vonkeman, I. Thornton, Z. Makuch, Kluwer Academic Publishers, Dordrecht, The Netherlands (2002), 525 pp., ISBN: 1-4020-0224-6.
- “Speciation studies of copper in the Gulf of Elefsis: the role of the macroalgae *Ulva rigida*” M. Scoullou, M. Plavsic, S. Karavoltzos, *Marine Chemistry*, 86 (2004), 51.
- “Molecular biomarkers of oxidative stress in aquatic organisms in relation to toxic environmental pollutants” A. Valavanidis, T. Vlachgianni, M. Dassenakis, M. Scoullou, *Ecotoxicology and Environmental Safety*, 64 (2006), 178.

Distinctions:

- Golden Medal of the City of Paris (Honorary Citizen)
- Knight Officer of the National Order of the Cedar of Lebanon
- Knight of Merit of the Order of St. John of Jerusalem
- The Medal of “Simon Bolivar” of UNESCO
- Medal by Pope Paul VI
- Medal by Pope John-Paul II
- Award of the Academy of Athens
- Award of the Notre Dame University of Beirut on IWRM
- Many honorary diplomas, medals, et c. by various Institutions.

Other Activities:

International Activities

- Coordinator of more than 25 Research Projects
- Referee of the scientific journals “Clean-Soil, Air and Water”, “Desalination”, “Estuarine, Coastal and

Shelf Science”, “International Journal of Environmental Analytical Chemistry”, “Polish Journal of Environmental Studies”, “Environmental Monitoring and Assessment”, “Marine Environmental Research”, “Food Control”, “Toxicological and Environmental Chemistry”

- Representative of the European Parliament (selected for (4) consecutive times) 1992 to present, in the Management Board and the Executive Bureau of the European Environment Agency (EEA)
- Founder and Chairman since 1992 of the Mediterranean Information Office for the Environment, Culture & Sustainable Development (MIO - ECSDE)
- Chairman of the Global Water Partnership-Mediterranean (GWP-MED)
- President of the Greek National Committee of MAB/ UNESCO (Man and the Biosphere) since 2000
- President, 1986-1995 and now Honorary President of the European Environmental Bureau (EEB)
- President for many years of the Committee against Pollution of the Mediterranean, of the International Committee of Scientific Exploration of the Mediterranean Sea (C.I.E.S.M.)
- Member of the European Academy of Sciences
- Coordinator of the CAPACITY Binding Component of the H2020 European Initiative to Depollute the Mediterranean by the year 2020
- President, 1983-2001 and now President Emeritus of the Elliniki Etairia (The Hellenic Society for the Protection of the Environment and the Cultural Heritage)
- Member for many years of the EU Scientific Advisory Committee on Toxicology and Ecotoxicology
- Vice President of the Mediterranean Committee for Sustainable Development (MCSDD of UNEP/MAP)
- Chairman of the International Panel of Experts of the World Bank for the Red Sea – Dead Sea Conveyor
- Assistant Chairman of the Steering Committee on Education for Sustainable Development of UNECE 2005 to date and Chairman of the UNECE Expert Group on Education for Sustainable Development Competences 2008 to date
- Member of the International Jury of the Onassis Award on the Environment 2008 to date
- Member (former Vice President) of the Mediterranean Scientific Association for Environmental Protection (MESAEP)
- Founding Member of the European Association for Marine

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Academic Qualifications:

- D.Sc. in Chemistry (1977) Chemistry Dept., NKUA
- M.Sc. in Oceanography (1981), University of Athens
- Ph.D. in Chemistry (1990) Chemistry Dept., NKUA

Appointments:

- 2011-today: Prof., Chemistry Dept., NKUA
- 2003-2011: Assoc. Prof., Chemistry Dept., NKUA
- 1996-2003: Ass. Prof., Chemistry Dept., NKUA
- 1991-1996: Lecturer, Chemistry Dept., NKUA
- 1984-1990: Research Associate, Chemistry Dept., NKUA

Teaching Activities: (current)

Undergraduate courses

- Environmental Chemistry
- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses

Inter-departmental postgraduate course in Oceanography

- Chemical Marine Pollution
- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography
- Methodology-Planning-Results of Research Programs of Chemical Oceanography
- Marine Chemical Technology – Marine Resources

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Technologies of Environmental Protection and Energy Production
- Environmental Management
- Pollution of Aquatic and Terrestrial Systems

Currently Supervisor of 5 Ph.D. and 6 M.Sc. dissertations

Research Interests/Activities: (last 10 years)

- Chemical behaviour, distribution and circulation of pollutants in the aquatic environment
- Transfer of pollutants among various environmental compartments
- Different forms under which various elements occur in natural systems
- Environmental impacts of sewage treatment plants and solid wastes
- Determination of environmental limitations in industrial sectors
- Pollution of the marine environment from aquacultures
- "Microenvironments" of special interest (lagoons, algal mats, ports, hot springs, etc)
- Nitrogen and Phosphorus Cycles in coastal zone
- Eutrophication development and effects in coastal zone

Scientific Publications/Citations:

