


## AUTONOMOUS MONITORING OF LITHIUM AND SODIUM FOR BATTERY RECYCLING

IBatSens is an autonomous, real-time monitoring system, developed by INL, for the quantification of lithium and sodium ions in battery recycling processes. The system supports black mass valorisation, process control, and environmental compliance across the battery recycling value chain.

IBatSens automatically collects and processes samples, performs potentiometric measurements, and estimates metal concentrations with minimal operator input. It provides reliable lithium and sodium concentration data relevant to industrial recycling operations.

The system has been validated in the laboratory against a reference method (ICP-MS) and will be deployed under real operating conditions in an industrial battery recycling facility. Integrated into an IoT network, IBatSens delivers real-time data to support recovery optimisation and compliance with safety limits.



New  
Generation  
Storage

PRR  
Plano de Recuperação  
e Resiliência

REPÚBLICA  
PORTUGUESA

Financiado pela  
União Europeia  
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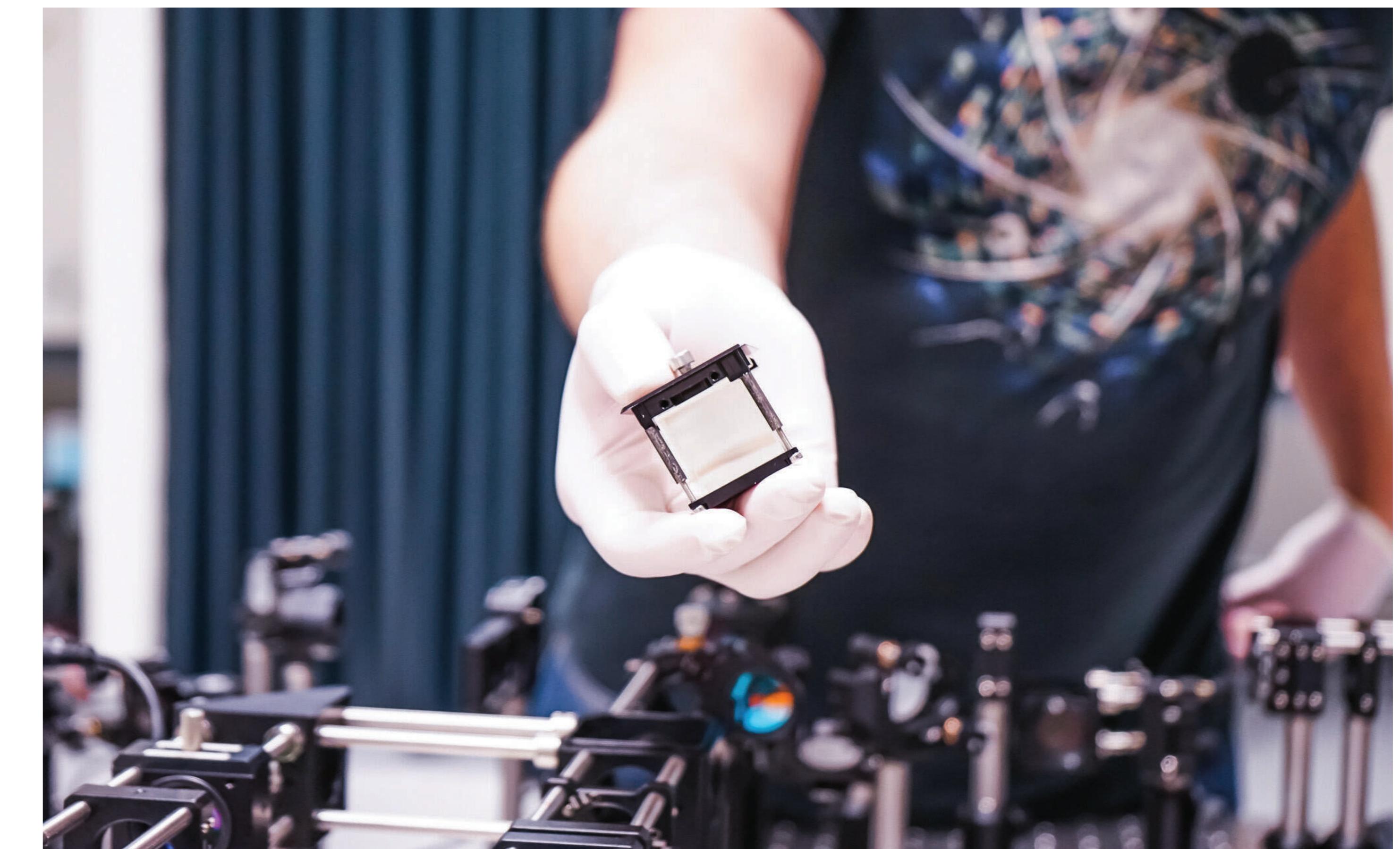
### + Advantages

- In-situ, real-time monitoring of lithium and sodium
- Automated operation: sampling, dilution, analysis, cleaning, recalibration
- Minimal operator involvement
- Easy integration into existing processes
- Supports safety and environmental compliance

### + Key benefits

- Analysis time: 5 min
- Measurement interval: 1h 30min
- Data output: Direct connection to an online platform (IoT)
- Analytical range: Li 0.7-700 mg/L; Na 2.3-2300 mg/L

TRL  
4



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