

# Dr Efstratios Kelepertzis

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PERSONAL DETAILS      Date and place of birth: 23th October 1980, Thessaloniki  
Family status: Married with two children  
Home address: Digeni Akrita 26, 171 24, Nea Smirni, Athens

## EDUCATION

### **PhD in Environmental Geochemistry**

Dates: April 2008 - April 2011

Institution: Department of Geology and Geoenvironment, University of Athens, Greece.

Thesis title: Bioaccessibility of potentially toxic elements in surface geochemical media of dispersion for the environmental risk assessment at mining areas of NE Chalkidiki.

Key features: Development of a methodology contributing to the environmental assessment framework in mineralized and/or mining areas, processes controlling the dispersion, mobility and fate of trace elements in freshwater aquatic environments.

**MSc in Contaminated Land** (*following a scholarship for postgraduate studies abroad by the National Scholarship Foundation of Greece*)

Institution: University of Portsmouth (UK), School of Earth and Environmental Sciences.

Dates: October 2004 - November 2005

Thesis title: Environmental study of soils, surface and groundwaters in an industrial zone east of Larissa town, central Greece.

Key features: The MSc course comprehensively covered principles of environmental contamination and included taught units in contaminated land assessment methodology, soil and water geochemistry and environmental geology, promoting the acquisition of writing skills and accomplishment of reports and duties within specific time intervals.

### **Diploma in Geology**

Dates: October 1998 - December 2003

Institution: Department of Geology, University of Athens, Greece.

Dissertation title: The distribution of heavy metals Cu, Pb, Zn and Cd in soil samples of the Thoriko-Plaka area in Lavreotiki and their characterization with regard to environmental pollution.

FELLOWSHIP           **October 2015:** Scientific visit to the Department of Environmental Sciences, Czech University of Life Sciences Prague, under the Bilateral Educational Programme between the Greek and Czech Republic Ministries of Education. Supervisor: Professor Michael Komárek.

EMPLOYMENT AND   **2014-present:** Laboratory Teaching Staff, Department of Geology and

OTHER EXPERIENCE   Geoenvironment, University of Athens.

**2007-2013:** Administrative/Laboratory Staff, Department of Geology and Geoenvironment, University of Athens.

**June 2007-August 2007:** Motor Oil Hellas Refineries, Division of Health, Safe and Environment. Assessing the applicability and effectiveness of landfarming method for the petroleum wastes.

**February 2007-April 2007 / December 2005-February 2006:** Institute of Geology and Mineral Exploration, Division of Hydrogeology. Sampling of groundwaters and statistical/graphical processing of hydrochemical data.

**Summer 2002:** Internship, General Secretariat of Civil Protection.

**Summer 1999 and 2000:** Student researcher at the Institute of Geology and Mineral Exploration, Division of Mineralogy. Mineralogical analyses with X-ray diffraction.

RESEARCH

My research interests are focusing on the geochemical principles governing the environmental behavior of trace elements in the surface terrestrial environment, as well as on baseline geochemical and environmental studies in soil and aquatic environs and subsequent interpretation of data variation allowing to discriminate natural from anthropogenic sources of contamination. Of special interest is the mineralogy and chemistry of soils naturally enriched with heavy metals and the potential ecological and human health risks.

My recent research activities fall into the field of urban soil geochemistry and agricultural soil chemistry focusing on the chemical forms of trace metals within the soil matrix and the understanding of the main mechanisms and processes that are responsible for their retention or release. To achieve the goals, I combine chemical extractions in the lab and advanced statistical treatment of the analytical data.

I currently investigate the geochemical behavior of heavy metals and metalloids of both anthropogenic and geogenic origin in diverse contaminated soils seeking to determine the influence of land use (urban, agricultural, metalliferous, mining and rural) on their available and reactive pools. I am also involved in investigations examining the content of trace

elements in house dust from Athens city and the chemical composition of waters following interaction processes with serpentinite rocks.

