

Results of the Project

"Innovative Zeolite/Graphene Electrodes on Stone Paper for Pesticide Detection in Fruits and Vegetables" (acronym SMARTSENS)- Website: <https://www.itim-cj.ro/PNCIDI/smartsens/>

Project No. TE 153 / 2022, Project Code PN-III-P1-1.1-TE-2021-0358

Summary of Stage 2 (January 2023- December 2023)

The stage encompassed 2 activities, summarized below:

1. Electrode Development:

- Developed screen-printed graphite electrodes modified by "drop casting" with: graphene (E/Gr), zeolite (E/Z), graphene with cobalt nanoparticles (E/Gr-CoNPs), zeolite with cobalt nanoparticles (E/Z-CoNPs), graphene-zeolite-cobalt nanoparticles (E/Gr-Z-CoNPs).
- Electrochemically deposited cobalt nanoparticles on screen-printed graphite electrodes (E/CoNPs).

2. Structural Characterization and Electrochemical Analysis:

- Characterized modified electrodes using SEM and EDS.
- Investigated electrochemical parameters of the modified electrodes: E_p , I_p , Q_p , E_0' , ΔE , electrochemically active area, and charge transfer resistance (R_{ct}) using cyclic voltammetry and electrochemical impedance spectroscopy.
- Tested pH influence, repeatability, reproducibility, and stability of the modified electrodes.

Results: - Two ISI articles.

- Eight international conference participations.
- Six products.
- One patent application.

Project Director:

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