



Teodor Laurentiu Busuioc

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● EXPERIENȚA PROFESIONALĂ

11/04/2019 – ÎN CURS – Bucharest, România

INSPECTOR – Austria Bio Garantie GmbH

Austria Bio Garantie GmbH Enzersfeld Sucursala Bucuresti (ro.abg-cert.com) este o sucursala a Austria Bio Garantie GmbH in Romania. A fost infiintata in 2008 si este un organism de inspectie si certificare independent. A trecut toate cerintele pentru a deveni organism de inspectie si certificare national si european pentru Romania in 2009 si activeaza sub aprobarea Ministerului Agriculturii din Romania.

Produsele certificate de Austria Bio Garantie GmbH Enzersfeld Sucursala Bucuresti sunt identificate prin codul: RO-ECO-018.

Austria Bio Garantie GmbH isi asuma intreaga responsabilitate a activitatilor desfasurate prin unitatea din Romania. Activitatile desfasurate sub acreditare prin unitatea din Romania sunt de inspectie si certificare in domeniul agriculturii ecologice pentru activitatile de:

- Productie
- Animale vii sau produse de origine animala neprocesate si produse de acvacultura
- Procesare si distributie produse ecologice

Principalele activitati:

- Desfasurarea activitatii de inspectie si verificare in conformitate cu procedura de lucru;
- Intocmirea rapoartelor de inspectie si a altor documente specifice activitatii;
- Intocmirea dosarelor de control;
- Comunicarea cu clientii sucursalei;
- Comunicarea cu reprezentantii Autoritatii competente de control;
- Planificarea resurselor de timp si financiare necesare desfasurarii sarcinilor de serviciu desemnate;
- Efectuarea sarcinilor de serviciu in conformitate cu termenele limita predate;
- Intocmirea decontului de cheltuieli si predarea documentelor contabile in termenele stabilite;
- Participarea in cadrul auditurilor interne si externe, dupa caz;
- Participarea la instruirile anuale;
- Insusirea schimbarilor legislative si a procedurilor de lucru.

Procesare si comert | Agricultură, silvicultură și pescuit | romania@abg.at | <https://ro.abg-cert.com/> |

Str. Popa Savu, Nr. 77, Etaj 1, Ap.3, Interfon 03, Sector 1,, 011432, Bucuresti

07/10/2014 – 10/04/2019 – Bucuresti, România

SPECIALIST CALITATE PRODUSE ALIMENTARE SI MARCI PROPRII – Metro Cash & Carry Romania SRL

Calitatea Produselor Alimentare:

- Evaluarea produselor înainte de listare privind conformitatea cu normele legale de comercializare și standardele de calitate.
- Examinare etichetare, marcare, ambalare, verificare documentație: specificații tehnice, declarații de conformitate, buletine de analiză, etc).
- Contribuție la dezvoltarea proiectelor de Mărci proprii (contribuție la definirea și planificarea proiectelor, realizarea specificațiilor tehnice, contribuție la selecția furnizorilor de marcă proprie, participarea la desfasurarea auditurilor la furnizor, verificarea textelor etichetelor, în conformitate cu legislația în vigoare, verificarea completării corecte a documentației tehnice anexă la Contractul de Marca Proprie, coordonarea și managementul testelor produselor marcă proprie realizate, înainte de prima livrare, realizarea de teste periodice de verificare a conformității produselor de marcă proprie cu caracteristicile proiectate și menționate în anexa tehnică la contract).
- Intocmirea și implementarea programului de verificare al nivelului calitatii produselor in baza documentatiei de produs si a legislatiei aplicabile.
- Asigurarea suportului tehnic in selectia furnizorilor de servicii implicati in activitatile legate de calitatea produselor si calificarea furnizorilor de produse Marca Proprie (servicii de laborator, servicii de audit).
- Asigurarea suportului tehnic in vederea obtinerii autorizatiilor de comercializare a produselor alimentare in magazine.

Managementul crizei:

- Responsabil pentru evaluarea și managementul situațiilor de criză (rezolvarea reclamațiilor de calitate care apar în sistemul CFT, evaluarea gradului de risc pentru fiecare situație reclamată și luarea deciziei privind retragerea / rechemarea produselor din întreaga rețea de magazine dar și pentru gestionarea produselor neconforme identificate), pentru a asigura o limitare a riscurilor determinate de produse cu defecte de calitate sau care pot afecta sănătatea consumatorilor.

