

Confined Nanoreactors for Environmental, Medical and Catalytic Applications
(Project Number: 101235833) 23 June – 22 July 2026

Within the 101235833 — NANOEMCA — HORIZON-MSCA-2024-SE-01-01,a Marie Skłodowska-Curie Actions - Staff Exchange (SE)-MSCA-SE 2024, Prof. Dr. Habil. Simina Daniela Stefan, Assoc. Prof. Dr. Nicoleta Daniela Ignat, Lecturer Dr. Madelene Annette Dancila and Prof. Dr. Habil. Claudia-Maria Simonescu, completed a 30-day secondment (1 person-month) at MEDISEN MEDİKAL TEKNOLOJILER ARASTIRMA GELISTIRME SANAYI TICARET LIMITED SİRKETİ (MEDISEN), Türkiye, starting on 23.06.2026 and finishing on 22.07.2026 in a full time arrangement.

Within the scope of the project, a welcoming meeting was arranged at the scheduled time with Prof. Dr. Ibrahim Işıldak, Director of the Turkish SME MEDISEN. During this meeting, an exchange of information took place regarding both project-related and research activities of all the participants in this meeting. Furthermore, academic collaborations were discussed, and goodwill was expressed by all parties.



Professor Simonescu – the coordinator presented the Marie Skłodowska-Curie Actions Staff Exchanges project NANOEMCA – Confined Nanoreactors for Environmental, Medical and Catalytic Applications, coordinated by POLITEHNICA Bucharest, the POLITEHNICA Bucharest and its Faculty of Chemical Engineering and Biotechnologies, highlighting the university's strong academic heritage, extensive research infrastructure,

active involvement in international projects, significant scientific contributions, and commitment to fostering new partnerships and collaborative initiatives.

The POLITEHNICA Bucharest team and MEDISEN's team represented by Prof. Dr. Ibrahim Işıldak and biotechnologist researcher Ensar KANAT analyzed future collaboration possibilities in new projects targeting areas such as periodic mesoporous organosilica (PMOs), algal biomass production with pharmaceutical applications, water remediation and



Muhammed Ihsan OZGUN and Postdoctoral Researcher Doğan Çetin from BITAM.

During the visit to BITAM, POLITEHNICA's team explored the laboratories and research and development facilities, gaining insight into the institution's advanced infrastructure and ongoing scientific activities.

The meeting provided an opportunity to present the objectives and activities of the NANOEMCA project, highlighting the collaboration established with Turkish research team coordinated by Prof. Ibrahim Işıldak.



During the secondment, links were established with various companies such as AKDI Mühendislik (www.akdimuhendislik.com) manufacturing advanced engineering components using additive manufacturing (3D printing) technologies.

The company JETMASTER, which provides high-performance equipment that uses advanced artificial intelligence algorithms and patented technology to optimize energy consumption and



others has been also visited by the POLITEHNICA's team. This experience opened prospects for new collaborations in the field of artificial intelligence-based technology and process optimization with various applications.



Model Aerospace, a company operating in the aerospace and defense technology sector, located in Konya and specialized in the production of model rocket kits has been also visited by the POLITEHNICA's team. The company is headquartered and carries out its research activities at the InnoPark Konya Technology Development Center, situated within the Selçuklu Industrial Zone.



During the secondment, the researchers actively participated in scientific discussions and laboratory demonstrations focused on the design, fabrication and characterization of all-solid-state electrochemical sensors and biosensors developed at MEDISEN. Particular attention was devoted to the development of potentiometric, voltammetric and impedimetric sensing platforms based on screen-printed electrodes, carbon

nanomaterials, conductive polymers and ion-selective membranes.



Special emphasis was placed on exploring how confined nanoreactor concepts developed within the NANOEMCA project could be integrated with advanced electrochemical sensing platforms. The researchers discussed future collaborative research involving periodic mesoporous organosilica (PMO) nanoreactors, green synthesized nanoparticles, catalytic

nanomaterials and all-solid-state sensing technologies for environmental remediation, biomedical diagnostics and catalytic applications.

The mutual priority partnership areas in targeted value chains, best practices, and networks of excellence between high-level partners have been identified. New links between research and industry have been created. Opportunities for international researcher mobility and collaborative networks between the participating institutions have been discussed.

Several forthcoming Horizon Europe calls published by the European Commission were analysed as potential funding opportunities for future collaboration between the research teams. The Horizon Europe **Cluster 4 – Digital, Industry and Space Work Programme (2026–2027)** was examined to identify funding opportunities aligned with the scientific interests of both partners. Particular attention was given to **Destination 1 – Leadership in Materials and Production for Europe**, which supports research aimed at developing advanced materials, sustainable manufacturing technologies and circular production systems. **HORIZON-CL4-2027-01-MAT-PROD-22 – Innovative advanced materials and new production processes – reducing dependencies on Critical and Strategic Raw Materials**, **HORIZON-CL4-2027-05-DIGITAL-EMERGING-03 – Advanced integrated photonic devices for extended features and ultra-low power consumption**, **Horizon Europe Cluster 6 – Food, Bioeconomy, Natural Resources, Agriculture and Environment**, where particular attention was paid to **HORIZON-CL6-2027-01-CIRCBIO-09 – Increasing the circularity of bio-based sector: upcycling and recycling for higher value and environmental benefits** were considered particularly relevant.

Overall, the analysis of forthcoming Horizon Europe funding opportunities represented one of the practical outcomes of the secondment. The discussions contributed to defining future directions for collaboration, strengthening institutional links between partners, and establishing the foundations for the preparation of future collaborative Horizon Europe proposals. These activities are fully consistent with the objectives of the **MSCA-SE** programme by promoting knowledge exchange, interdisciplinary collaboration and long-term cooperation between academia and industry.

The secondment made a significant contribution to multiple project work packages. Specifically, it supported **WP2 – Synthesis and Characterization of PMO Precursors by advancing characterization techniques**, **WP3 – Synthesis and Characterization of PMO Nanoreactors through the implementation of sustainable synthesis approaches and comprehensive characterization methods**, and **WP6 – Dissemination, Communication and Networking** by promoting stakeholder collaboration, fostering dialogue on public health issues, and strengthening dissemination activities and scientific networking.

Funding and Disclaimer



**Funded by
the European Union**

This project has received funding from the European Union's Horizon Europe research and innovation program under the grant agreement No. 101235833. Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.