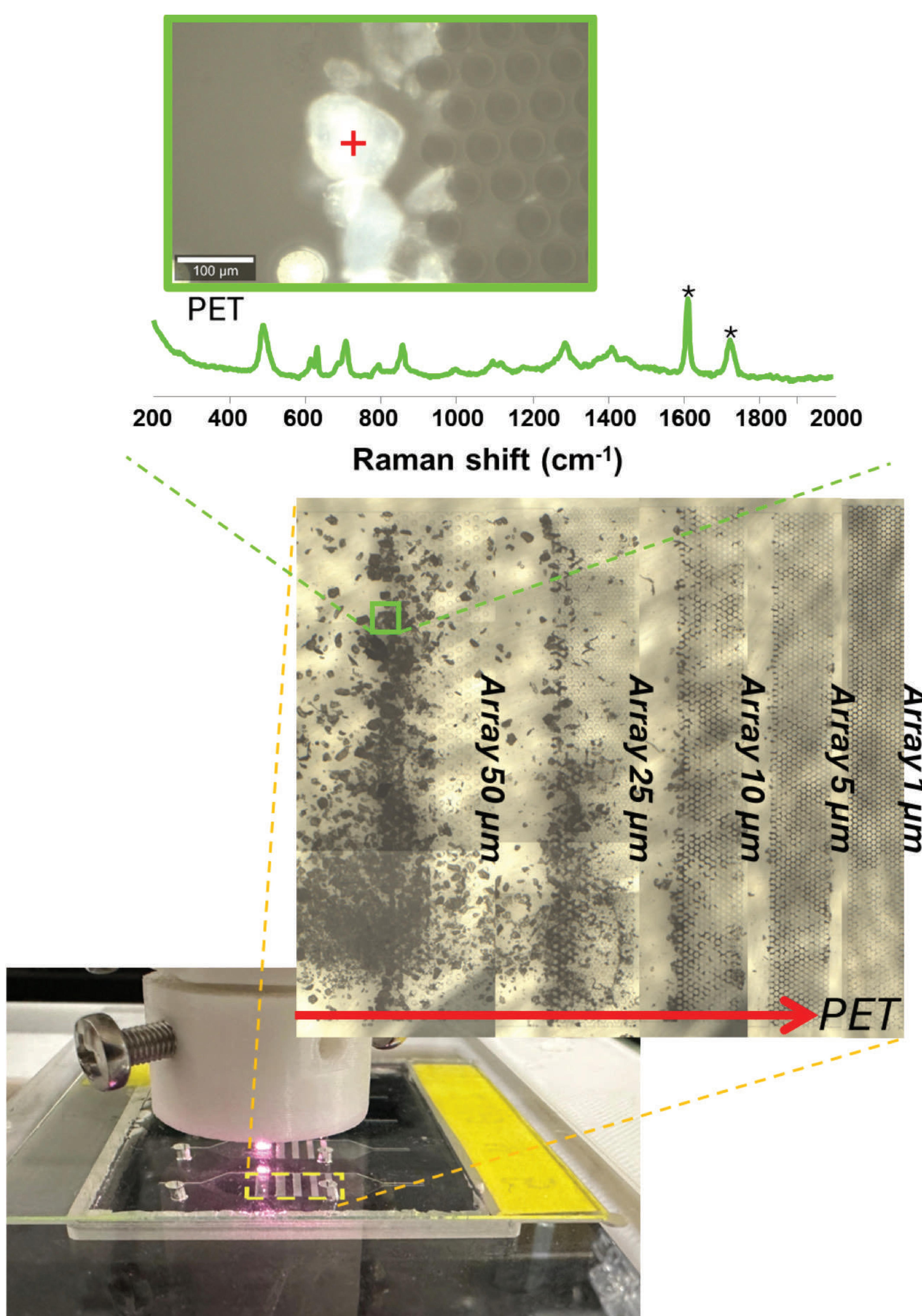


MICROPLASTIC DETECTION LAB-ON-A-CHIP



INL has developed a lab-on-a-chip platform for the rapid identification and size sorting of small microplastics in water. The microfluidic device combines size-based sorting and Raman spectroscopic identification on a single chip, enabling analysis of microplastics with sizes up to 100 μm without sample pre-treatment.

The technology addresses the growing need for reliable and standardisable analytical tools to monitor microplastic contamination. By providing both particle size information and polymer identification, the platform supports *in situ* screening of water bodies and generates data relevant for environmental monitoring and public health assessment. The chip can be integrated into a portable system and is compatible with a wide range of Raman setups, from laboratory instruments to compact and field-deployable solutions.