Asigurarea Calitatii | Comerțul Cu Ridicata Și Cu Amănuntul; Repararea Autovehiculelor Și Motocicletelor |

<https://www.metro.ro> | Bd Theodor Pallady nr. 51 N, Cladirea C6, Corp A, Sector 3, 032258, Bucuresti

24/03/2014 – 06/10/2014 – Tunari

INGINER – Convenience Prod. SRL

Convenience Prod este producator de ingrediente pentru sandwich si salate, snitel, file copt si portionat, bacon, crispy bacon, cordon bleu, frigaru, minisnitel, nuggets, fingers si alte preparate din carne de pui, curcan, vita sau porc. Produsele sunt dedicate pentru: fast-food, catering, restaurante, linii de autoservire, cantine, producatori sandwich.

Responsabilitati:

Inginer departamentul de calitate pe schimburi de zi si noapte.

- Verificarea si respectarea instructiunilor de lucru in toate etapele fluxului de productie.
- Indeplinirea activitatilor departamentului de asigurarea calitatii, actualizarea si transpunerea in practica a cerintelor sistemelor de siguranta alimentara IFS si BRC, sustinerea auditurilor interne.
- Intocmirea de documente specifice sistemului de control al calitatii pentru fiecare etapa a fluxului de productie.
- Impunerea si respectarea regulilor de igiena si bune practici de productie.
- Recoltarea probelor pentru laborator si analiza partiala a acestora in laboratorul propriu.
- Coordonarea echipei de igienizare si verificarea eficientei activitatilor de igienizare.
- Mentinerea contactului cu diferiti furnizori de servicii.
- Gestionarea specificatiilor si etichetelor de produs, imbunatatirea, actualizarea si editarea acestora.
- Intocmirea si realizarea de instruiiri ale personalului pe diferite teme de activitate.
- Intocmirea diferitelor documente specifice receptiei de materie prima cat si de livrare al produsului finit.
- Implementarea standardelor de calitate și siguranța alimentelor IFS (International Food Standard) si BRC (British Retail Consortium).
- Certificarea unitatii Halal.

Asigurarea calitatii | Industria prelucrătoare | <https://www.gierlinger-holding.com/en/cookin5> |

Soseau de centura nr. 18, 077180, Tunari

● **EDUCAȚIE ȘI FORMARE PROFESIONALĂ**

01/10/2014 – ÎN CURS – Str. Gheorghe POLIZU, nr. 1-7, sector 1, Bucuresti, România

DOCTOR IN INGINERIE CHIMICA – Universitatea Politehnica din Bucuresti - Scoala Doctorala a Facultatii de Chimie Aplicata

Domeniul (domeniile) de studiu

- Inginerie Chimica

Materiale adsorbante pe baza de chitosan pentru eliminarea ionilor metalelor grele din apele uzate |

<http://www.chimie.upb.ro/> | https://www.researchgate.net/profile/Teodor_Laurentiu_Busuioc

01/10/2012 – 31/07/2014 – Str. Gheorghe POLIZU, nr. 1-7, sector 1, Bucuresti, România

INGINER MASTERAND IN PROTECTIA CONSUMATORULUI. CONTROLUL CALITATII PRODUSELOR. – Universitatea Politehnica din Bucuresti - Facultatea de Chimie Aplicata si Stiinta Materialelor

Domeniul (domeniile) de studiu

- Protectia consumatorului. Controlul calitatii produselor.

9.56 | 10 | <http://www.chimie.upb.ro/>

Domeniul (domeniile) de studiu

- Controlul si expertiza produselor alimentare

9.4 | <http://fmvb.ro/>

Domeniul (domeniile) de studiu

- Resurse naturale si protectia mediului. Tehnician analize produse alimentare.