- RECENT FUNDING
- 2015:** *Environmental study of soils and groundwaters in the agricultural area of Nemea Municipality. Qualitative status and discrimination of the natural and anthropogenic sources affecting the chemical composition.* Funded by municipal authorities.
- 2014:** *Soil monitoring planning in the mining areas of Kassandra, Chalkidiki.* Funded by ENVECO S.A.
- 2013:** *Geochemical and environmental characteristics of urban soils in Athens focusing on the mobility and human bioaccessibility of toxic chemical elements.* Funded by John S. Latsis Public Benefit Foundation "Scientific Projects 2013".
- 2013:** *Geochemical study of agricultural soils in Argolida Basin, Peloponnese, focusing on the concentrations of potentially toxic elements. Discrimination of natural and anthropogenic factors controlling the chemical composition.* Funded by municipal authorities.
- 2012:** *Chemical quality of groundwaters used for drinking purposes of Farsala Municipality.* Funded by municipal authorities.

- COMMUNITY ROLE
- Editorial Board:** Member of the editorial board of the open access Journal 'Sustainability'.
- Reviewer:** Journals including *Science of the Total Environment, Ecotoxicology and Environmental Safety, Geoderma, Environmental Monitoring and Assessment, Pedosphere, International Journal of Environmental Research and Public Health, Applied Geochemistry, Chemosphere, Journal of Soils and Sediments, Environmental Earth Sciences, Environmental Science and Pollution Research, Journal of Geochemical Exploration, Environmental Pollution.*
- Society Membership:** European Association of Geochemistry, Society for Environmental Geochemistry and Health, The Geological Society of Greece.

- COMPUTING SKILLS
- Operating system: Windows Vista, Windows 8.1
- Applications: Microsoft Office Suite
- Statistical software: Minitab 16, IBM SPSS Statistics 22.0, OriginPro 9
- Geographic Information System (GIS): ArcGIS Desktop 10

- TEACHING
- 2008-present:**
- Teaching fellow for the undergraduate courses of *Geochemistry, Environmental Geochemistry, Hydrogeochemistry-Analytical Geochemistry* and the postgraduate courses *Applied Geochemistry* and

*Environmental Geochemistry.* This role involves delivery of practical hands-on exercises in the class and lectures, instructing students to analytical facilities of the 'Laboratory of Economic Geology and Geochemistry', performance of analytical experiments, chemical and mineralogical analyses, office hours student assistance and marking of coursework essays. I also participate in undergraduate and postgraduate field trips for educational and geochemical sampling purposes.

- Involvement in the accomplishment of undergraduate and postgraduate dissertations by providing supervision during study design, sample collection, laboratory and experimental work and analytical data processing in statistical and GIS software products.

#### LAB EXPERIENCE

##### 2008-present:

- Processing and treatment of geochemical samples prior to analytical measurements.
- Physicochemical characterization of soils and waters.
- Preparation of analytical extraction solutions. Dissolution of geochemical phases in soils and sediments by chemical reagents targeting to release elements from their host components.
- Operation of Atomic Absorption Spectroscopy (flame and graphite furnace modes, Perkin Elmer 1100B) for chemical determinations of heavy metals in geochemical solutions. Preparation of standard solutions and calibration of the instrument.
- Operation of Scanning Electron Microscopy–Energy Dispersive X-ray Spectrometry (SEM-EDS) instrument for semi-quantitative chemical analyses of mineral phases in rock and soil samples.
- Operation of analytical apparatus like flame photometer (Jenway PFP7) and spectrophotometer (Hach DR 4000) for the determination of major ions in waters.
- Determination of crystalline minerals by X-ray diffraction.

#### PUBLICATIONS

##### PEER REVIEWED JOURNAL ARTICLES

- Botsou, F., Sungur, A., **Kelepertzis, E.**, Soylak, M., 2016. Insights into the chemical partitioning of trace metals in roadside and off-road agricultural soils along two major highways in Attica's region, Greece. *Ecotoxicology and Environmental Safety* 132, 101-110.
- **Kelepertzis, E.**, Komárek, M., Argyraki, A., Šillerová, H., 2016. Metal(loid) distribution and Pb isotopic signatures in the urban environment of Athens, Greece. *Environmental Pollution* 213, 420-431.

