

Vassilis Kilikoglou Curriculum Vitae

Studies :

- Degree on Chemistry from the University of Athens (1981)
- PhD from the Chemistry Department, University of Ioannina (1988). The thesis was carried out, on a Greek Atomic Energy Commission fellowship, at the NCSR Demokritos from 1981 to 1985.

Current position:

- Director of Research at the Institute of Nanoscience and Nanotechnology, NCSR “Demokritos” (since 2004) and head of Ceramics and Composite Materials research group.

Previous positions:

- 1985/86 : Research fellow at the Conservation Analytical Laboratory, Smithsonian Institution, Washington DC.
- 1987/88 : Research Associate at the Radioanalytical Laboratory, NCSR Demokritos
- 1989-2004: Research Scientist, Senior Researcher and Principle Researcher at the Institute of Materials Science, NCSR Demokritos.
- 1993 – 2010 Senior lecturer at the Conservation School, Athens Technological Educational Institute.
- 2016-2021: Director of Institute of Nanoscience and Nanotechnology, NCSR DEMokritos
- 2019-2020: President of NCSR Demokritos

Research activities:

Conservation science: Study of mechanisms of deterioration and methods of preservation of mortars and stone materials of archaeological and historic buildings. The goal here is to design pozzolanic mortars by using natural materials in order to replace cement. In this context several types of pozzolanic mortars have been developed, by monitoring the hydration process in order to maximize the production of hydraulic phases and enhance strength. Furthermore, alternative mortars have been synthesized, as for example Ba-based ones which exhibit high resistance to acid attack and TiO₂ enriched ones for the promotion of hardening and self-cleaning capability.

Mortars and grouts for the conservation of architectural monuments: The activity focuses on the design and development of sustainable, energy-efficient conservation composites, by incorporating traditional, low-cost earthen-based materials and modern nano-materials. Beyond conservation studies and consulting for field projects, the main research activities in the field focus on a) Enhancement of reactivity in natural and artificial, low-cost pozzolanic admixtures, b) Optimization of mortar properties in terms of strength, durability and performance towards the reduction of production costs.

Self-healing and service life optimization of mortars: The research conducted in this field aims at the parametric modification of both chemical composition and microstructure of modern repair mortars, in order to create optimum conditions for the initiation of the self healing mechanism in the field. This, in turn, leads to an enhanced service-life and enhances the sustainability of conservation materials. To this end, mechanisms such as leaching

Provenance and technology of archaeological pottery: It consists of the most popular field of research in the area of Archaeometry or Archaeological Science and it includes studies on the origin and choice of raw materials, procedures for pottery manufacture and geographical distribution of the final products. The ultimate goal of these investigations is the reconstruction of the exchange networks and the trade routes which existed in the antiquity and provide evidence for contacts amongst cultural units, as well as transfer of ideas. The methodology employed includes the physicochemical characterization of pottery followed by comparison with relevant materials from candidate sites.

Integration of analytical techniques in archaeological ceramic studies / geochemistry of clay deposits: It involves the development of scientifically sound analytical methodologies by the integration of chemical, mineralogical and petrographic data for the study of production and distribution of pottery. This methodology is heavily based on the detailed prospection and exploration of clay deposits and their possible exploitation in antiquity.

Mechanical and thermal properties of ceramics: The effect of temper on the mechanical performance of ceramics has been studied and explained experimentally as well as with the development of appropriate models. Alternative tests with small size sample requirements have been developed and applied on archaeological ceramics. The effect of vessel shape has been investigated by Finite Element Analysis. The main outcome of this research effort is the understanding of the prevailing parameters that controlled pottery production in the antiquity and how these parameters were adopted by the potters for the production of vessels for specific function, over prehistoric and historic periods.

Development of low energy Belite Calcium-Sulpho-Aluminate (BCSA) clinker/cements: Aiming to reduce the environmental impact of conventional cement, the development and hydration of novel, eco-friendly Belite Calcium-Sulfo-Aluminate (BCSA) type of cement is studied, as an alternative to Portland cement (OPC). The approach followed encompasses laboratory experiments, firing trials, analytical characterization and simulation studies, using open access thermodynamic software for the identification of the hydration products and mechanisms..

Supervisory activities : Twelve PhDs have been completed under his supervision at the Archaeometry Laboratory of NCSR Demokritos on weathering of ceramics during burial, provenance and technology of Minoan pottery, comparison of analytical techniques, technology of Byzantine wall paintings and conservation and self-healing mechanisms of mortars

Twelve Conservation students working on their final year thesis.

Four post-doctoral fellows have worked on provenance and technology of pottery, as well as production of ceramic foams.

Education: Lecturer at post-graduate level on "Technology and provenance of ancient ceramics", Department of Archaeology, University of Barcelona (1993, 1996), Department of Archaeology University of Athens (1994), Greek Physical Society (1993), University of Thessaloniki (1999 - 2003), University of Crete (1998, 1999), National Technical University (1999 – to date), University of Athens (2005 – to date), University of Peloponnese (2016-to date)

Lecturer at the Conservation Department of TEI, Athens, courses on Physicochemical Methods of Examination in Conservation and Dating (1993-2010).

Funding: He has been receiving regular funding from the EU, Greek State and Private Sector for the last 25 years and has been scientist-in-charge of 31 European, nationally and internationally funded projects. , has created the research group "Ceramics and Composite Materials" within the Cultural Heritage Program of NCSR Demokritos.

Leadership, Management and Administration: He has created the research group of Ceramics and Composite Materials, within the Cultural Heritage Programme of the Institute of Nanoscience and Nanotechnology, as well as the Laboratory of Archaeological Materials. The group focuses on all aspects of archaeological and conservation science as described above, and through the Laboratory, extensive services and consultancy are offered to academic institutions, the archaeological service and industry.

2010-2014: Elected Member of the Board of Directors of NCSR Demokritos.

2011-2017: Chairman of the NCSR Demokritos technical committee, responsible for the infrastructures and technical support.

2006-2010: Member of NCSR Demokritos committee for the supervision of the Technological Park "Lefkippos".

1999-2005: Chairman of the Scientific Board of the Institute of Materials Science. This board is the main forum for the development of the research agenda of the institute and responsible for the monitoring of its finances.

2020-to date: Coordinator of the "NCSR Demokritos Infrastructure Expansion Project" (48.33 M€)

Publications

Books	2
Edited volumes	5
Papers in refereed journals	104
Papers in refereed conference proceedings	68
Chapters in books and collective volumes	16
Papers in non refereed conference proceedings	23