● **COMPETENŢE LINGVISTICE**

Limbă(i) maternă(e): **ROMÂNĂ**

	COMPREHENSIUNE		VORBIT		SCRIS
	Comprehensiune orală	Citit	Exprimare scrisă	Conversație	
ENGLEZĂ	C1	C1	C1	C1	C1
SPANIOLĂ	C1	B1	B1	B1	A1
FRANCEZĂ	A2	A2	A2	A2	A2
GERMANĂ	A1	A1	A1	A1	A1
ITALIANĂ	A2	A1	A1	A1	A1

Niveluri: A1 și A2 Utilizator de bază B1 și B2 Utilizator independent C1 și C2 Utilizator experimentat

● **COMPETENŢE DIGITALE**

Microsoft Office | Ecert | CFT Tool

● **PERMIS DE CONDUCERE**

Permis de conducere: **A1**

Permis de conducere: **B1**

Permis de conducere: **B**

● PUBLICAȚII

Kinetic Studies of Zn(II) Removal from Single and Binary Solutions by Synthetic Hydroxyapatite

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2018

Kinetic Studies of Zn(II) Removal from Single and Binary Solutions by Synthetic Hydroxyapatite - Based Nanopowders

A kinetic study has been carried out with two hydroxyapatite nanopowders to establish the mechanism involved in heavy metals removal from aqueous synthetic solutions. The samples of nanohydroxyapatite have been previously characterized. The first sample represents a pure hydroxyapatite (HAP) nanopowder named HAP-1, and the second sample (HAP-2) consist of a mixture of hydroxyapatite (HAP; Ca₁₀(PO₄)₆(OH)₂) and β-tricalcium phosphate (β-TCP; Ca₃(PO₄)₂). Batch experiments with single and binary Zn(II) and Pb(II) aqueous solutions have been performed. According to this research study, it was found that the both nanohydroxyapatite samples show good heavy metals adsorption capacity, and selectivity for Pb(II) ions. A more pronounced decreasing of sorption capacity of Zn(II) ions from binary solutions compared to that registered from single heavy metal ion solutions has been observed. From the kinetic point of view, the sorption process can be described for both heavy metals as a pseudo-second-order kinetic process. According to this model, the Zn(II) and Pb(II) sorption can be achieved by chemical reactions between heavy metals and functional groups of adsorbents. The obtained results are indicative of good hydroxyapatite adsorption ability towards Pb(II) and Zn(II) ions.

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/326404910)

[326404910 Kinetic Studies of ZnII Removal from Single and Binary Solutions by Synthetic Hydroxyapatite - Based Nanopowders](https://www.researchgate.net/publication/326404910)

Applicability of chitosan/hydroxyapatite composites for adsorptive removal of lead, copper, zinc an

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2017

Applicability of chitosan/hydroxyapatite composites for adsorptive removal of lead, copper, zinc and nickel from synthetic aqueous solutions

The purpose of this research paper is to use chitosan/hydroxyapatite composites to remove lead, copper, zinc and nickel from multi-metal aqueous systems. The comparative studies were performed in a batch system. The effects of the removal process parameters such as, pH, contact time, initial metal ions concentration, and type of chitosan/hydroxyapatite composites on the heavy metals removal process were investigated. Freundlich and Langmuir adsorption isotherm models were investigated to determine the adsorption model that better characterize the sorption process. The pseudo-first-order, pseudo-second-order and intraparticle diffusion kinetic models were applied to establish the mechanism involved in sorption process. It was concluded that the properties of hydroxyapatites used as raw materials have an important influence on the sorption properties and selectivity of chitosan/hydroxyapatite composites. These composites can be used as effective adsorbents of heavy metals from aqueous synthetic solutions and wastewater.

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/314848284)

[314848284 Applicability of chitosanhydroxyapatite composites for adsorptive removal of lead copper zinc and nickel from synthetic aqueous solutions](https://www.researchgate.net/publication/314848284)

Simultaneous Removal of Lead and Nickel Ions from Aqueous Synthetic Solutions by Chitosan Coated Co

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2017

Simultaneous Removal of Lead and Nickel Ions from Aqueous Synthetic Solutions by Chitosan Coated Cobalt Ferrite

This research study deals with lead and nickel simultaneous removal from aqueous solutions by the use of chitosan coated cobalt ferrite as adsorbent. Batch removal tests were performed in order to establish the main parameters that influence the sorption capacity, removal efficiency and the selectivity of this adsorbent. The values of sorption capacity for lead and nickel experimentally determined are: 56.23 mg/g and respectively 45.11 mg/g. Langmuir and Freundlich adsorption isotherms were used to interpret the sorption experimental data. The kinetic data were explored by pseudo-first order, pseudo-second order and intraparticle diffusion kinetic models. The experimental data were well fitted with the pseudo-second order model for both heavy metals. The main conclusion that can be drawn from this research is that this material can be successfully used for the removal of lead and nickel from binary aqueous solutions and wastewater.

