

**Laboratory for quality control of materials LQCM _ UPB (accredited 2009-2013) Available
infrastructure of the laboratory**

(GC-MS)	VARIAN Ion Trap (GC 3900 MS Saturn 2200) (2008)
HPLC	WATERS Detectors : double channels UV, Fluorescence, refractive index
Voltametric instrument	ECOCHÉMIE AUTOLAB, PGSTAT30 with Metrohm stand 663VA with impedance modul (2003)
GC-FID	AGILENT Detectors: FID, ECD (2008)
Spectrophotometer UV-Vis V-530	JASCO Double beam spectrophotometer, 0,2 nm
ELITE 8908 interface	NICCO simultaneous potentiometric measurements (8 channels), temperature sensor
Rotaevaporator Heidolph	2008
Solid phase extraction system	2008
pH-meters	
conductometers	

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Research objectives

The main objectives of the laboratory cover the need for scientific advances in environmental contaminants monitoring in order to identify, develop and optimize analytical methods for contaminants analysis in soils and sediments and the sorption of contaminants on nanoparticles of natural or anthropogenic provenience using several techniques of separation and investigation.

The specific objectives are:

- Development of techniques for the characterization of soils and sediments from the point of view of **natural nanoparticles occurrence**
- Development of analytical methods for determining a range of contaminants in soils and sediments. These methods will be then used in monitoring and control of multiple chemical contaminants
- Development of methods of analysis of environmental contaminants using **carbon engineered nanomaterials as sorbents in remediation techniques**

- Development of **innovative means of performing sampling** and sample preparation, rapid co-extraction of multiple chemical contaminants from a range of soil and sediments matrices and the ability to produce several sample extracts per day compatible with the solvent abilities of the new assays
- Checking the existing confirmatory methods to support the newly developed ones
- **Training** of young scientists from the project and from external laboratories to use the newly developed analytical tools in an effective manner.
- Widespread dissemination of project information to audiences ranging from scientists to consumers and regulators.
- **Testing biosensors** with entrapped nanomaterials already developed for pesticides extracts of known concentrations of pesticides, taking into account that for environmental control and monitoring biosensors can provide fast and specific data of contaminated sites.

Structure of the research team

The structure of the group of research (2 professors, one experienced researcher, 2 assistant professors, 2 PhD students) will contribute to the formation and building of interdisciplinary knowledge of young PhD students and young researchers, necessary in the frame of this theme which suppose good knowledge of analytical chemistry, food chemistry, environment chemistry and nanosciences. (techniques of characterization of nanoparticles and nanomaterials). The work in this project will serve in educating specialists in an interdisciplinary field, in creating new knowledge, in solving specific problems, this knowledge being the result of a common effort in this field of research.

Working together in this laboratory is an opportunity for the new generation of young scientists to be trained in interdisciplinary fields of research such as **environmental analytical chemistry in nanoscience and nanotechnology**. They can have backgrounds as: environment, food, chemistry, civil engineering, electronics, biology,

On-going projects:

one **FP7** (as a partner) in application of nanomaterials in the agriculture (2010-2013);

a bilateral cooperation **Germany – Romania** in nanoparticles from the environment as vectors for contaminants (2009-2010);

cooperation **USA - Romania** in training and research in the environmental applications of carbon nanomaterials (2009-2010)

one **PN II** project in biosensors for detection of environmental contaminants (2008-2011)