- 50 publications in refereed journals
- 120 refereed international conference publications
- 70 refereed Greek conference publications
- 35 publications in specific editions
- 4 invited papers in international journals
- 2 university publications
- More than 550 citations (excluding self citations). (H-index 12)

Top five publications

- "The use of various methods for the study of metal pollution in marine sediments. The case of Euvoikos gulf, Greece" M. Dassenakis, H. Andrianos, G. Depiazi, A. Konstantas, A. Sakelari, M. Skoullou, Applied Geochemistry, 18 (2003), 781.
- "Nitrogen and phosphorus in coastal sediments covered by algal mat" M. Ladakis, M. Dassenakis, A. Pantazidou, Journal of soils and sediments, 6 (2006), 46.
- "Molecular biomarkers of oxidative stress in aquatic organisms in relation to toxic environmental pollutants" A. Valavanidis, T. Vlachgianni, M. Dassenakis, M. Scoullou, Ecotoxicology and Environmental

Safety, 64 (2006), 178.

- “Chemical speciation of inorganic pollutants in river-estuary-sea water systems” S. Tepavicharova, T. Todorov, D. Rabadjeva, M. Dassenakis, V. Paraskevopoulou, Environmental Monitoring and Assessment, 149(2009), 251
- “Assessment of heavy metal contamination and mineral magnetic characterization of the Asopos river sediments (Central Greece)” F. Botsou, A. Karageorgis, M. Dassenakis, M. Scoullou, Marine Pollution Bulletin, 62 (2011), 547.

Other Activities:

- President of European Federation of Marine Science and Technology Societies (EFMS) 2007-2013
- President of the Hellenic Oceanographers’ Association 2000-2011
- Coordinator of 21 International Research Projects
- Participation in 15 research Projects
- Member of the Editorial Board of the scientific journal “Advances in Oceanography and Limnology” (Editor Prof. Roberto Danovaro)
- Referee of scientific papers for various journals e.g. “Marine Environmental Research”, “Environmental Pollution”, “Marine Pollution Bulletin”, “Mediterranean Research”, “Chemosphere”, “Desalination”, “Science of the total Environment”, “Estuarine, Coastal and Shelf Science” “Pure and Applied Chemistry”

Professor Dimitrios Nikolelis

Academic Qualifications:

- Ph.D. in Chemistry (1977) Dept. of Chemistry, University of Athens
- B.Sc. in Chemistry (1971) Dept. of Chemistry, University of Athens

Appointments:

- 2004-today: Professor, Dpt. of Chemistry, University of Athens
- 1995-2004: Associate Professor, Chemistry Department, University of Athens
- 1990-1995: Assistant Professor, Chemistry Department, University of Athens.
- 1990-2005: Adjunct Prof. University of Toronto.
- 1977-1990: Lecturer, Chemistry Department, University of Athens
- 1974-1977 Research Associate, Chemistry Department, University of Athens.

Teaching Activities: (current)

- Environmental Chemistry.
- Atmospheric Chemistry.

Research Interests/Activities: (last 10 years)

- Analytical Chemistry.
- Chemical sensors
- Environmental monitoring
- Food analysis and safety
- New materials and technological advances.
- Toxicants
- Biochemical processes.

Scientific Publications/Citations:

- 120 publications in refereed journals
- 50 refereed conference publications
- Editor of 7 books.
- Author 20 book chapters

Editor of the following scientific journals:

- Frontiers in Plant Science
- Chemical Sensors.

Member of the Editorial Board of the following scientific journals:

- Natural Science
- International Journal of Green Pharmacy .
- Global Journal of Analytical Chemistry
- Open Analytical Chemistry Journal.
- Analytical Letters.

Top five publications

1. D. P. Nikolelis and M. Mitrokotsa, Biosensors & Bioelectronics, 17, 565-572 (2002).
2. D. P. Nikolelis, D. A. Drivelos, M. G. Simantiraki and S. Koinis, Anal. Chemistry, 76, 2174-2180.
3. D. P. Nikolelis and S.-S. Petropoulou, Biochimica et Biophysica Acta, 1558, 238-245 (2002).
4. G.-P. Nikoleli, D. P. Nikolelis and C. Methenitis, Analytica chimica Acta, 675, 58-63 (2010).
5. Georgia-Paraskevi Nikoleli^{1*}, Muhammad Q. Israr², Nikolaos Tzamtzis¹, Dimitrios P. Nikolelis³, Magnus Willander², Nikolas Psaroudakis., Electroanalysis, in press.

Awards:

- NATO ARW director: Biosensors for Direct Monitoring of Environmental Pollutants in Field ...{Smolenice, Slovakia}: May 1996
- " NATO ARW director: Portable biosensors for the rapid detection of weapons of terrorism (Lunds, Sweden) July, 2011.