+ Key benefits

- Combined pre-concentration, size sorting, and identification on a single microfluidic chip
- No sample manipulation required
- Customisable size range from 1 μm to 100 μm
- Compatible with laboratory, portable, and fibre-coupled Raman systems
- Applicable to multiple water matrices, including seawater, surface water, groundwater, runoff water, and wastewater

+ Performance highlights

- Detection limits for 10-15 mL samples: PS 14 $\mu\text{g/L}$, PET 26 $\mu\text{g/L}$, PE 54 $\mu\text{g/L}$, PP 45 $\mu\text{g/L}$
- Identification of PVC and PVDC in natural water samples

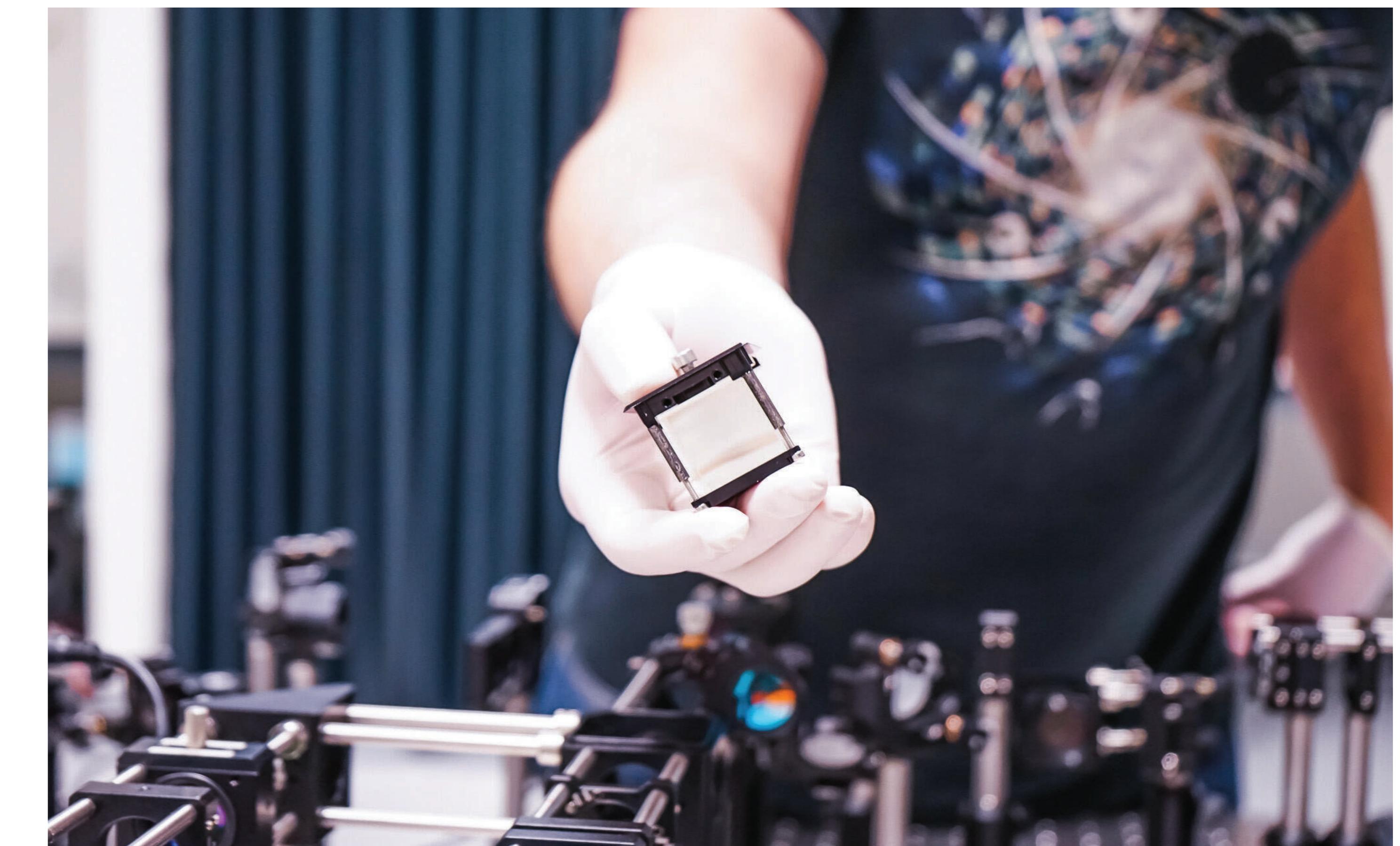
+ Suggested applications

- Drinking water monitoring and water supply management
- Environmental monitoring of rivers, lakes, and coastal waters
- Wastewater treatment and process control
- Early screening to support regulatory compliance

+ Patent Status

- An offer for patent licensing

TRL
4



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