



Manos Dassenakis

Title: Professor of Environmental Chemistry and Chemical Oceanography

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Graduate studies: Diploma of Chemistry, University of Athens (1975) ,

Postgraduate studies: Master of Science in Oceanography, University of Athens (1981) , Ph.D. of Chemistry, University of Athens (1990),

Educational activities: Teaching the graduate and postgraduate students of Chemistry and Oceanography about special aspects of Environmental Chemistry and Marine Chemistry and training them in the relevant laboratories. Participating in lifelong learning activities mainly as it concern Environmental Education for high school teachers

Undergraduate courses

➤ **ENVIRONMENTAL CHEMISTRY:** Introduction to environmental chemistry. Ecological principles. Chemical processes in natural systems, bio- and geochemical cycles. Sources of pollution/contamination, transport of pollutants in natural systems. Nutrient cycles-eutrophication, organic toxic substances, heavy metals, radionuclides in air, soils and waters. Atmospheric photochemistry. Carbon, nitrogen and sulphur oxides, Ozone layer, hydrocarbons, suspended particles.

➤ **CHEMICAL OCEANOGRAPHY:** Water balance on earth, hydrological cycle. Structure of water, impacts of temperature, pressure and electrolytes. Chlorinity, salinity, Marcet principle. Dissolved oxygen, carbon dioxide and other gases in seawater. Carbon cycle. The elements in seawater. Nutrients, eutrophication, dissolved and particulate organic matter. Primary and secondary production. Marine sediments (inorganic, biogenic). Laboratory exercises: Sampling techniques, determinations of salinity, dissolved oxygen, nutrients, chlorophylls, organic carbon etc. Field work.

➤ **CHEMISTRY - MANAGEMENT OF AQUATIC ENVIRONMENT:** Chemistry of fresh and ground waters. Water for irrigation, industry and public use. Study of urban and industrial wastes. Technologies of water pollution abatement. Solid wastes and their management problems. Sustainable development and its limitations. The contribution of chemistry in environmental management. Laboratory exercises : Principles of environmental monitoring. Determinations of BOD/COD, heavy metals, Detergents, Phenols, Pesticides etc, Field work.

Postgraduate Courses

- MARINE CHEMICAL POLLUTION : Introduction, fate and chemical behaviour of various pollutants in the marine environment
- ANALYTICAL CHEMICAL OCEANOGRAPHY : Analytical techniques that are used in the study of marine samples (water particles, sediments, organisms)
- MARINE CHEMICAL TECHNOLOGY : Technologies relevant to the marine environment (desalination, salt production, raw materials, energy)
- SPECIAL CHAPTERS OF CHEMICAL OCEANOGRAPHY : Study of lagoons and estuaries, air-sea interface, anoxic environments, aquacultures etc

Supervising Ph.D. and MSc theses . Some of the most recent Ph.D.s :

- ✓ M.Ladakis: Bio-Geochemical study of coastal organosedimentary forms (algal mats)
- ✓ A.Kastritis: Study of nitrogen and phosphorus cycles in the coastal system of Maliakos Gulf
- ✓ S.Triantafyllaki: Chemical behaviour and transport of organic pollutants in a coastal area affected by industrial pollution (NW Saronicos gulf)
- ✓ V.Paraskevopoulou: Transport and chemical behaviour of trace metals in a coastal area affected by refinery activities.
- ✓ K.Parinos: Study of the chemical composition and circulation of heavy metals and nutrients in estuarine systems affected by anthropogenic polluting activities
- ✓ E.Anastasopoulou: Study of the effects of olive mills in the coastal environment
- ✓ O.Chalkiadaki : Study of the interactions of heavy metals and proteins in marine benthic organisms

Research activities :

My main research interests focuses on the chemical behaviour, distribution and circulation, of pollutants like heavy metals, nutrients and organic substances in aquatic environment and between the various environmental compartments. The study of the transfer of pollutants from the land to the sea is of high priority. Of particular importance is also the study of the different forms under which various elements occur in natural systems and which are responsible for their biological activity and impact . I also work on application of anti-polluting technologies, study of sewage treatment plant, studies of environmental impact and determination of environmental limitations in industrial sectors. Another topic of interesting environmental research of my group is the relation between aquacultures and pollution of the marine environment and, finally, the research in “microenvironments” of special interest (lagoons, algal mats, ports, hot springs, etc). A lot of research projects funded by various sources (Local, National, European) have been accomplished by my research team in collaboration with various Greek and European Laboratories.