Distinctions/Projects

- Coordinator of the following 3 European Projects:
 1. CIPA96-0231 COPERNICUS "Novel biosensors based on bilayer lipid membranes for the determination of compounds of biomedical pharmaceutical, environmental and industrial interest" (1994-1997)
 2. IC15-CT96-0804, "Biosensors for direct Monitoring of Environmental Pollutants in the Field" (1997-2001)

3. QLK3-2000-01311: "Evaluation/validation of novel biosensors in real environmental and foodsamples (2002-2005).
 - Scientific Coordinator of Greece in the European project NMP4-CT-2005-017114, "RECEPTRONICS" (Label-free Biomolecular Detectors: at the Convergence of Bioengineered Receptors and Microelectronics (2004-2008).Member of Managment Committee of COST D35

Research Staff

Mrs Vasiliki Mantzara

Academic Qualifications:

- Degree in Chemical Oceanography MSc, (1991), Post Graduate Course on Oceanography, University of Athens
- B.Sc. in Chemistry (1987) Dept. of Chemistry, University of Athens

Appointments:

- August 2005-today: Placement in the Laboratory for Environmental Chemistry Laboratory as Administrative and Laboratory personnel (IDAX)

Activities: (current)

- Support to the Director for the day to day management of administrative and financial issues of the LEC-NKUA relating to its core funding and also to all its projects funded by other sources (e.g. EU, private and public bodies)
- Responsible for administrative issues relating to student issues, textbooks, presentations, supplies and laboratory acquisitions.
- Support to the Director in the coordination and management of major programs: currently the H2020 Capacity Building-Mediterranean Environment Program.
- Identification of potential call for proposals and funding sources, preparation, development and submission of various proposals.

Research Interests/Activities: (last 10 years)

- Involved since 1992 in projects coordinated by LEC-NKUA on issues related to marine pollution from heavy metals, management of protected areas and endangered species and on environmental education and education for sustainable development projects and awareness raising campaigns.
- Worked for the preparation of the Integrated Environmental Management Plan of the protected wetland area (RAMSAR), of the Amvrakikos Gulf in Greece, a Project executed under the supervision of the Greek Ministry for the Environment and with the support of the CEU, DG XI.
- Participated in the Monitoring Project for the Pollution of the Saronic Gulf, Athens, Greece (MED-POL/UNEP), representing LEC and was responsible for heavy metal analysis on water samples, and for the preparation of the of the Technical Report for the period 1986-1988.
- Experience in co-ordinating and handling administrative and financial aspects for many projects

Scientific Publications/Citations:

- SCOULLOS M., DASSENAKIS M., MANTZARA V., "Technical Report for MED-POL/UNEP-MAP programme for the period 1986-1988".
- SCOULLOS M., MANTZARA V., CONSTANTIANOS E., " The Greek National Programme for the Protection of the Mediterranean Monk Seal: First Results." Paper presented in the Conference:Coastal Management and Habitat Conservation . EUCC, 26-30/4/93, Marathon, Greece.
- DASSENAKIS M., KRASAKOPOULOU E. MANTZARA V., "Chemical characteristics of Aetoliko lagoon, Greece, after an ecological shock", in Marine Pollution Bulletin, Vol. 28, No 7 pp. 427-433, 1994.

Top five publications

- Scoullou M., M. Mantzara, V. Constantianos . (1994), The Book-Directory for the Mediterranean Monk Seal *Monachus monachus* in Greece, ISBN 960-7614-01-1. Copyright Elliniki Etairia, Athens, Greece.
- "Long Range Study in Water Supply and Demand in Europe" in collaboration with ICWS - International Centre for Water Studies, The Netherlands, (1996)
- SCOULLOS M., ALAMPEI A., KOUROUTOS V., MALOTIDI V., MANTZARA M., PSALIDAS V., 2008, "Environmental Education and Education for Sustainable Development in Protected Areas", Educational material, 183 p., MIO-ECSDE, ISBN: 978-960-6783-04-2

Other Activities:

- Collaboration with the Mediterranean Information Office for Environment Culture and Sustainable Development
- Member of the Association of Greek Chemists
- Member of the Association of Greek Oceanographers

Dr Sotirios Karavoltzos

Academic Qualifications:

- Ph.D. in Chemical Oceanography (2002), University of Athens
- M.Sc. in Chemical Oceanography (1998), University of Athens
- B.Sc. in Chemistry (1995) Chemistry Dept., University of Athens

Appointments:

- 2006-today: Scientific fellow, Chemistry Dept., University of Athens, permanent staff
- 2005-2006: Chemist, General State Chemical Laboratories, Ministry of Finance
- 2004-2005: Research Fellow, Technological Educational Institute of Messolonghi, Department of Aquacultures and Fisheries
- 2004: Chemist, General Secretariat for Consumer, Ministry of Development
- 1998-2001: Research Associate, Chemistry Dept., University of Athens

Teaching Activities: (current)

Undergraduate courses

- Environmental Chemistry
- Atmospheric Chemistry

Postgraduate courses

Inter-departmental postgraduate course in Oceanography

- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography
- Marine Chemical Technology – Marine Resources

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Atmospheric Pollution and Methods for its Abatement
- Pollution of Aquatic and Terrestrial Systems

Research Interests/Activities:

