DESIGN OF MULTIFUNCTIONAL PLATFORM BASED ON NANOCOMPOSITES FOR ENVIRONMENTAL AND SENSING APPLICATIONS (NANOPLAT-SENV)

Goal of the project

The NANOPLAT-SENV project scope is to develop new bifunctional composite materials characterized through perovskite structure for the sensing applications and advanced water treatment technologies. These materials will enable to detect electrochemically the cytostatics in water and also, to develop photocatalytic treatment processes for emerging pollutants-containing water treatment.

Short description of the project

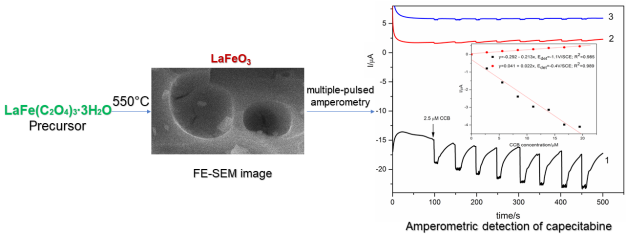
A new and economic method for in situ obtaining of multifunctional nanocomposites was developed.

Implementation period

01.02.2020 - 15.06.2020

Budget

47.600 RON (10000 EUR)



Main activities

The main work packages and tasks are:

1. Project management;
2. Obtaining of new composites based on perovskite-type oxides;
3. Characterization of nanomaterials with perovskite structure on carbon support;
4. Evaluation of adsorption and photocatalysis capacity of the composite materials selected for cytostatics removal/ degradation and correlation with the physico-chemical characterization;
5. Evaluation of electroanalytical activity of the selected composite materials for the elaboration of a method for electrochemical detection of the cytostatics from water;
6. Dissemination of the results.

Results

Lots of nanomaterials: $LaFeO_3$, $LaCoO_3$, $CuCo_2O_4$, $CdCr_2O_4$, $CuBi_2O_4$
Detection of CCB using $LaFeO_3$/BDD electrod

Applicability and transferability of the results:

The obtained nanocomposites were used for:

- development of sensors characterized by enhanced electroanalytical performance for cytostatics detection (e.g., doxorubicin, capecitabine, etc.);
- integration of VIS-based photocatalysis as advanced water treatment process related to the removal of cytostatics from water.

Research team

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