

Activities in Phase 2

Activities, responsibilities of partners and obtained results

Phase II. (Experimental development A3, Industrial research A2, Innovation activities – patent protection B1, Dissemination D) Validation, characterization, and improvement of the analytical performance of SSETV-μCCP-OES-based methods, with and without <i>ex-situ</i> and <i>on-site</i> μ-SPE preconcentration, for food and environmental quality control through single-element or simultaneous multi-element determinations (completion). Characterization of the greenness and whiteness, and extension of the applicability range of the validated single element and multielement SSETV-μCCP-OES methods, with and without <i>ex-situ/in-situ</i> preconcentration, by demonstrating their usefulness and capability on real samples (completion).	
Activity 2.1. Validation of single element and multielement SSETV-μCCP-OES methods for food and environmental samples, with or without <i>ex-situ/in-situ</i> μ-SPE (completion)	
CO-UBB Validation of single element and multielement SSETV-μCCP-OES methods for food and environmental samples, with or without <i>ex-situ/in-situ</i> μ-SPE (completion)	Results: Validated multielement SSETV-μCCP-OES method with <i>on-site</i> μ-SPE preconcentration for the determination of Cd, Cu, Pb and Zn in surface water samples
P1-Fotometric Instruments S.R.L. Validation of single element and multielement SSETV-μCCP-OES methods for food and environmental samples, with or without <i>ex-situ/in-situ</i> μ-SPE (completion)	
Activity 2.2. Validation of the (μ-SPE)-SSETV-μCCP-OES methods by comparison with ICP-OES and GFAAS (completion)	
CO-UBB Validation of the (μ-SPE)-SSETV-μCCP-OES methods by comparison with ICP-OES and GFAAS (completion)	Results: Validated multielement (μ-SPE)-SSETV-μCCP-OES method by comparison with ICP-OES and GFAAS in surface waters, through evaluation of analytical performance and certified reference materials analysis
Activity 2.3. Widening the applicability range of the single element and multielement SSETV-μCCP-OES methods, with and without <i>ex-situ/on-site</i> μ-SPE, to TRL 4 level through application to real food and environmental samples	
CO-UBB Widening the applicability range of the single element and multielement SSETV-μCCP-OES methods, with and without <i>ex-situ/on-site</i> μ-SPE, to TRL 4 level through application to real food and environmental samples	Results: Widened range of applicability of the multielement (μ-SPE)-SSETV-μCCP-OES method with <i>on-site</i> preconcentration, demonstrated at TRL4 level on real surface water samples.
P1-Fotometric Instruments S.R.L. Widening the applicability range of the single element and multielement SSETV-μCCP-OES methods, with and without <i>ex-situ/on-site</i> μ-SPE, to TRL 4 level through application to real food and environmental samples	

Activity 2.4. Evaluation of the greenness and whiteness of the <i>ex-situ/on-site</i> (μ -SPE)-SSETV- μ CCP-OES methods using the AGREEprep and RGB 12 metrics	
CO-UBB Evaluation of the greenness and whiteness of the <i>ex-situ/on-site</i> (μ -SPE)-SSETV- μ CCP-OES methods using the AGREEprep and RGB 12 metrics	Results: Greenness and whiteness of the SSETV- μ CCP-OES method with <i>on-site</i> μ -SPE preconcentration on dithizone-functionalized C18 cartridges for the determination of Cd, Cu, Pb, and Zn, evaluated using the AGREEprep and RGB 12 metrics
Activity 2.5. Demonstration of the usefulness and capability of the green and white single element and multielement <i>ex-situ/on-site</i> methods based on (μ -SPE)-SSETV- μ CCP-OES	
CO-UBB Demonstration of the usefulness and capability of the green and white single element and multielement <i>ex-situ/on-site</i> methods based on (μ -SPE)-SSETV- μ CCP-OES	Results: Usefulness and capability of the developed methods, based on <i>ex-situ</i> SSETV- μ CCP-OES coupled with <i>on-site</i> μ -SPE powered by a photovoltaically charged battery, demonstrated during a demonstration session organized at the Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Cluj-Napoca
Activity 2.6. Drafting and filing of a national patent application (B1)	
CO-UBB Drafting and filing of a national patent application (B1)	Results: 1 national patent application filed, entitled: <i>Portable assembly powered by a battery charged by a photovoltaic cell for the on-site processing of surface water samples by micro-solid phase extraction for the determination of toxic metal content by spectral methods</i> Inventors: Covaci Eniko, Petreuş Dorin, Moţ Augustin Cătălin, Şulea Dorin, Dudu Adrian-Ioan, Frenţiu Tiberiu
Activity 2.7. Dissemination of the results through participation in national and international conferences (1 conference) and the publication of articles (2 articles)	
CO-UBB Dissemination of the results through participation in national and international conferences (1 conference) and the publication of articles (2 articles)	Results: 1 article published in <i>Talanta</i> , DOI: 10.1016/j.talanta.2026.130082 (IF = 6.7) 1 article sent for publication in <i>Analyst</i> (FI = 3.6) 2 mobilities to 1 international conference (2 poster presentations at the 52 nd International Conference of the Slovak Society of Chemical

	Engineering, Štrbské Pleso, Slovakia, 26–29 May 2026)
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