- Bio-geochemical cycles and speciation of metals, in aquatic systems (including water, suspended particulate matter, pore water and sediments). Application of in-situ techniques such as Diffusive Gradients in Thin Films (DGT)
- Distribution of heavy metals in waters, sediments, air, biota, foodstuffs and biological fluids
- Metal complexing properties of extra-cellular organic material from marine organisms. Application of specialized electrochemical techniques
- Distribution of nutrients and microbiological parameters in coastal areas
- Estimation of the uncertainty in chemical analysis using different techniques

Scientific Publications/Citations:

- 9 publications in refereed journals
- 23 refereed international conference publications
- 8 refereed national conference publications
- 78 citations (excluding self citations). (H-index 5)

Top five publications

- "Comparison of ISO-GUM and Monte Carlo methods for the evaluation of measurement uncertainty: Application to direct cadmium measurement in water by GFAAS" D. Theodorou, L. Meligotsidou, S. Karavoltzos, A. Burnetas, M. Dassenakis, M. Scoullou, Talanta, 83 (2011), 1568-1574.
- "Speciation studies of copper in the Gulf of Elefsis: The role of the macroalgae *Ulva rigida*", M. Scoullou, M. Plavsic, S. Karavoltzos, Marine Chemistry, 86 (2004), 51-63.
- "Cadmium and lead in organically produced foodstuffs from the Greek market", S. Karavoltzos, A. Sakellari, M. Dassenakis, M. Scoullou, Food Chemistry, 106 (2008), 843-851.
- "Partitioning and distribution of dissolved copper, cadmium and organic matter in Mediterranean marine coastal areas: The case of a mucilage event" M. Scoullou, M. Plavsic, S. Karavoltzos, A. Sakellari, Estuarine Coastal and Shelf Science, 67 (2006), 484-490.
- "Cadmium content in foodstuffs from the Greek market" S. Karavoltzos, A. Sakellari, M. Dimopoulos, M. Dassenakis, M. Scoullou, Food Additives and Contaminants, 19 (2002), 954-962.

Other Activities:

- Participation in 5 research programs
- Responsible for the quality assurance of the lab. of Environmental Chemistry according to ISO/IEC

17025:2005

- Participation in the program of the University of Athens for the management of the laboratory hazardous wastes (deriving from all NKUA departments)
- Member of the Association of Greek Chemists
- Member of the Hellenic Association of Oceanographers

Dr Fotini Botsou

Academic Qualifications:

- Ph.D. in Chemical Oceanography (2007), University of Athens
- M.Sc. in Oceanography (2000), University of Athens
- B.Sc. in Environmental Studies (1996) School of Environment, University of Aegean
- Erasmus programme (1996), Dept. of Chemistry, Dublin City University, Ireland

Appointments:

- August 2005-today: Researcher, Dept. of Chemistry, University of Athens
- February 2004 - August 2005: Researcher, Hellenic Centre for Marine Research, Institute of Oceanography, Lab. Of Organic Chemistry
- 2003: Elaboration and preparation of project proposals for vocational training seminars in fields of Management of Water Resources, Water and Wastewater Treatment Systems Cooperation with PYXIDA Vocational Training Center

Teaching Activities: (current)

Postgraduate courses in Oceanography

- Special Chapters in Chemical Oceanography
- Methodology-Planning-Results of Research Programs of Chemical Oceanography

Postgraduate courses in Chemistry and Technology of the Environment

- Pollution of aquatic and terrestrial ecosystems

Research Interests/Activities:

- Geochemical cycles of metals in the coastal zone, with emphasis on transitional water bodies.
- Mercury speciation in the environment.
- Organic pollutants in the marine environment (PAHs, PCBs).
- Environmental magnetism in marine, riverine and lacustrine sediments.
- Planning and implementation of projects in the field of environmental research and conservation

Scientific Publications:

- 4 publications in refereed journals
- 16 refereed conference publications
- Author and co-author of assessments and technical subjects of environmental management

Publications

- "Fractionation of metals in diagenetically active, pyrite-bearing lagoon sediments" F. Botsou, A. Godelitsas, K. Kaya, B. Paraskevopoulou, M. Scoullou. Presented in the 10th National Symposium of Oceanography and Fisheries, HCMR, 11 – 17 May 2012, to be submitted in Mediterranean Marine Science Journal.
- "Cadmium in waters, sediments and tissues of Mugil cephalus from the Antinioti lagoon (Kerkyra Island) in NW Greece". F. Botsou, E. Aperi, O. Chalkiadaki, M. Scoullou. Accepted for publication in Asian Chemistry Letters.
- "Polycyclic aromatic hydrocarbons (PAHs) in marine sediments of the Hellenic coastal zone, Eastern Mediterranean". F. Botsou and I. Hatzianestis. Journal of Soils and Sediments (2012); 12(2): 265-277, DOI: 10.1007/s11368-011-0453-1
- "Assessment of heavy metal contamination and mineral magnetic characterization of the Asopos River sediments (Central Greece)" F. Botsou, A.P. Karageorgis, E. Dassenakis, M. Scoullou Marine Pollution Bulletin, (2011), 62:547-563
- Transport of pollutants in two estuarine systems on the coast of Georgia", M. Dassenakis; F. Botsou; V. Paraskevopoulou; C. Chikviladze; K. Kachiasvili, Chemistry and Ecology (2006); 22(5) p.: 379 – 393.