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/313219239)

[313219239 Simultaneous Removal of Lead and Nickel Ions from Aqueous Synthetic Solutions by Chitosan Coated Cobalt Ferrite](https://www.researchgate.net/publication/313219239)

Removal of Lead(II), Nickel(II), Zinc(II) and Copper(II) from Multi-metal Systems by Chitosan-gluta

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2017

Removal of Lead(II), Nickel(II), Zinc(II) and Copper(II) from Multi-metal Systems by Chitosan-glutaraldehyde Beads

The aim of this work was to use glutaraldehyde-crosslinked chitosan (Chit-GLA) beads to remove lead(II), nickel(II), zinc(II) and copper(II) from polycationic aqueous solutions. The batch experiments were carried on to test the influence of different parameters such as: pH, contact time, and initial ion concentration on adsorption of metal ions onto glutaraldehyde-crosslinked chitosan beads. The results obtained revealed that removal ration decreased in the order: 74.06 for Pb(II), 73.45 for Ni(II), 73.16 for Zn(II), and 72.77% for Cu(II) in mixed solutions with the initial solution with concentration 90.72 mg Pb(II)/L, 99.39 mg Ni(II)/L, 92.32 mg Zn(II)/L, and 108.8 mg Cu(II)/L. The maximum adsorption capacity of 67.19 mg Pb(II)/g Chit-GLA, 67.81 mg Ni(II)/g Chit-GLA, 72.71 mg Zn(II)/g Chit-GLA and 79.18 mg Cu(II)/g Chit-GLA were achieved. The results of this research study can lead to the conclusion that glutaraldehyde-crosslinked chitosan beads can be used for the removal of lead, nickel, zinc and copper from polycationic aqueous solutions and wastewater. The series: Cu(II) > Zn(II) > Ni(II) > Pb(II) was proposed as the selectivity series of Chit-GLA beads.

<https://www.researchgate.net/publication/312301364> Removal of LeadII NickellII Zincli and CopperII from Multi-metal Systems by Chitosan-glutaraldehyde Beads

Simultaneous Removal of Lead(II), Nickel(II), Zinc(II) and Copper(II) from Aqueous Solutions by Nan

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2016

Simultaneous Removal of Lead(II), Nickel(II), Zinc(II) and Copper(II) from Aqueous Solutions by Nano-hydroxyapatite Synthesized by Microwave Field.

In the present work, nano-hydroxyapatite (nano-HAP) prepared in microwave field was applied to remove lead(II), nickel(II), zinc(II) and copper(II) from polycationic aqueous solutions. Optimum adsorption conditions were evaluated using batch experiments. Effect of various physicochemical parameters such as: pH, contact time, and initial ion concentration on adsorption of metal ions onto nano-HAP was evaluated. Batch experiments revealed that removal ration decreased in the order: 87.1% for Pb(II), 44.66% for Zn(II), 20.39% for Cu(II) and 19.97% for Ni(II) in mixed solutions with the initial solution with concentration 90.72 mg Pb(II)/L, 92.32 mg Zn(II)/L, 108.8 mg Cu(II)/L, and 99.39 mg Ni(II)/L. The maximum adsorption capacity of lead, nickel, zinc and copper determined were 79.02 mg/g, 19.85 mg/g, 41.23 mg/g and 22.18 mg/g. The results of this research study can lead to the conclusion that nano-hydroxyapatite can be used as a cost-effective material for the removal of lead, nickel, zinc and copper from polycationic aqueous solutions and wastewater. The selectivity of this material follows the series: Pb(II) > Zn(II) > Cu(II) > Ni(II).

