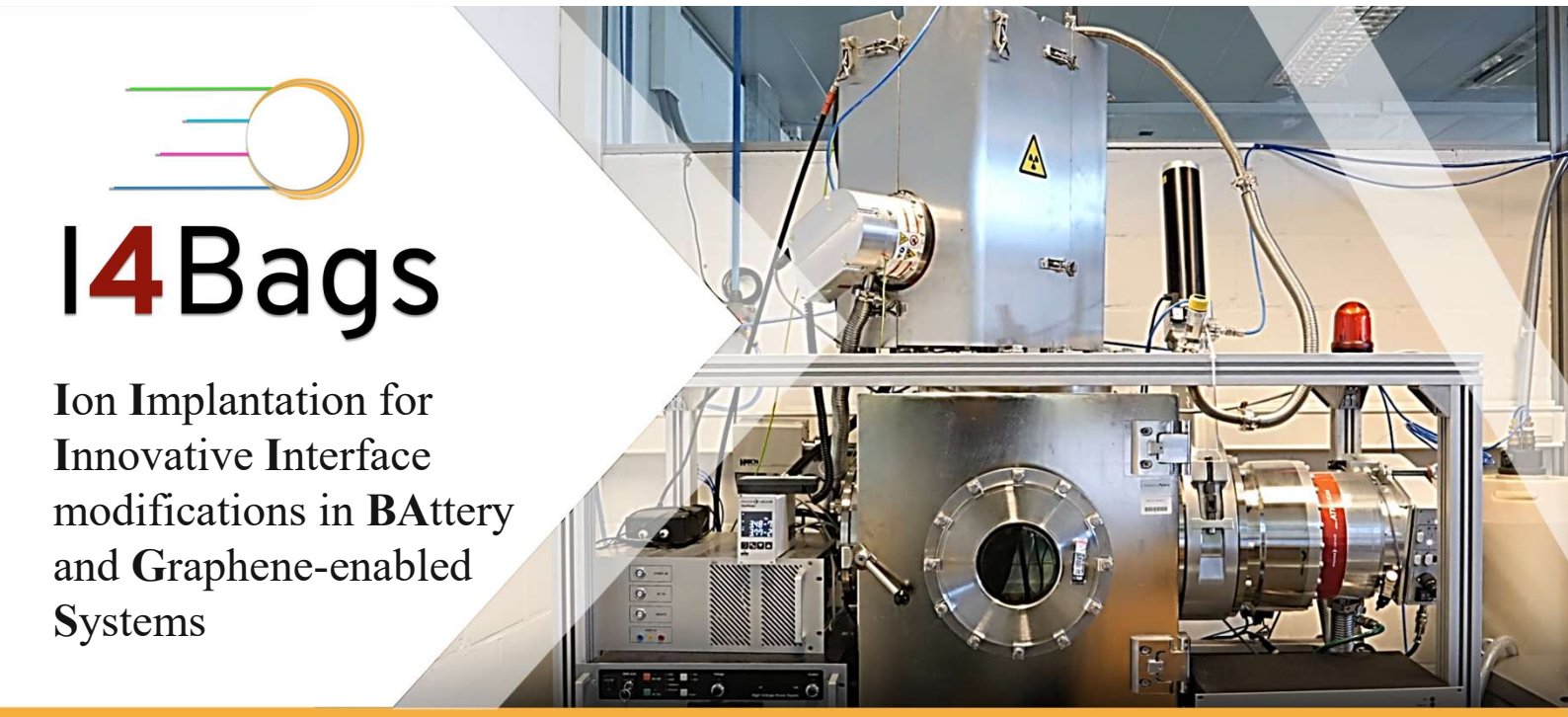
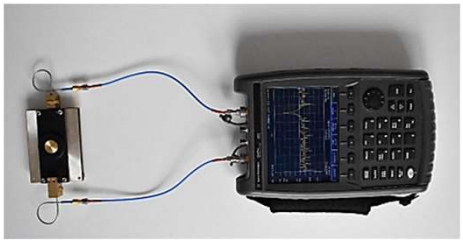
I4Bags

Ion **I**mplantation for **I**nnovative **I**nterface modifications in **BA**ttery and **G**raphene-enabled **S**ystems



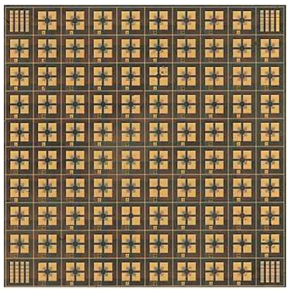
The **I4BAGS** project aims to develop **innovative processing and characterisation solutions** for microelectronics and battery applications. Driven by topical challenges in communication and energy management, and supported by large industrial demand for innovation, most performing devices have a complex thin-film stacking architecture, the manufacturing processes of which require **fine monitoring of materials and their interface properties** and to keep track of their properties, often at the nanoscale.