Participation in scientific projects (selection of the last 10 years)

- 4.2011- 10.2011: Survey on the key issues linked to water resources management of the transboundary Drin Basin leading to the document "Extended Drin Basin – A situation Analysis" of Faloutsos D., Botsou F., Toli K., Panovski D., Subotic V., Dedej Z., Scoullou M. Prepared by GWP-Med, in cooperation with UNECE, financed by the Swedish Environmental Protection Agency.
- 2010: Distribution and speciation of mercury and other heavy metals in framboidal pyrites from lagoon sediments in NW Greece, using micro-XRF/--XANES/-EXAFS/-XRD techniques. Funded by KIT and European Commission.
- 1.2009 – 5.2009: Scientific assistant in the study "Evaluation of Environmental Resources for the

Rehabilitation of Varkiza beach, Attica, Greece. Collaboration with Living Prospects - Consultants on Development and Environmental Services.

- 10. 2007 – 5.2009: Survey on potential environmental and sanitary impacts from the use of organic dry sludge on cement industry as an alternative fuel at Kamari Industry of TITAN C.A.
- 1997 – 2002 & 2007-2009: Survey on the water quality of the Asopos River in Central Greece.

Fellowships:

- 2000-2002: PhD fellowship, GSRT and Famar S.A.
- 1998-1999: MSc fellowship
- 1996: Erasmus studentship.

Dr Aikaterini Sakellari

Academic Qualifications:

- Ph.D. in Chemical Oceanography (2006), University of Athens
- M.Sc. in Chemical Oceanography (2002), University of Athens
- B.Sc. in Chemistry (2000) Chemistry Dept., University of Athens

Appointments/Activities:

- 2007-today: Scientific fellow, Chemistry Dept., University of Athens
- 2006-2007: Participation in the research program for the “Determination of physicochemical parameters and qualitative composition of wastes of Attica” (Funding: Association of Communities and Municipalities in the Attica Region – ACMAR)
- 2000-2006: Participation in 7 research projects

Teaching Activities: (current)

Undergraduate courses (laboratory lectures and supervision)

- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses (lectures and laboratory supervision)

Inter-departmental postgraduate course in Oceanography

- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Pollution of Aquatic and Terrestrial Systems

Research Interests/Activities:

- Biogeochemical cycles of metals in marine systems
- Metal speciation in seawater and suspended particulate matter in order to assess metal bioavailability and how this is affected by dissolved organic matter. Application of special techniques such as Diffusive Gradients in Thin Films (DGT) and Differential Pulse Anodic Stripping Voltammetry (DPASV).
- Metal fractionation in sediments and its impact on their mobilization and transition from sediment to pore water and overlying water and vice versa
- Heavy metal analysis in various matrices of environmental samples (marine and fresh water, sediments, biota, foodstuffs, human blood, solid wastes and products of waste recycling)
- Copper complexing properties of various matrices (seawater, rainwater, algal exudates) with the use of Differential Pulse Anodic Stripping Voltammetry (DPASV)

Scientific Publications/Citations:

- 9 publications in refereed journals
- 18 refereed international conference publications
- 6 refereed national conference publications
- 96 citations (excluding self citations). (H-index 5)

Top five publications

- “Assessment of copper, cadmium and zinc remobilization in Mediterranean marine coastal sediments”, A. Sakellari, M. Plavsic, S. Karavoltzos, M. Dassenakis, M. Scoullou, Estuarine, Coastal and Shelf Science, 91 (2011), 1.
- “Evaluation of the quality of drinking water in regions of Greece”, S. Karavoltzos, A. Sakellari, N. Mihopoulos, M. Dassenakis, M. Scoullou, Desalination, 224 (2008), 317.
- “Partitioning and distribution of dissolved copper, cadmium and organic matter in Mediterranean marine coastal areas: The case of a mucilage event”, M. Scoullou, M. Plavsic, S. Karavoltzos, A. Sakellari, Estuarine Coastal and Shelf Science, 67 (2006), 484.
- “The use of various methods for the study of metal pollution in marine sediments. The case of Euvoikos gulf, Greece” M. Dassenakis, H. Andrianos, G. Depiazi, A. Konstantas, A. Sakellari, M. Scoullou, Applied Geochemistry, 18 (2003), 781.
- “Cadmium content in foodstuffs from the Greek market” S. Karavoltzos, A. Sakellari, M. Dimopoulos, M. Dassenakis, M. Scoullou, Food Additives and Contaminants, 19 (2002), 954.

