Short Term Scientific Mission funded by the COST Action CA22131

LUCES

Supramolecular LUminescent Chemosensors for Environmental Security

Lanthanide-Functionalized Silica Nanoparticles as Photoluminescent Platforms for Monitoring PET Degradation

Objective: Synthesize and surface-functionalize silica nanoparticles with Eu^{3+} and Tb^{3+} phenanthroline complexes for optical tracking of PET degradation.

Results&Main Findings:

- Optimized synthesis to achieve strictly single-sized, highly monodisperse nanoparticles, enabling uniform monomodal electrosprayed coatings on PET surfaces.
- Completed real-time PET degradation experiments, demonstrating a systematic decrease in photoluminescence intensity upon polymer breakdown

Follow-up: Completing HPLC validation and TEM structural analysis; developing a joint project proposal to secure funding for a full postdoctoral position at Aalborg University.

Almara Aliyeva

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Host Group: Prof. Peter Fojan, Aalborg University, DK - WG1

Period: 31.07.2026 to 31.08.2026

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