- Voutsis, N., **Kelepertzis, E.**, Tziritis, E., Kelepertsis, A. 2015. Assessing the hydrogeochemistry of groundwaters in ophiolite areas of Euboea Island, Greece, using multivariate statistical methods. *Journal of Geochemical Exploration* 159, 79-92.
- **Kelepertzis, E.**, Paraskevopoulou, V., Argyraki, A., Fligos, G., Chalkiadaki, O. 2015. Evaluation of single extraction procedures for the assessment of heavy metal extractability in citrus agricultural soil of a typical Mediterranean environment (Argolida, Greece). *Journal of Soils and Sediments* 15, 2265-2275.
- **Kelepertzis, E.**, Argyraki, A. 2015. Geochemical associations for evaluating the availability of potentially harmful elements in urban soils: Lessons learnt from Athens, Greece. *Applied Geochemistry* 59, 63-73.
- **Kelepertzis, E.**, Argyraki, A. 2015. Mercury in the urban topsoil of Athens, Greece. *Sustainability* 7, 4049-4062.
- Skordas, K., **Kelepertzis, E.**, Kosmidis, K., Panagiotaki, P., Vafidis, D. 2015. Assessment of nutrients and heavy metals in the surface sediments of the artificially lake water reservoir Karla, Thessaly, Greece. *Environmental Earth Sciences* 73: 4483-4493.
- Pelton, A., Stamatakis, M., **Kelepertzis, E.**, Panagou, A. 2015. The origin and archaeometallurgy of a mixed sulphide ore for copper production on the island of Kea, Aegean Sea, Greece. *Archaeometry* 57: 318-343.
- Argyraki, A., **Kelepertzis, E.** 2014. Urban soil geochemistry in Athens, Greece: The importance of local geology in controlling the distribution of potentially harmful trace elements. *Science of the Total Environment* 482-483, 366-377.
- **Kelepertzis, E.** 2014. Accumulation of heavy metals in agricultural soils of Mediterranean: Insights from Argolida basin, Peloponnese, Greece. *Geoderma* 221-222, 82-90.
- **Kelepertzis, E.** 2014. Investigating the sources and potential health risks of environmental contaminants in the soils and drinking waters from the rural clusters in Thiva area (Greece). *Ecotoxicology and Environmental Safety* 100, 258-265.
- **Kelepertzis, E.**, Stathopoulou, E. 2013. Availability of geogenic heavy metals in soils of Thiva town (central Greece). *Environmental Monitoring and Assessment* 185, 9603-9618.
- Kaitantzian, A., **Kelepertzis, E.**, Kelepertsis, A. 2013. Evaluation of the sources of contamination in the suburban area of Koropi-Markopoulo, Athens, Greece. *Bulletin of Environmental Contamination and Toxicology* 91: 23-28.
- **Kelepertzis, E.** 2013. Heavy metals baseline concentrations in soft tissues of *Patella* sp. from the Stratoni coastal environment, NE Greece. *Ecological Chemistry and Engineering* S20: 141-149.
- **Kelepertzis, E.**, Galanos, E., Mitsis, I. 2013. Origin, mineral speciation and geochemical baseline mapping of Ni and Cr in agricultural topsoils of Thiva valley (central Greece). *Journal of Geochemical Exploration* 125: 56-68.

- Tziritis, E., **Kelepertzis, E.**, Korres, G., Perivolaris, D., Repani, S. 2012. Hexavalent chromium contamination in groundwaters of Thiva basin, central Greece. *Bulletin of Environmental Contamination and Toxicology* 89: 1073-1077.
- **Kelepertzis, E.**, Argyraki, A., Valakos, E., Daftsis, E. 2012. Distribution and accumulation of metals in tadpoles inhabiting the metalliferous streams of eastern Chalkidiki, Northeast Greece. *Archives of Environmental Contamination and Toxicology* 63: 409-420.
- Antibachi, D., **Kelepertzis, E.**, Kelepertzis, A. 2012. Heavy metals in agricultural soils of the Mouriki-Thiva area (central Greece) and environmental impact implications. *Soil and Sediment Contamination* 21: 434-450.
- **Kelepertzis, E.**, Argyraki, A., Daftsis, E. 2012. Geochemical signature of surface water and stream sediments of a mineralized drainage basin at NE Chalkidiki, Greece: A pre-mining survey. *Journal of Geochemical Exploration* 114: 70-81.
- Kelepertzis, A., Tziritis, E., **Kelepertzis, E.**, Leontakianakos, G., Pallas, K. 2009. Hydrogeochemical characteristics and genetic implications of Edipsos thermal springs, north Euboea, Greece. *Central European Journal of Geosciences* 1: 241-250.