Distinctions:

- 2002 – 2005 Ph.D. financed by the Hellenic Ministry of Environment

Other Activities:

- Analyst (chemist) of the Laboratory of Environmental Chemistry according to ISO/IEC 17025:2005
- Member of the Association of Greek Chemists
- Member of the Hellenic Association of Oceanographers

Dr Vassiliki Paraskevopoulou

Academic Qualifications:

- Ph.D. in Chemical Oceanography (2009), Post-Graduate Course of Oceanography, University of Athens
- M.Sc. in Chemical Oceanography (2005) Post-Graduate Course of Oceanography, University of Athens
- B.Sc. in Chemistry (2001) Dept. of Chemistry, University of Athens

Appointments:

- September 2007-today: Researcher, permanent staff of the Laboratory of Environmental Chemistry

Teaching Activities: (current)

Undergraduate courses (selected laboratory lectures-laboratory supervision)

- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses (selected lectures-laboratory supervision)

Inter-departmental postgraduate course in Oceanography

- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography
- Methodology-Planning-Results of Research Programs of Chemical Oceanography

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Pollution of Aquatic and Terrestrial Systems

Research Interests/Activities: (last 10 years)

- Trace metals in the marine environment (trace metal chemistry, speciation and distributions in polluted coastal areas, river-estuary systems, lagoons and groundwaters).
- Design application and validation of analytical methods in marine and environmental samples (trace metals, nutrients).
- Recent Activities: Marine pollution research in affected areas (Sarokikos Gulf, Gulf of Elefsis), pollutants in river-estuarine-coastal systems (Sperchios River-Maliakos Gulf, Kubitskal-Ropotamo-Kamchiya Bulgaria), Environmental studies in lagoons (Coryssia Corfu, Moustos Peloponnesus, Paliastomi Bulgaria, Mar Menor Spain), Effects of pollutants to marine organisms (fish, mussels, cyanobacteria etc.), Environmental studies in hot spot areas (Lavrio Port, Marinas of Saronikos).

Scientific Publications/Citations:

- 15 publications in refereed journals
- 9 publications in refereed special issues-series
- 25 refereed international conference publications
- 9 refereed national conference publications
- 73 citations. (H-index 4)

Top five publications

- "REMOTE SENSING IN COASTAL WATER MONITORING: APPLICATIONS IN THE EASTERN MEDITERRANEAN SEA (IUPAC TECHNICAL REPORT)", Dassenakis, M., Paraskevopoulou, V., Cartalis, C., Adaktilou, N., & Katsiabani, K., Pure and Applied Chemistry, 84 (2), 335-375, 2012.
- "DISSOLVED AND PARTICULATE NICKEL DISTRIBUTIONS IN A COASTAL MARINE AREA AFFECTED BY GEOCHEMICAL AND INDUSTRIAL PROCESSES", V.Paraskevopoulou, S.Triantafyllaki, N.Giannikopoulos, M. Dassenakis, Fresenius Environmental Bulletin, Vol 19, No 9, 1833-1840, 2010.
- "CHEMICAL SPECIATION IN MINING AFFECTED RIVER WATERS, THE CASE STUDY OF ASAREL-MEDET MINE", D. Rabadjieva, S. Tepavitcharova, T. Todorov, M. Dassenakis, V. Paraskevopoulou, M.Petrov, Environmental Monitoring and Assessment, Volume 159, Issue 1, 353-366, 2009.
- "DISSOLVED AND PARTICULATE TRACE METAL LEVELS IN SARONIKOS GULF, GREECE, IN 2004. THE ROLE OF THE WASTEWATER TREATMENT PLANT OF PSITTALIA", M. Scoullou, A. Sakellari, K. Giannopoulou, V. Paraskevopoulou, M. Dassenakis, Desalination, 210, 98-109, 2007.

- “HEAVY METAL POLLUTION AND ENVIRONMENTAL MANAGEMENT PROBLEMS IN THE MARINAS OF SARONIKOS GULF”, S. Tapinos, V. Paraskevopoulou, M. Dassenakis, F. Sakelariadou, Fresenius Environmental Bulletin, 15, 9a,1 049-1057, 2006.

Distinctions:

- July 2005 – December 2009 Ph.D. financed by the Hellenic General Secretariat for Research and Development.

Other Activities:

- Member of Hellenic Oceanographers Association
- Member of the Hellenic Chemists Association

Dr Eleni Stathopoulou

Academic Qualifications:

- Ph.D. Chemical Oceanography (2009) Dept. of Geology, University of Athens
- M.Sc. Chemistry & Technology of the Environment (2001) Dept. of Chemistry, University of Athens
- B.Sc. Chemistry (1997) Dept. of Chemistry, University of Patras

Appointments:

- 2009-present: Research Associate/permanent staff at the Laboratory of Environmental Chemistry
- 2007-2009: Executive Environmental Consultant at the Business Development Department of “Environmental Protection Engineering S.A.”
- 1999-2000: Chemical Analyst at the laboratory of the Antipollution and Environmental Protection Division of “Athens Water Supply and Sewerage Company”(EYDAP)

Teaching Activities: (current)

Undergraduate courses (selected laboratory lectures laboratory supervision)

- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses (selected lectures-laboratory supervision)

Course: Chemistry & Technology of the Environment

- Technologies of Environmental Protection & Energy Production
- Pollution of Aquatic and Terrestrial Systems

Course: Chemical Oceanography

- Analytical Chemical Oceanography
- Marine Chemical Technology-Marine Resources

Research Interests/Activities: (last 10 years)

- Mercury methylation mechanisms in extreme environments (hydrothermal vents, anoxic lagoons).
- Biogeochemical cycles and speciation of trace metals and sulfur compounds.
- Atmospheric monitoring and analytical methods for the determination of mercury and its compounds in the atmosphere. Study of mercury compounds' exchange at the air-sea interface.
- Design/application/validation of analytical methods in environmental samples (seawater/groundwater/sediments/soil/biota/PM2.5-10).
- Mesocosms and microcosms experiments applied in situ and laboratory simulations.
- Sampling and on board analysis on oceanographic scientific research cruises.