Some recent Research Projects were:

- “Transport of pollutants through small polluted rivers to the sea”: Greek-Spanish- Georgian collaboration funded by INTAS
- “Sampling and Analysis of Polycyclic Musks in activated sludge and sewage treatment plant effluents in various cities of Greece” Funded by Fragrance Producing Industries IFF and PWF.
- “Study of the transport and chemical behaviour of toxic pollutants in a marine area influenced by a big refinery and other industrial activities” Funded by the Greek General Secretary of Research and Technology and the Refinery of MOTOR OIL
- “Nitrogen and phosphorus cycles in the Maliakos gulf – study of the eutrophication in the area of Sperchios estuary” Funded by the Greek Ministries of Education and Environment.
- “Environmental Study in the Gulf of Suda in Crete” Funded by the Municipality of Suda

- Modeling of pollutant transport and distribution in river estuaries endangered by eutrophication phenomena in collaboration with the Laboratory of Physical Oceanography of the University of Athens. Funded by the Greek Ministry of Education.
- Study of the interactions of heavy metals and proteins in marine benthic organisms. Funded by the Greek General Secretary of Research and Technology
- Combination of chemical analytical measurements and remote sensing techniques for coastal water monitoring. The cases of Eastern Mediterranean and Black Sea. Funded by IUPAC

Projects for the dissemination and promotion of Environmental sciences were:

- ‘‘Development of Oceanographic Research in Greece’’ Specific Support Action project in the frame of the 6th FP of European Union- Structuring the European Research Area - Human resources and mobility - FP6-2004-Mobility-13 (2005-2006)
- Researchers’ night 2006–2007-2008 ‘‘A Night On the Beach with Oceanography Researchers’’ (ANOBOR) - ‘‘Researchers Against Degrading Environment’’ (RADE) – Research Web in the Society (REWEBIS) Specific Support Action projects Human resources, Marie Curie actions and mobility In the frame of FP6 –FP7 of European Union

Other activities :

- President of European Federation of Marine Science and Technology Societies (EFMS) 2008-2013
- President of the Hellenic Oceanographers Association 2008-2010
- Associated member of the Division of Chemistry and Environment of International Union of Pure and Applied Chemistry. 2011-12
- Member of the Editorial Board of scientific journals like ‘‘Advances in Oceanography and Limnology - AOL’’ and ‘‘Environmental Aquatic Quality (EQA)’’

Scientific publications:

The results of my research work was published in about 100 scientific publications (journals, books, special series) and about 200 announcements in International or National conferences. Some characteristic recent publications are :

- ‘‘NITROGEN AND PHOSPHORUS IN COASTAL SEDIMENTS COVERED BY ALGAL MAT’’, M.Ladakis, M.Dassenakis, A.Pantazidou, JSS- Journal of soils and sediments 6 (1) 46-54, 2006
- ‘‘CHARACTERIZATION OF ATMOSPHERIC PARTICULATES, PARTICLE-BOUND TRANSITION METALS AND POLYCYCLIC AROMATIC HYDROCARBONS OF URBAN AIR IN THE CENTRE OF ATHENS (GREECE)’’ Athanasios Valavanidis, Konstantinos Fiotakis, Thomais Vlahogianni Evangelos B. Bakeas, Styliani Triantafyllaki, Vasiliki Paraskevopoulou, Manos Dassenakis, Chemosphere, 65, 760-768 2006.
- ‘‘MOLECULAR BIOMARKERS OF OXIDATIVE STRESS IN AQUATIC ORGANISMS IN RELATION TO TOXIC ENVIRONMENT POLLUTANTS’’ A.Valavanidis, T.Vlachogianni, M.Dassenakis, M.Scoullos, Ecotoxicology and Environmental Safety 64,2,178-189, 2006
- ‘‘TRANSPORT OF POLLUTANTS IN TWO ESTUARINE systems in the coast of georgia’’ M.Dassenakis, F.Botsou, K.Chikviladje, K.Kachiasvili, V.Paraskevopoulou Chemistry and Ecology, 22 (5) 379-393, 2006
- ‘‘TOTAL MERCURY IN EDIBLE TISSUES OF TWO ELASMOBRANCHES SPECIES FROM THE MEDITERRANEAN SEA’’, V.Kousteni, P.Megalophonou, M.Dassenakis, E.Stathopoulou, Cybium, 30(4) suppl.: 119-123, 2006
- ‘‘DISSOLVED AND PARTICULATE TRACE METAL LEVELS IN SARONIKOS GULF, GREECE, IN 2004. THE ROLE OF THE WASTEWATER TREATMENT PLANT OF PSITTALIA’’ Michael J. Scoullous, Aikaterini Sakellari, Konstantina Giannopoulou, Vassiliki Paraskevopoulou, Manos Dassenakis, Desalination 210, 98-109, 2007