Single-Post Dielectric Resonator with Keysight Fieldfox



Magnetron sputtering and PECVD chambers

Neutron-irradiation-resistant high-temperature graphene Hall effect sensor for advanced magnetic diagnostics



Partners

Łukasiewicz Institute of Microelectronics and Photonics

MATERIA NOVA

ionics surface technologies

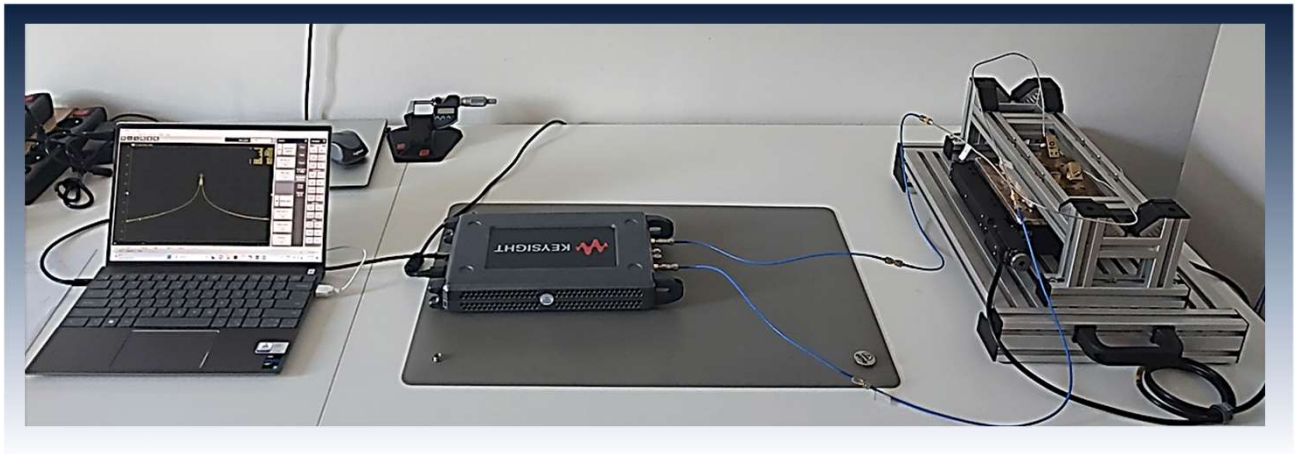
Acknowledgement

M-era.Net

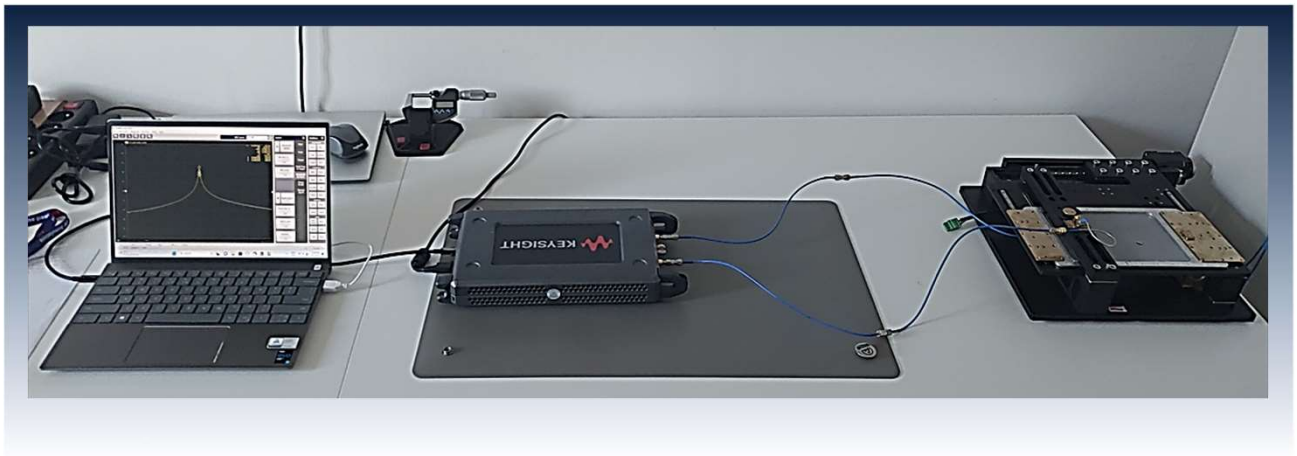
NCBR National Centre for Research and Development

Wallonie

SPW Service public de Wallonie



The measurement setup shown above is used to measure materials that conduct electricity at microwave frequencies. It measures the **resistivity**, or **surface resistance**, of samples and creates 2D maps to assess homogeneity and manufacturing defects. Uses an inverted single-post dielectric resonator at **10 GHz**, placed above the sample. The measurement process involves scanning the surface of the sample, extracting resonance data and using backward modeling to derive material parameters, facilitating accurate characterization of conductive materials.



The **10 GHz** SPDR scanner is designed to measure the combined electrical **permittivity** and **loss tangent** of dielectric materials, such as LTCC substrates and ferroelectric thin films on low-loss dielectric substrates. They can also measure the **surface resistance** and **conductivity** of conductive materials such as resistive layers, conductive polymer films and semiconductors with a surface resistance greater than 5 kΩ/square.

Visit the project website using QRCode!