

TFK programme, funded projects 2025

Project title: Advanced Approaches in Environmental and Ecological Chemistry: Sustainable Materials, Analytical methods, Remediation, and Technology	
Coordinator Åbo Akademi Päivi Mäki-Arvela, pmakiarv@abo.fi	This joint project between Åbo Akademi University and Taras Shevchenko National University of Kyiv aims to strengthen academic cooperation through interdisciplinary research and education in environmental and ecological chemistry. The focus areas include wastewater treatment, CO₂ emissions reduction, and the development of sustainable materials, such as sustainable aviation fuels (SAFs), batteries, sorbents. One of a core research objective is the design of novel sorbent materials based on renewable feedstocks for the purification of various wastes. These materials will be characterized and evaluated using advanced spectroscopic and electrochemical methods to understand structure–function relationships and enhance performance. Planned Activities The project integrates student and staff mobility, joint research, and curriculum development. Ukrainian students will receive practical training in several advanced techniques, including GC, HPLC, FTIR, N₂ physisorption, TPR, TPD, Solid-state NMR, SEM-EDX, HRTEM, TEM, TGA/DSC, cyclic and stripping voltammetry (CVA, StVA), as well as adsorption and catalytic experiments in both batch and continuous flow modes. Students will also attend advanced courses at Åbo Akademi, including: • Applied Analytical Chemistry, Electrochemistry, Sensors and Biosensors • Advanced Organic Chemistry, NMR, Colloid Chemistry, Supramolecular Chemistry • Industrial Inorganic Chemistry, Heterogeneous Catalysis, Computer-Aided Drug Design • Materials for Biomedical Applications, Chemical Product Technology • Scientific Writing and Publishing These courses support interdisciplinary learning in analytical chemistry, catalysis, materials science, and communication, providing direct academic and professional value. Faculty members will participate in short-term exchanges, deliver joint lectures, co-develop teaching content, and co-supervise research projects. Collaborative publication of research results is also planned. Anticipated Results • Increased international competencies of students and staff, supporting long-term academic internationalization
Partners Taras Shevchenko National University of Kyiv	

	• Integration of newly developed content into university curricula • Strengthened institutional ties and potential for future EU-funded cooperation • Enhanced research capacity through training in instrumental techniques • Joint publications and presentations at academic conferences • Development of novel sorbents and materials for environmental and SAF applications This project will contribute to sustainable development and support Ukraine's integration into the European Higher Education Area, while establishing a model for high-quality academic collaboration between Finland and Ukraine.
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