- "THE CHEMICAL BEHAVIOUR OF TRACE METALS IN A SMALL, ENCLOSED, AND SHALLOW BAY ON THE COAST OF ATTIKA, GREECE", M. Ladakis, M. Dassenakis, M. Scoullou and C. Belias, *Desalination*, 213, 29-37, 2007
- "PROXIMATE COMPOSITION, FATTY ACIDS, CHOLESTEROL, MINERALS IN FROZEN RED PORGY" S.Miniadis, C.Dimizas,V.Loukas, A.Moukas, A.Vlachos, N.Thomoaidis, V.Paraskevopoulou, M.Dassenakis, *Chemistry and physics of lipids*,146,2, 104-110, 2007
- "STUDY OF THE N, P AND Si FLUXES BETWEEN FISH FARM SEDIMENT AND SEAWATER. RESULTS OF SIMULATION EXPERIMENTS EMPLOYING A BENTHIC CHAMBER UNDER VARIOUS REDOX CONDITIONS" C.Belias, M.Scoullou, M.Dassenakis, *Marine Chemistry*, 103 (3), 266-275, 2007
- "INTEGRATED USE OF BIOMARKERS IN MUSSELS MYTILUS GALLOPROVINCIALIS FOR ASSESSING HEAVY METALS' POLLUTION IN COASTAL AREAS FROM THE SARONIKOS GULF OF GREECE" T. Vlahogianni, M.Dassenakis, M.J.Scoullou, A.Valavanidis, *Marine Pollution Bulletin*, 54,1361-1371, 2007
- "SEASONAL FLUCTUATIONS OF NUTRIENTS IN A HYPERSALINE MEDITERRANEAN LAGOON" E.Diamantopoulou, M.Dassenakis, A.Kastritis, V.Tomara,V.Paraskevopoulou,*Desalination*,224,271-279, 2008
- "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, 251-260, 2009.
- "CHEMICAL SPECIATION IN MINING AFFECTED RIVER WATERS, THE CASE STUDY OF ASAREL-MEDET MINE", D.Rabadjeva, S.Tepavicharova, T.Todorov, M.Dassenakis, V.Paraskevopoulou, M.Petrov, *Environmental Monitoring and Assessment: Volume 159, Issue 1, Page 353-366*, 2009
- "N-WAY MODELLING OF SEDIMENT MONITORING DATA FROM MAR MENOR LAGOON, SPAIN" S.Tsakovski, B.Kudlak, V.Simeonov, L.Wolska^f, A.Sagajdakow, G.Garcia, M.Dassenakis, J.Namiesnik, *Talanta* 80 (2), pp. 935-941, 2009
- "THE EFFECT OF MINING ACTIVITIES ON THE HYPERSALINE MAR MENOR LAGOON", M. Dassenakis, G. Garcia, E. Diamantopoulou, E.M. Garcia-Marin, G. Filippi, V. Fioraki, *Desalination and Water Treatment* , 13, 282-289, 2010
- "EVALUATION OF WATER QUALITY IN AN URBAN PARK FOR ENVIRONMENTAL ENHANCEMENT : A LARGE SCALE SIMULATION PROJECT" S.Karavoltsos, M.Antonopoulou, A.Sakellari, M.Dassenakis, M.Scoullou, *Desalination and Water Treatment*, 13, 328-335, 2010
- "CHEMICAL SPECIATION IN WATERS INFLUENCED BY LEAD-ZINC METAL-URGICAL INDUSTRY", S.Tepavicharova, T.Todorov, M.Dassenakis, V. Paraskevopoulou, *Environmental Monitoring and Assessment*, Vol 169, 1, 27-36, 2010
- "ASSESSMENT OF THE MOBILIZATION POTENTIAL OF COPPER, CADMIUM AND ZINC IN COASTAL SEDIMENTS" A.Sakellari, M.Plavšić, S.Karavoltsos, M.Dassenakis, M.Scoullou, *Estuarine, Coastal and Shelf Science* 91 (1) pp 1-12 , 2011
- "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*,2011
- "CHEMICAL SPECIATION IN NATURAL AND BRINE SEA WATERS" S.Tepavicharova, T.Todorov, M.Dassenakis, V. Paraskevopoulou, *Environmental Monitoring and Assessment* ,180,217-227, 2011
- "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.Karavoltsos,M.Dassenakis,M.Scoullou,*Talanta* 83, 1568-1574 , 2011
- "REMOTE SENSING IN COASTAL WATER MONITORING:APPLICATIONS IN THE EASTERN MEDITERRANEAN SEA" M.Dassenakis, V.Paraskevopoulou ,C.Cartalis, N.Adaktilou, K.Katsiabani (IUPAC Technical Report) *Pure and applied Chemistry*, 84, 2, 335-375, 2012

- “HEAVY METALS IN RAW, FRIED AND GRILLED MEDITERRANEAN FINFISH AND SHELLFISH” N.Kalogeropoulos, S.Karavoltzos, A.Sakellari, S.Avramidou, M.Dassenakis, M. Scoullos , Food Chemistry and Toxicology 50, 3702-3708, 2012
- “BIOACCUMULATION OF METALS (CD, CU,ZN) BY THE MARINE BIVALVES *M. GALLOPROVINCIALIS*, *P. RADIATA*, *V. VERRUCOSA* AND *C.CHIONE* IN MEDITERRANEAN COASTAL MICROENVIRONMENTSQ ASSOCIATION WITH METAL BIOAVAILABILITY” A.Sakellari, S.Karavoltzos, D.Theodorou, M.Dassenakis, M.Scoullos, Environmental Monitoring and Assessment 185 (4) , 3383-3395, 2013
- “COPPER COMPLEXING PROPERTIES OF EXUDATES AND METABOLITES DERIVING FROM SEVERAL MACROALGAL SPECIES FROM COASTAL WATERS OF THE AEGEAN SEA, GREECE” S.Karavoltzos, A.Sakellari, S.Strmeski, M.Plavsic, E.Ioannou, V.Roussis, M.Dassenakis, M.Scoullos, Chemosphere 91 (11) , 1590-1595, 2013