<https://www.researchgate.net/publication/309557325> Simultaneous Removal of LeadII NickellII Zincli and CopperII from Aqueous Solutions by Nano-hydroxyapatite Synthesized by Microwave Field

Application of Nano-hydroxyapatite Synthesized by Microwave in Efficient Removal of Lead(II) and Co

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac>

Application of Nano-hydroxyapatite Synthesized by Microwave in Efficient Removal of Lead(II) and Copper(II) from Aqueous Solutions

Nano-hydroxyapatite was prepared using a rapid microwave method as an effective sorbent for lead(II) and copper(II) removal from aqueous solutions. The surface of the produced nano-hydroxyapatite has a porous structure and the specific surface area according to the BET model in value of 88.75 mg/g. Batch experiments revealed that removal ration increased in the order of lead (96.56 %), and copper (40.69%) in mixed solutions with the initial solution with concentration 100 mg Cu(II)/L and 100 mg Pb(II)/L. The maximum adsorption capacity of lead and copper determined were 99.94 mg/g and 40.04 mg/g. The results of this research study can lead to the conclusion that nano-hydroxyapatite can be used as a cost-effective material for the removal of lead and copper from binary aqueous solutions and wastewater.

<https://www.researchgate.net/publication/306378915> Application of Nano-hydroxyapatite Synthesized by Microwave in Efficient Removal of LeadII and CopperII from Aqueous Solutions

Lead removal from synthetic aqueous solutions by chitosan/hydroxyapatite composites

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2016

Lead removal from synthetic aqueous solutions by chitosan/hydroxyapatite composites

This work reports the results obtained in the process of lead removal from synthetic aqueous solutions by different types of chitosan/hydroxyapatite (CHIT-HAP) composites. Batch experiments were performed to test sorption capacity of chitosan/hydroxyapatite composites. The solution's pH, contact time and concentration of lead ions in the initial solution have been investigated as the main parameters that have influence on the sorption process. The maximum amount of Pb(II) retained per gram of chitosan/hydroxyapatite composite was 93.21 mg/g, and the higher value of removal efficiency was 99.63%. Lead uptake was quantitatively studied using the Langmuir and Freundlich isotherms. The results showed that Langmuir model is applicable for all chitosan/hydroxyapatite composites samples tested. The mechanism of the lead sorption process was studied by involving pseudo-first, pseudo-second-order kinetic models and intraparticle diffusion model. Lead sorption process was found to follow the pseudo-second-order kinetic model.

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/305075517)

[305075517 Lead removal from synthetic aqueous solutions by chitosanhydroxyapatite composites](https://www.researchgate.net/publication/305075517)

The Kinetic and Modeling Study of Zinc Sorption onto Chitosan-glutaraldehyde Beads

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2015

The aim of this research study was to investigate the effectiveness of chitosan beads chemically by crosslinking with glutaraldehyde in zinc removal from aqueous solutions. The effect of the followings parameters such as: glutaraldehyde concentration used in obtaining copolymers, zinc level in initial solution, time, and pH value was investigated. The equilibrium data were evaluated using Langmuir and Freundlich isotherm models. The kinetics was analyzed with the pseudo-first-order rate equation, the pseudo-second-order rate equation and intraparticle diffusion. The results of this research study can lead to the conclusion that chitosan-glutaraldehyde can be used as a cost-effective material for the removal of zinc from aqueous solutions and wastewater.

<https://www.researchgate.net/publication/283720676> The Kinetic and Modeling Study of Zinc Sorption onto Chitosan-glutaraldehyde Beads

Copper removal from synthetic aqueous solutions by chemically modified beads of chitosan

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac>

Copper removal from synthetic aqueous solutions by chemically modified beads of chitosan.

This study deals with the preparation and characterization of chitosan-glutaraldehyde (Chit-GLA) copolymers at different glutaraldehyde concentration. The sorption properties of Chit-GLA copolymers were evaluated comparatively in copper ions removal process from aqueous solutions. For this purpose, the experiments were carried out in a batch regime. The sorption properties of the copolymers have been correlated with the level of the accessibility of the sorption sites in accordance with the relative cross-linker content. The relative sorption capacity of the Chi-Gla copolymers decreases as the level of cross-linking increases. The contact time, the concentration of copper ions in the initial solution, and pH were the main parameters studied. The experimental data were better fitted with Freundlich isotherm.

