

<b>Program</b>	Program Nucleu, contract 20N/2019, project code: PN 19 04 01 02
<b>Project title (ENG):</b>	ADVANCED METHODS AND TECHNIQUES FOR WATER QUALITY ASSESSMENT, <i>ECOSENZ</i>
<b>Project title (RO):</b>	METODE SI TEHNICI AVANSATE PENTRU EVALUAREA CALITATII APELOR, <i>ECOSENZ</i>
<b>Duration</b>	2019-2022
<b>Team Leader</b>	Valeria Nicorescu
<b>Summary</b> (short description) ENG	<p>In 2019, two phases of the project were carried out. In one of the phases, the aim was to identify the anthropogenic factors and characterize the wastewater discharged into the Bega and Timis rivers. To highlight the impact generated by the potential sources of pollution on the watercourses, the quality of the two bodies of water upstream and downstream of each potential source of pollution was evaluated. The evaluation of their quality was carried out in accordance with the Order MMGA no.161 / 2006 - regarding the classification of the quality of surface waters in order to establish the ecological status of the water bodies. In order to reduce phosphorus from polluted waters, experimental phytoremediation studies were performed using the <i>Lemna minor</i> L. aquatic plant.</p> <p>The second phase of the project aimed to modify the conventional surfaces of the commercial electrodes with nanomaterials (carbon-graphene, Au, Pt, Ag, Cu nanoparticles, and materials with perovskite structure) to improve the electrode performance - sensitivity, limit of detection, limit of quantification. The modification of the commercial electrodes was performed electrochemically by applying the technique of chronoamperometry with graphene and nanoparticles of metals and chemically with materials that have a perovskite structure. The electrodes obtained were characterized by determining the specific surface and tested in the detection of pharmaceutical products of the following classes: antibiotics (tetracycline), cytostatic (docetaxel, paclitaxel and capecitabine) and anti-inflammatory (diclofenac).</p>
<b>Summary</b> (short description) RO	<p>In anul 2019 s-au desfasurat doua faze ale proiectului. In una dintre faze s-a urmarit identificarea factorilor antropici si caracterizarea apelor uzate evacuate in raurile Bega si Timis. Pentru evidentierea impactului generat de sursele potentiale de poluare asupra cursurilor de apa, s-a evaluat calitatea celor doua corpuri de apa amonte si aval de fiecare sursa potentiala de poluare. Evaluarea calitatii lor s-a realizat in conformitate cu <i>Ordinul MMGA nr.161/2006</i> - privind clasificarea calitatii apelor de suprafata in vederea stabilirii starii ecologice a corpurilor de apa. Pentru reducerea fosforului din apele poluate s-au efectuat studii experimentale de fitoremediere utilizand planta acvatica <i>Lemna minor</i> L.</p> <p>A doua faza a proiectului a vizat modificarea suprafetelor conventionale ale electrozilor comerciali cu nanomateriale (pe baza de carbon -grafena, nanoparticule de Au, Pt, Ag, Cu si materiale cu</p>

	<p>structura perovskitica) pentru a imbunatati performantele electrozilor - sensibilitate, limita de detectie, limita de cuantificare. Modificarea electrozilor comerciali s-a realizat electrochimic prin aplicarea tehnicii de cronoamperometrie cu grafena si nanoparticule de metale si chimic cu materiale ce prezinta structura perovskitica. Electrozii obtinuti au fost caracterizati prin determinarea suprafetei specifice si testati in detectia produselor farmaceutice din urmatoarele clase: antibiotice (tetraciclina), citostatice (docetaxel, paclitaxel si capecitabina) si antiinflamatoare (diclofenac).</p>
<b>Dissemination of results</b>	
PhD Thesis – Title ENG	S. C. Negrea, <i>Voltammetric and amperometric sensors for the detection of emerging pollutants in water</i>
PhD Thesis – Title RO	S. C. Negrea, <i>Senzori voltametrici si amperometrici pentru detectia poluantilor emergenti din apa</i>
Full-paper ISI	S. C. Negrea, L. A. Diaconu, V. Nicorescu, A. Baci, A. Pop, F. Manea, <i>Copper-Modified Boron-Doped Diamond (Cu/Bdd) Electrode for the Electrochemical Detection of Paclitaxel and Oxaliplatin in Aqueous Solutions</i> , Rev. Chim. (Bucharest), vol. 70, no. 12, pag. 4595, 2019
	D. G. Neidoni, M. Dragalina, V. Nicorescu, A. Banciu, C. Stoica, M. N. Lazar, <i>The influence of temperature on the absorption capacity of total phosphorus by Lemna minor L.</i> , Rev. Chim. (Bucharest), in press, ianuarie 2020
Conferences (platform, poster, abstract / full-paper)	S. Negrea, M. Ihos, M. Dragalina, D. Neidoni, F. Manea, <i>Electrochemical denitrification of water for drinking purpose</i> , Proceedings of the 25th International Symposium on Analytical and Environmental Problems, Szeged, Hungary, pag. 148, 2019
	D. G. Neidoni, M. Dragalina, V. Nicorescu, A. I. Siminic, D. A. Pop, A. Pahomi, <i>Lemna minor L. and Pistia stratiotes L. in the accumulation of total phosphorus from the water</i> , Proceedings of the 25th International Symposium on Analytical and Environmental Problems, Szeged, Hungary, pag. 207, 2019