#### ARTICLES IN REFERRED JOURNALS AND CONFERENCE PROCEEDINGS

- **Kelepertzis, E.**, Massas, I., Fligos, G., Panagiotou, M., Argyraki, A., 2016. Copper accumulation in vineyard soils from Nemea, Greece. *Bulletin of the Geological Society of Greece*, Proceedings of the 14<sup>th</sup> International Congress.
- Pyrgaki, K., Argyraki, A., **Kelepertzis, E.**, Paraskevopoulou, V., Botsou, F., Dassenakis, E., Mitsis, I., Skourtsos, E., 2016. *Bulletin of the Geological Society of Greece*, Proceedings of the 14<sup>th</sup> International Congress.
- Papazotos, P., Chalkiadaki, O., Chatzistamatiou, E.A., Georgopoulos, G., Gkiouleka, I., Katsikis, I., Zygouri, E., **Kelepertzis, E.**, Argyraki, A., 2016. *Bulletin of the Geological Society of Greece*, Proceedings of the 14<sup>th</sup> International Congress.
- Fadel, D., Argyraki, A., Papageorgiou, S., **Kelepertzis, E.**, 2016. *Bulletin of the Geological Society of Greece*, Proceedings of the 14<sup>th</sup> International Congress.
- Argyraki, A., **Kelepertzis, E.**, Fligos, G., Athanasiou, E., Gardiakos, K., Kourgia, V. 2013. Geochemical mapping of urban soils in Athens, Greece - Preliminary results, *Bulletin of the Geological Society of Greece* Vol. XLVII(2): 901-909.
- **Kelepertzis, E.**, Argyraki, A., Daftsis, E., Ballas, D. 2010. Geochemical background heavy metal concentrations of stream sediments at mineralized areas of NE Chalkidiki. *Hellenic Journal of Geosciences* 45: 153-162.
- **Kelepertzis, E.**, Argyraki, A., Daftsis, E., Ballas, D. 2010. Quality characteristics of surface waters at Asprolakkas hydrological basin, N.E. Chalkidiki, Greece. *Bulletin of the Geological Society of Greece* Vol. XLIII(4), 1737-1746.

CHAPTER IN BOOKS

- **Kelepertzis, E.**, Argyraki, A., Daftsis, E. 2011. Factors controlling major ion and trace element content in surface water at Asprolakkas hydrological basin, NE Chalkidiki: Implications for elemental transport mechanisms. In: N. Lambrakis et al (Eds.), *Advances in the research of aquatic environment*, Vol 2: 177-184, Springer-Verlag Berlin Heidelberg, p. 177-184.

ABSTRACTS IN CONFERENCE PROCEEDINGS

- Sungur, A., Kelepertzis, E., Botsou, F., Soylak, M., (2016). Relationship between soil properties and different fractions of Cd, Cu, Ni, Pb and Zn in roadside agricultural soils from Athens, Greece. 10th Aegean Analytical Chemistry Days, Çanakkale, Turkey.
- Kelepertzis, E., Komárek, M., Argyraki, A., Šillerová, H., 2016. Lead isotope signatures in different particle sizes and chemical fractions from Athens urban soil: possible linkage with house dust. 32nd International Conference on Environmental Geochemistry and Health, Brussels, Belgium.
- **Kelepertzis, E.**, Argyraki, A., 2015. Environmental availability of potentially harmful elements in Athens soil. Proceeding of the 6<sup>th</sup> International Conference on Medical Geology, Aveiro, Portugal.
- Argyraki, A., **Kelepertzis, E.** 2013. Geochemical mapping of soils in Athens, Greece. Proceedings of the 29<sup>th</sup> Conference of the Society for Environmental Geochemistry and Health, Toulouse, France.
- Argyraki, A., **Kelepertzis, E.** 2012. Pre-mining environmental geochemical survey of a mineralised watershed in North Greece. Proceedings of the 9<sup>th</sup> International Symposium on Environmental Geochemistry, Aveiro, Portugal.
- **Kelepertzis, E.**, Valakos, E., Argyraki, A. 2012. Transfer of metals (Pb, Zn, Cu, Cd) from the geosphere to the biosphere within freshwater ecosystems of NE Chalkidiki. Proceedings of the 34<sup>th</sup> Scientific Conference of the Hellenic Association for Biological Sciences, Trikala, Greece.
- Tziritis, E., **Kelepertzis, E.** 2008. Hydrogeochemical research of the Neogene aquifers at the Karlovasi basin of Samos island. Proceedings of the 26<sup>th</sup> European Conference of the Society of Environmental Geochemistry and Health, Athens, Greece.