[https://www.researchgate.net/publication/](https://www.researchgate.net/publication/286622319)

[286622319 Copper removal from synthetic aqueous solutions by chemically modified beads of chitosan](https://www.researchgate.net/publication/286622319)

Nano and Micro-hydroxyapatite Particles for Lead Removal from Wastewater

<https://www.researchgate.net/profile/Teodor-Laurentiu-Busuioac> – 2015

Two types of $(\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2)$ hydroxyapatite (HAP) powders with high purity were obtained using two different synthesis methods – a wet chemical synthesis method such as precipitation from aqueous solution and a dry chemical method such as solid-state sintering. Both types of powders were characterized by X-ray diffraction, FT-IR analysis, scanning electron microscopy (SEM), and N_2 sorption analysis. X-ray diffraction showed that both HAP powders contain hydroxyapatite as the only crystalline phase. Data from X-ray diffraction were confirmed by FT-IR spectra. SEM images showed that nanometric size hydroxyapatite (nano-HAP) was obtained by precipitation from aqueous solution and hydroxyapatite with micrometric size (micro-HAP) was obtained using sintering method as a solid phase synthesis method. Nano-HAP powder has a BET surface area almost 5 times higher than that of the microcrystalline HAP powder. Consequently, both powders were comparatively tested in lead removal process from aqueous solutions. The contact time, the concentration of lead ions in the initial solution, pH and temperature were the main parameters studied. The highest Pb(II) sorption was achieved for nano-HAP. The sorption process was relatively fast because the equilibrium was achieved after about 60-180 min of contact depending on the lead concentration in the initial solution, and the specific surface area of the samples. Results showed that the adsorption behaviour of micro-HAP and nano-HAP follows the Langmuir isotherm. The kinetic process of Pb(II) sorption onto micro-HAP and nano-HAP was tested by applying the pseudo-first order, the pseudo-second order, and intraparticle diffusion models.

<https://www.researchgate.net/publication/276053186> Nano and Micro-hydroxyapatite Particles for Lead Removal from Wastewater

● PROIECTE

01/10/2014 – 09/2019

Innovative Materials and Processes for Selective Removal of Heavy Metals from Wastewater

<https://www.researchgate.net/project/Innovative-Materials-and-Processes-for-Selective-Removal-of-Heavy-Metals-from-Wastewater>

Goal: The project's aim is to develop novel materials (nano- and micro-scale) with high selectivity for removal/retaining heavy metals from wastewater by solid phase synthesis, precipitation from aqueous solutions, and non conventional techniques such as sol-gel and microwave-assisted synthesis. The products obtained will be also as powder, beads, micro/nanospheres (hydroxyapatite, magnetite and chitosan), and compounds with complex structures like chitosan composites, chitosan cross-linked with glutaraldehyde, magnetite nanoparticles functionalized with organosilane and chitosan. The main purpose is to increase the selectivity, sorption capacity, durability and stability in acid environments, specific to wastewater. Materials obtained will be tested in heavy metals (Pb(II), Cu(II), Ni(II) si Zn(II)) removal/retaining processes from synthetic solutions and industrial wastewater in order to identify the material with high selectivity and sorption capacity. There will be performed batch and continuous tests to establish the influence of factors (contact time, stirring speed, pH, size of adsorbent particles, height of adsorbent bed, metal ion concentration in the initial solution/wastewater, competition with other metal ions) on the sorption process. The kinetic and thermodynamic studies will be performed to establish the mechanisms involved in sorption process for industrial technology development.

The project consortium consists of prestigious research organizations in Romania ("Politehnica" University of Bucharest - UPB - CO, National Research and Development Institute for Electrical Engineering - ICPE-CA - P1 and "Ilie Murgulescu" Institute of Physical Chemistry of the Romanian Academy - ICF - P2) and companies with comprehensive experience in environmental engineering (SC Kemwater Cristal SRL - P3 and the Institute for Studies and Power Engineering - ISPE - P4) involved in national and international research projects.