Secondment of Prof. Eugenia Eftimie TOTU

Host Institution: MEDISEN Medical Technologies Research and Development Industry Trade Co. Ltd., Konya, Türkiye
Associated Institutions: Bilim ve Teknoloji Araştırma ve Uygulama Merkezi (BİTAM), Necmettin Erbakan University (NEU)
Secondment Period: 1–30 June 2026

Within the framework of the Marie Skłodowska-Curie Actions Staff Exchanges project **NANOEMCA**, Professor Eugenia Eftimie TOTU from the National University of Science and Technology POLITEHNICA Bucharest completed a 30-day secondment at MEDISEN Medical Technologies Research and Development Industry Trade Co. Ltd., Türkiye.

The secondment was an important component of the project's knowledge-transfer strategy, aiming to strengthen scientific cooperation among the consortium partners while facilitating the exchange of expertise in nanomaterials, advanced characterization techniques, biomedical applications, environmental technologies and interdisciplinary research.

Throughout the secondment, Professor Totu actively participated in scientific research, laboratory investigations, dissemination activities, networking events and strategic meetings, contributing to several work packages of the NANOEMCA project.

Professor Totu was integrated into the scientific activities of MEDISEN and worked closely with the local NANOEMCA team coordinated by Professor Ibrahim IŞILDAK and Associate Professor Fatih ERÇI.

The secondment provided direct access to MEDISEN laboratories and to the advanced research infrastructure available at BİTAM and Necmettin Erbakan University. This enabled the exchange of experimental methodologies, analytical protocols and scientific expertise in materials synthesis and characterization.

The activities included continuous interaction with researchers, participation in brainstorming sessions, scientific seminars and round-table discussions focused on future research directions within NANOEMCA and beyond. Professor Totu led several scientific discussions on the project's future developments and participated in meetings with research group leaders, where her presentations and scientific contributions were highly appreciated.

A major component of the secondment consisted of laboratory-based scientific work. Professor Totu participated in the advanced characterization of functional materials using complementary analytical techniques, including: UV–Visible spectrophotometric analysis; Field Emission Scanning Electron Microscopy (FE-SEM); X-ray diffraction (XRD); Thermogravimetric and Differential Scanning Calorimetry (TG-DSC); discussions concerning BET surface-area analysis and other advanced physicochemical characterization methods.
Such investigations are to be applied for the characterization of periodic mesoporous organosilica (PMO) materials developed within the NANOEMCA project and supported activities under WP2 (*Synthesis and Characterization of PMO Precursors*) and WP3 (*Synthesis and Characterization of PMO Nanoreactors*).
Technical meetings were organised with MEDISEN specialists to discuss innovative synthetic approaches for PMO nanoreactors. Special attention was devoted to: green synthesis methodologies; optimization of synthesis parameters; characterization strategies; reproducibility of experimental protocols; analytical validation; and potential biomedical and environmental applications.

These exchanges significantly improved the understanding of the experimental methodologies employed by MEDISEN and supported the development of future collaborative research within Work Package 3 of the project.

During her visits to BİTAM, where she explored its modern laboratories and infrastructure dedicated to advanced materials and analytical sciences, she met with: Associate Professor Fatih ERÇİ (Director), Associate Professor Eda GÜMÜŞ (Deputy Director), Associate Professor Selman ERDOĞDU, Professor Serdar AKBAYRAK, Dr. Muhammed İhsan ÖZGÜN, and members of their research teams. Scientific discussions focused on: exchange of scientific expertise; future collaborative research; researcher mobility; joint publications; development of new project proposals; long-term cooperation between the partner institutions. The visit significantly strengthened institutional cooperation and expanded opportunities for interdisciplinary research.

There were also organised visits to the Faculty of Engineering of Necmettin Erbakan University (NEU), where Professor Totu was warmly welcomed by the Dean, Professor Savaş DURDURAN. The visit created an excellent opportunity to strengthen academic dialogue, explore common research interests, and discuss future cooperation between the two institutions. Professor TOTU presented the Marie Skłodowska-Curie Actions Staff Exchanges project NANOEMCA – Confined Nanoreactors for Environmental, Medical and Catalytic Applications, coordinated by POLITEHNICA Bucharest. The presentation focused on the project's main work packages, including the design and development of confined nanoreactors; materials synthesis and characterization; environmental, medical, and

catalytic applications; researcher secondments; training activities; dissemination, communication, and exploitation of results. The discussions also highlighted valuable cooperation with Turkish researchers and MEDISEN partners, including Professor Ibrahim IŞILDAK and Assoc. Prof. Dr. Fatih ERÇI, Dr. Selman ERDOĞDU, Dr. Muhammed Ihsan ÖZGÜN and their colleagues. She also introduced POLITEHNICA Bucharest and the Faculty of Chemical Engineering and Biotechnologies, highlighting their research infrastructure, international experience and capacity for future collaborative research. Discussions confirmed the common interest in developing joint research proposals, scientific exchanges and future secondments.

An important interdisciplinary activity was the visits to the Department of Public Health, Faculty of Medicine, Necmettin Erbakan University. Professor Totu presented the NANOEMCA project and emphasised the importance of integrating biomedical innovation with public health priorities. The discussions focused on: harmonisation of biomedical outcomes with public health guidelines; environmental health; stakeholder engagement.

Both sides expressed their willingness to continue the fruitful cooperation between NEU and POLITEHNICA Bucharest, under the auspices of the Marie Skłodowska-Curie NANOEMCA project, particularly in topics of common interest such as advanced and functional materials, nanomaterials, environmental technologies, biotechnology, biomedical applications, sustainable processes, and researcher training. The meetings concluded in a positive and constructive atmosphere, confirming the shared interest in the successful development and implementation of the NANOEMCA project and in developing future joint activities.

As NANOEMCA “Data Management and Other Research Outputs & Quality Data Assurance Coordinator”, Professor Totu outlined the project's strategy to ensure high-quality, reproducible, and FAIR-compliant scientific outputs, in accordance with the requirements of Horizon Europe and the Marie Skłodowska-Curie Actions. The discussions addressed best practices for scientific publishing, research integrity, data transparency, quality assurance throughout the publication process, and the importance of disseminating research results through internationally recognized journals with broad scientific visibility. In this sense, the opportunities to publish NANOEMCA research results in Web of Science-indexed journals of the Necmettin Erbakan University Press (NEU Press) and to strengthen dissemination through high-quality scientific publications were taken into consideration.

The secondment directly supported several project work packages, including: WP2 – Synthesis and Characterization of PMO Precursors (advanced characterization methodologies**);** WP3 – Synthesis and Characterization of PMO Nanoreactors (green synthesis strategies and characterization protocols); and WP6 – Dissemination, Communication and Networking (stakeholder engagement, public health dialogue, dissemination and scientific networking).