Scientific Publications/Citations:

- 4 publications in refereed journals
- 3 publications in refereed special issues-series
- 9 refereed international conference publications
- 2 refereed national conference publications

Top five publications

- • “CONTINUED EXPLORATION OF THE SANTORINI VOLCANIC FIELD AND CRETAN BASIN, AEGEAN SEA” Croff-Bell K., Nomikou P., Carey S., Stathopoulou E., Polymenakou P., Godelitsas A., Roman C., Parks M., Oceanography, 25 (1), 30-32, 2012
- • “CO₂ DEGASSING FROM HYDROTHERMAL VENTS AT KOLUMBO SUBMARINE VOLCANO, GREECE AND THE ACCUMULATION OF ACIDIC CRATER WATER”, Carey S., Nomikou P., Croff-Bell K., Lilley M., Lupton J., Roman C., Stathopoulou E., Ballard R., Geology (in submission) April 2012.
- • “METHYLMERCURY BACKGROUND LEVELS AND BASELINE VALUES IN THE MEDITERRANEAN SEA”, Stathopoulou E., Heimburger L., Cossa D., Bastien T., Sonke J., Tanhua T., Scoullou M. Ocean Science (in submission) May 2012.

- • “SPATIAL DISTRIBUTION OF DISSOLVED TRACE METAL CONCENTRATIONS IN THE SURFACE AND DEEP OPEN WATERS OF THE WHOLE MEDITERRANEAN SEA”, Stathopoulou E., Heimbürger L., Dassenakis M., Scoullou M., Ocean Science (in submission) May 2012
- • “THE KOLUMBO (SANTORINI, GREECE) SHALLOW SUBMARINE SB-TH RICH HYDROTHERMAL SYSTEM”, Kiliadis S., Nomikou P., Carey S., Papanikolaou D., Godelitsas A., Croff-Bell K., Polymenakou P., Argyraki A., Stathopoulou E., Betzelou K., Livanos I., Gottlinger J., Gamaletsos P., Christakis C., Mertzimekis T., Scoullou M., Nature Geoscience (in preparation)

Distinctions:

- October-December 2010: Short Training Scientific Mission funded by COST action ES0801. (Italy)
- July 2002–December 2005: Studentship by the Hellenic General Secretariat of Research and Technology (GSRT) within the frame of Program for “Reinforcement of Young Researchers”. (Greece)
- November-December 2001: Training course funded by IAEA-MEL. (Monaco)

Other Activities:

- Member of the Mediterranean GEOTRACES Planning Group
- Member of Hellenic Oceanographers Association
- Member of the Hellenic Chemists Association

Dr Styliani Triantafyllaki

Academic Qualifications:

- Ph.D. in Chemical Oceanography (2012), Postgraduate Course in Oceanography, School of Sciences, University of Athens (graduation pending)
- M.Sc. in Chemical Oceanography (2005), Postgraduate Course in Oceanography, School of Sciences, University of Athens
- B.Sc. in Chemistry (2001), Dept. of Chemistry, University of Athens

Appointments:

- 01/06/2010 to today, "Horizon 2020 Capacity Building Mediterranean Environment Programme" (Funding: E.U.-Europe Aid)
- 01/07/2005 to 30/06/2008, "Study of the transport and chemical behavior of toxic pollutants in a marine area affected by industrial activities. Application of mild catalytic antipolluting technologies (Funding: General Secretariat of Research and Technology and MOTOR-OIL)
- 01/07/2008 to 31/12/2008, "Researchers Web in Society-People Coordination" (Funding: E.U. Specific Support Action projects, Human resources, Marie Curie actions and mobility FP6 –FP7)
- 01/01/2005 to 30/06/2005, "Integrated study of coastal organosedimentary forms, plan for protection–management"-Pythagoras II (Funding: Ministry of Education-E.U.)
- 01/09/2004 to 31/12/2004, "Sampling and analysis of polycyclic musks in activated sludge and sewage treatment plant effluents in Greece" (Funding: IFF/PFW Aroma Chemicals)

Teaching Activities: (current)

Undergraduate courses (selected laboratory lectures-laboratory supervision)

- Chemical Oceanography
- Chemistry-Management of Aquatic Environment

Postgraduate courses (selected lectures-laboratory supervision)

