Rapid Microplastic Analysis by Microparticle Radars

Fact Sheet

Project Information

RAMP-UP
Grant agreement ID: 101113438

Funded under
European Research Council (ERC)

DOI
10.3030/101113438

Start date
1 August 2023

End date
31 January 2025

Total cost
€ 0,00

EU contribution
€ 150 000,00

Coordinated by
BILKENT UNIVERSITESI VAKIF
Türkiye

Objective

Microplastics pollution is becoming increasingly problematic due to its involvement in a myriad of health problems and its effects on natural wildlife. Water agencies across the globe are progressively implementing screening policies for drinking water to address this issue. However, this is proving to be challenging since the existing monitoring technologies are labor intensive and time-consuming with low throughput. To address the issue, we propose a new flow-through sensor that builds upon technologies that were developed during our main ERC project. The sensor device combines two different electronic sensors that extract both the size and the dielectric permittivity of microparticles passing through the system in a rapid and high throughput manner. The dielectric permittivity is a robust parameter that can be used to identify plastics from other materials found naturally in the environment. By utilizing this difference at the single microparticle level, our new technology can be used either
to eliminate non-plastic materials from samples for down-stream conventional microplastics spectroscopy, or as a stand-alone automated sensor for rapid microplastics quantification in drinking water samples. Here, we will set up a microplastics workbench to cross-validate the accuracy of our proposed technology. After validation and securing the IP rights, we will seek out drinking water samples from water boards across the globe to analyze them in our lab. This will allow us to form networks of collaborators and lead us towards providing rapid microplastics analysis as a commercial service to water regulation agencies. In addition to the potential economic opportunities, we envision that our technology will accelerate microplastics screening and play a significant role in stymieing the spread of microplastics pollution.

**Fields of science**

- engineering and technology
- environmental engineering
- water treatment processes
- drinking water treatment processes
- electrical engineering, electronic engineering, information engineering
- information engineering
- telecommunications
- radio technology
- radar
- electronic engineering
- sensors
- earth and related environmental sciences
- environmental sciences
- pollution
- physical sciences
- optics
- spectroscopy

**Keywords**

- RAMP-UP

**Programme(s)**

- HORIZON.1.1 - European Research Council (ERC)

**Topic(s)**

- ERC-2022-POC2 - ERC PROOF OF CONCEPT GRANTS2

**Call for proposal**
Funding Scheme

HORIZON-ERC-POC - HORIZON ERC Proof of Concept Grants

Coordinator

BILKENT UNIVERSITESI VAKIF

Net EU contribution

€ 150 000,00

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Region

Batı Anadolu > Ankara > Ankara

Links

Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding

€ 0,00

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Last update: 27 July 2023

Permalink: https://cordis.europa.eu/project/id/101113438

European Union, 2023