



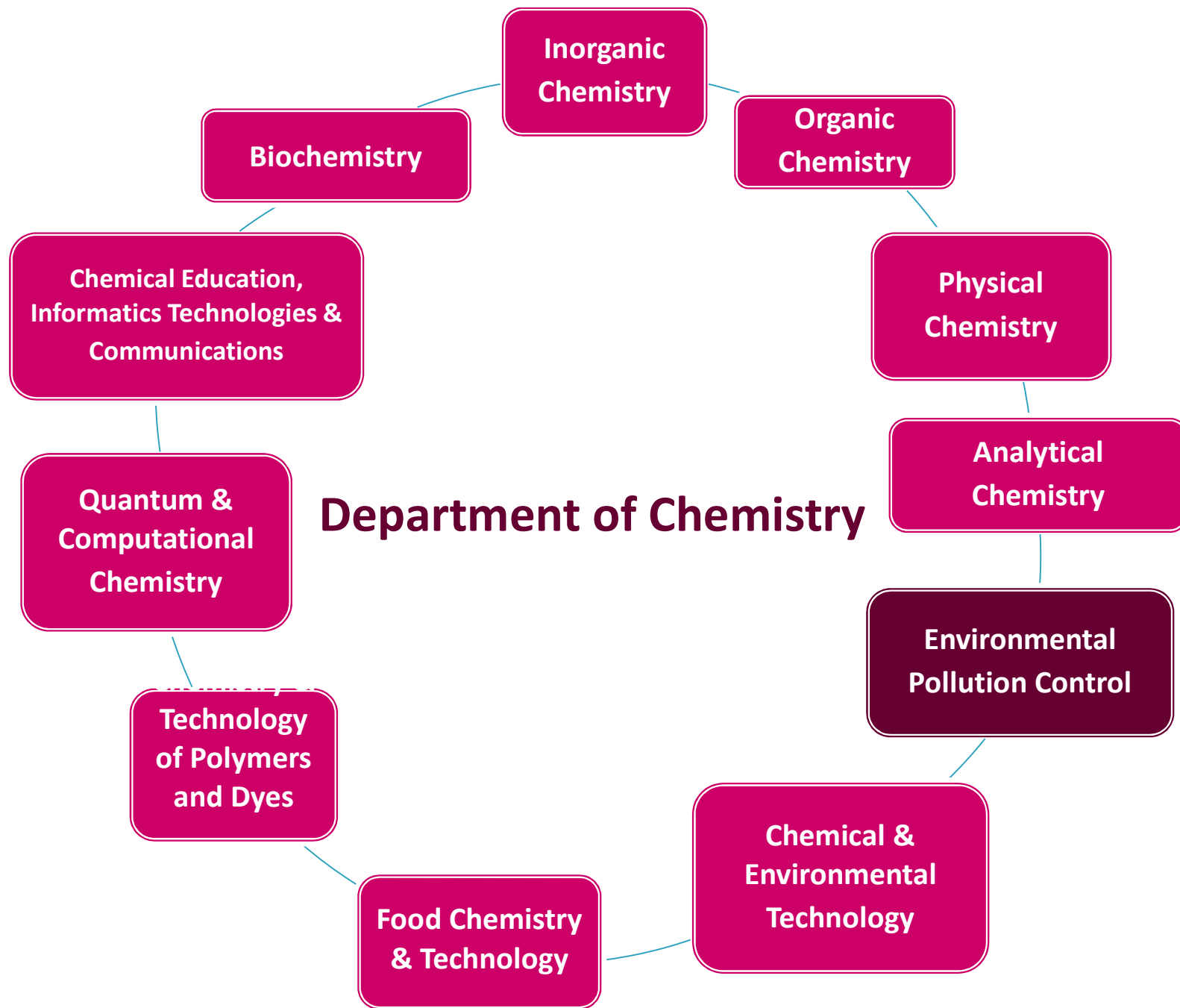
ARISTOTLE UNIVERSITY OF THESSALONIKI  
SCHOOL OF CHEMISTRY



# ENVIRONMENTAL POLLUTION CONTROL LABORATORY (EPCL)

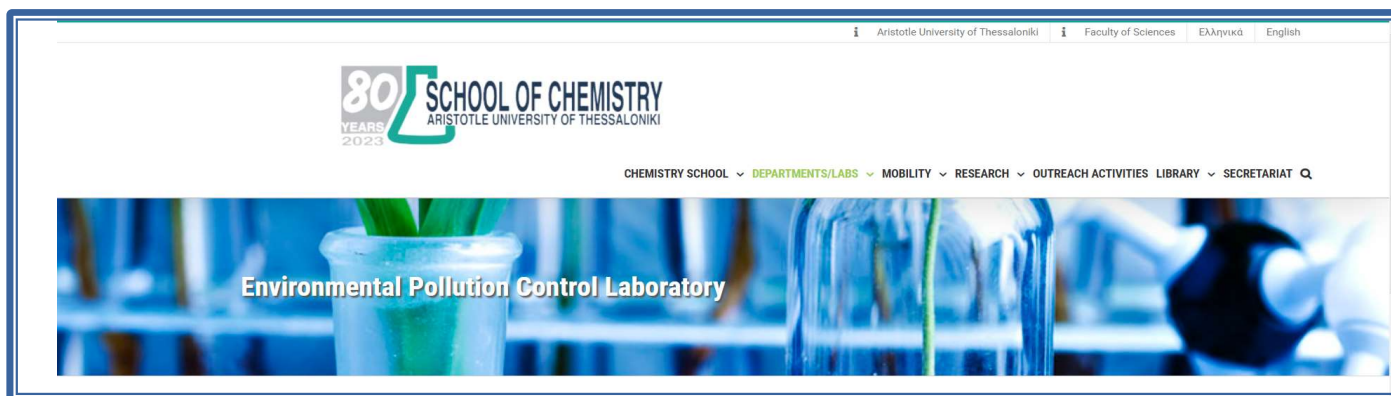
Professor Dimitra Voutsas, Director





## Historical background

The Environmental Pollution Control Laboratory was founded in 1976 and belongs to the section of Physical, Analytical and Environmental Chemistry of the School of Chemistry of the Aristotle University of Thessaloniki.



Address: University Campus, 541 24 Thessaloniki, Greece  
webpage: <http://w.w.w.chem.auth.gr>



# Personnel of EPCL

- ▶ 2 faculty members, professors
- ▶ 4 Laboratory teaching personnel
- ▶ 1 secretary
  
- ▶ Post doctoral researchers
- ▶ PhD students
- ▶ MSc students
- ▶ Bachelor's students



# Teaching activities

## Undergraduate Courses (5<sup>th</sup>-8<sup>th</sup> semester)

- ▶ Environmental Chemistry
- ▶ Environmental Pollution Control
- ▶ Chemistry & Management of Ecosystems
- ▶ Pollution Prevention & Environmental Protection
- ▶ Quality Assurance in Environmental Control and Management



# Teaching activities

## Post Graduate Program

### *“Environmental Quality Control & Management”*

- Chemistry and pollution control of aquatic and terrestrial environment
- Chemistry and pollution control of the atmospheric environment
- Methods for Environmental Analysis
- Pollution control and management of water and wastes
- Quality of environmental measurements-Quality management systems
- Environmental impact assessment-Geographical information systems
- Diploma research



# Research interests

- ❑ Atmospheric pollution from gaseous and particulate pollutants
- ❑ Pollution of aquatic and terrestrial environment from organic micropollutants, heavy metals, nutrients
- ❑ Environmental fate of pollutants and transportation in environmental compartments
- ❑ Quality of drinking water-Disinfection Byproducts
- ❑ Development of analytical methods for determination of micropollutants in environmental samples
- ❑ Treatment processes and strategies for removal of inorganic and organic pollutants
- ❑ Waste management - Risk assessment



# Research activities

## ATMOSPHERIC ENVIRONMENT

- Chemical characterization of PM (organic compounds, OC, EC, ionic species, elements)
- SA of PM using receptor models
- Size distribution of PM and associated components