Inter-departmental postgraduate course in Oceanography

- Analytical Chemical Oceanography
- Special Chapters in Chemical Oceanography
- Methodology-Planning-Results of Research Programs of Chemical Oceanography

Postgraduate course of Chemistry Dept.: Chemistry and Technology of the Environment

- Pollution of Aquatic and Terrestrial Systems

Research Interests/Activities: (last 10 years)

- Distribution and analysis of various pollutants in coastal areas, river-estuarine systems, groundwater, urban and industrial wastewater
- Determination of organic pollutants (PAHs, phenols, n-alkanes) in marine and other environmental matrices using High Pressure Liquid Chromatography (HPLC) with fluorescence/UV detection and Gas Chromatography-Mass Spectrometry (GC-MS)
- Recent Activities: Marine pollution research in affected areas (Saronikos Gulf, Evoikos Gulf), pollutants in river-estuaries-coastal systems (Sperchios River-Maliakos Gulf), effects of pollutants on marine organisms (mussels, cyanobacteria-algal mats etc.).

Scientific Publications/Citations:

- 4 publications in refereed journals
- 10 refereed international conference publications
- 1 refereed national conference publications
- 63 citations. (H-index 2)

Top publications

- "Polycyclic aromatic hydrocarbons in surface seawater and in indigenous mussels (*Mytilus galloprovincialis*) from coastal areas of the Saronikos Gulf (Greece)", Valavanidis, A., Vlachogianni, Th., Triantafyllaki, S., Dassenakis, M., Androutsos, F., Scoullas, M., Estuarine, Coastal and Shelf Science, 79 (4), pp. 733-739, 2008.
- "Characterization of atmospheric particulates, particle-bound transition metals and polycyclic aromatic hydrocarbons of urban air in the centre of Athens (Greece)", Valavanidis, A., Fiotakis, K., Vlachogianni, T.,

Bakeas, E.B., Triantafyllaki, S., Paraskevopoulou, V., Dassenakis, M., Chemosphere, 65 (5), pp.760-768, 2006.

- “Dissolved and particulate nickel distribution in a coastal marine area affected by geochemical and industrial processes”, Paraskevopoulou, V., Triantafyllaki, S., Giannikopoulos, N., Dassenakis, M., Fresenius Environ. Bulletin, 19 (9), pp. 1833-1840, 2010.
- “The chemical behavior of Mn and Fe in coastal algal mats”, Ladakis, M., Triantafyllaki, S., Paraskevopoulou, V., Dassenakis, M., Fresenius Environ. Bulletin, 17 (10B), pp. 1885-1890, 2008.

Distinctions:

- July 2005 – December 2009 Ph.D. financed by the Hellenic General Secretariat for Research and Development.

Other Activities:

- Member of the Hellenic Chemists Association
- Member of the Hellenic Oceanographers Association

Ms Maria Riga

Academic Qualifications:

- M.Sc. In Environmental Chemistry and Technology (2009). Two years Postgraduate Course of the Dept. of Chemistry, University of Athens
- B.Sc. in Chemistry (2006), Dept. of Chemistry, University of Athens

Appointments:

- 01/01/2011 to today, "Horizon 2020 Capacity Building Mediterranean Environment Programme" (Funding: E.U.-Europe Aid, Co-ordinator Prof. M. Scoullos)
- 1/10/2011 to today, "Exploration of paper with high humidity index at the location of Landfill and Mechanical Recycling and Composting Plant" (Funding: Association of Communities and Municipalities in the Attica Region – ACMAR, Co-ordinator Prof. M. Scoullos)
- 1/5/2008-1/5/2010, "Determination of trace metals in blood samples from workers employed in heavy industry". (Funding: Social Insurance Institute – Laboratory of Toxicology of the Center of Occupational Medicine, Co- ordination Prof. M. Scoullos)
- 1/11/2006-1/7/2007, "General coordination of the program for determination of physicochemical parameters and qualitative composition of wastes of Attica" (Funding: Association of Communities and Municipalities in the Attica Region – ACMAR, Co-ordinator Prof. M. Scoullos)
- 10/7/2004-30/7/2006, "General coordination of the Network of Laboratories for the monitoring of environmental quality of Greek seas" (Min. of Environment-EU, Co-ordinator Prof. M. Scoullos)
- 1/3/2004-1/6/2004, Determination of PCB's and microbial analysis on water samples in Water Division Laboratory of General State Chemical Laboratory.

Research Interests/Activities: (last 10 years)

- Heavy metals in marine organisms (edible fishes etc)
- Impact of heavy metal inputs from food
- Occupational exposure to heavy metals
- Determination of heavy metal levels in human blood
- Urban solid waste management: recycling and composting

Scientific Publications/Citations:

- 1 refereed national conference publications

Conference publications

- "Cadmium and Lead Concentrations in the flesh of edible fishes/indicators from various Greek seas" Riga M., Vasilakou S., Paraskevopoulou V., Bottos D., Katsiki A., Karavoltsos S., Scoullos M., Conference on Food and the Environment, Athens 13-14 February 2009 (oral presentation).

Other Activities:

- Member of the Hellenic Chemists Association