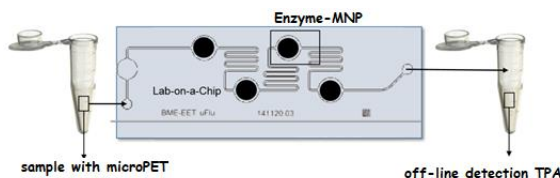


COGNITIVE AND SOCIO-ECONOMIC IMPACT

The production of plastic is continuously increase and PET particles have been recently traced even in the human blood. Therefore, besides recycling PET, the detection and removal of microplastic particles is also of great interest. In this context active enzymes (wild-type and improved variants) with improved stability under severe conditions, such as high temperature and presence of swelling agents, are highly desirable.

Lab-on-a-Chip (LoC) system for microPET detection



Cognitive impact

- The development of improved analytical methods (based on UV-Vis spectroscopy and HPLC) allow through the analysis of the degradation mixture the detection of PET even at very low concentration.
- the production, purification, characterization and use of recombinant PET-hydrolyzing enzymes as soluble and immobilized biocatalyst for continuous microPET detection and removal
- the scientific portfolio of the university will be enlarged through results dissemination (research articles, presentations at international conference, national patent proposal, PhD-thesis)
- The expected impact on the scientific field: providing as final products immobilized PET degrading enzymes with enhanced activity and operational stability and protocols for microPET enzymatic degradation in aqueous environment, as well devices for PET detection in aqueous media

Socio-economic impact

- development of new research directions and scientific networks related to the PET removal and detection, thus increasing the chances to attract more funds for research infrastructure and development *via* European and international research funding
- immobilized PET degrading biocatalysts are highly attractive for industrial partners, providing a significant technology-driven societal impact through decreasing the environmental footprint, also increasing environmental and food related health, thus resulting in improved life conditions
- project supports scientific and technological human resource growth of the research group and host institution