- G/P partitioning of SVOCs
- Wet and dry deposition of atmospheric pollutants
- Bioactivity of PM (redox activity, cytotoxicity, DNA damage)
- Indoor air pollution
- Human exposure

## AQUATIC & TERRESTRIAL ENVIRONMENT

- Occurrence and fate of EDCs, PCBs, PAHs, PPCPs, OPEs, pesticides)
- Monitoring of surface and groundwater quality
- Passive sampling
- Removal of organic pollutants with adsorptive and advanced oxidative methods
- Structure elucidation of organic contaminants by hyphenated chromatographic techniques
- Water ecotoxicology

## WASTE WATER & SOLID WASTE

- Fate of organic pollutants during the wastewater treatment
- Hazard assessment of industrial solid wastes and sewage sludge
- Wastewater ecotoxicology
- Management of hazardous wastes





# Laboratory Infrastructure

## Analytical Instruments

- GC-MS, TD-GC-MS
- LC/MS
- HPLC-FLD, HPLC-UV
- GC-ECD, GC-NPD ,
- IC
- AAS

## Sampling Devices

- Samplers for atmospheric pollutants
- Inertial impactors
- Wet and dry deposition collectors
- Surface water samplers
- Sediment samplers

## General Laboratory Equipment

- Total Organic Carbon Analyzer
- Microwave assisted extraction
- Freeze-drying device
- LUMISTox Luminometer
- UV-Vis spectrophotometers
- BOD and COD
- pH, DO, EC



# Accrediated methods

- ▶ Ambient air – Standard gravimetric measurement method for the determination of the  $PM_{10}$  or  $PM_{2.5}$  mass concentration of suspended particulate matter according to ISO EN 12341:2014) (Accreditation Certificate No. 739-4)
- ▶ Water, Soil, Sediments -Determination of pesticides and emerging contaminants(pharmaceuticals) (Accreditation Certificate No. 1259)



# Social services

- ▶ Organizing Seminars
- ▶ Training actions for teachers – students
- ▶ Cooperation with environmental education centers
- ▶ Cooperation with local authorities, municipalities, environmental organizations, environmental inspectors
- ▶ Scientific support for solving specific environmental problems



# Future Targets

- ❖ To offer high-quality teaching work in both undergraduate and postgraduate curriculum by supporting the Science of Environmental Chemistry
- ❖ To develop a multi-dimensional high-quality research on cutting-edge topics
- ❖ To support community liaison actions and provide evidence-based scientific opinions for solving environmental issues

