

Il LABEC in network e infrastrutture internazionali

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IAEA

International Atomic Energy Agency

Four Coordinated Research Projects (CRP) since 2005 (two on fundamentals of IBA and PIGE, one on portable XRF instrumentation, one on nuclear analytical techniques for forensic sciences).

Knowledge Transfer and Technology Transfer to 15 researchers from Member States since 2010 (mainly on IBA for environmental and cultural heritage applications).

Consultancy to different IAEA bodies and for activities in the field.



RADIATE is funded by the EU Research and
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RADIATE

Research and Development with Ion Beams - Advancing Technology in Europe

- Ion Beam Analysis & Accelerator Mass Spectrometry & Implantation from the top EU labs
- Supporting Academia and Industry across the Europe
- Free Transnational Access to Ion Beam Facilities across Europe

www.ionbeamcenters.eu



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The history behind RADIATE

(deep roots are not reached by the frost)

- **SPIRIT**, Support of public and industrial research using ion beam technology, (2009-2013), FP7-INFRAIA-2008-1.1.1
- **SPRITE**, Supporting Postgraduate Research with Internships in industry and Training Excellence, (2013-2017), FP7-PEOPLE ITN
- **SPIRIT2020**, Support of Public and Industrial Research using Ion Beam Technology beyond 2020, (2014) H2020-INFRAIA-2014-2015, “Engineering, Material Sciences, and Analytical facilities - Functional materials for special applications”
- **RADIATE**, (2018) H2020-INFRAIA-2018-2020, “Material Sciences and Analytical facilities - High and low energy ion beam labs”

The RADIATE project in numbers

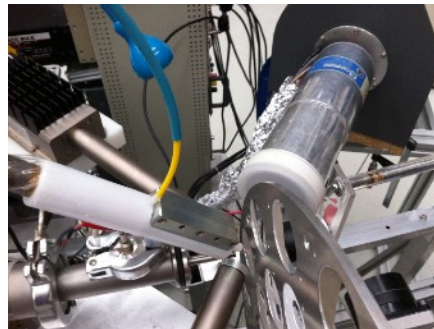
- 19 project partners
- 13 facilities offering transnational access
- 4 SMEs
- 4.5 year runtime (1/2019 - 6/2023)
- € 9.9M budget
- 15800 hours of transnational access (TA)
- open calls for TA proposal

Transnational access at LABEC

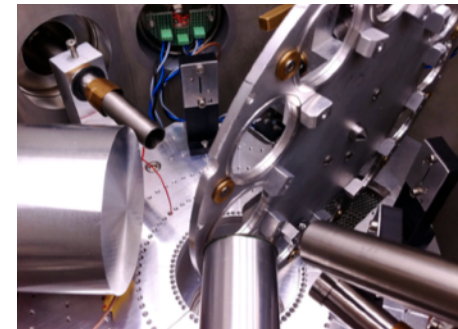
- 800 hours of TA have been offered at INFN LABEC, incoming 156 k€ (target was 900 hours)
- Main provider of PIXE/PIGE/RBS elemental analysis



External beam for low-current non-destructive PIXE, PIGE and RBS/EBS analysis of cultural heritage

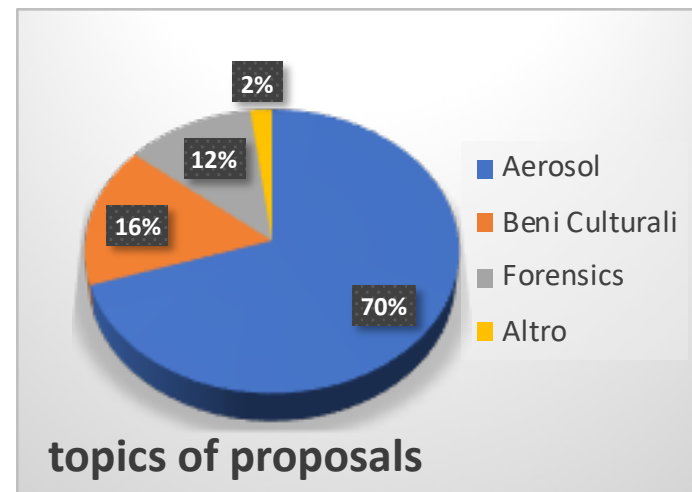
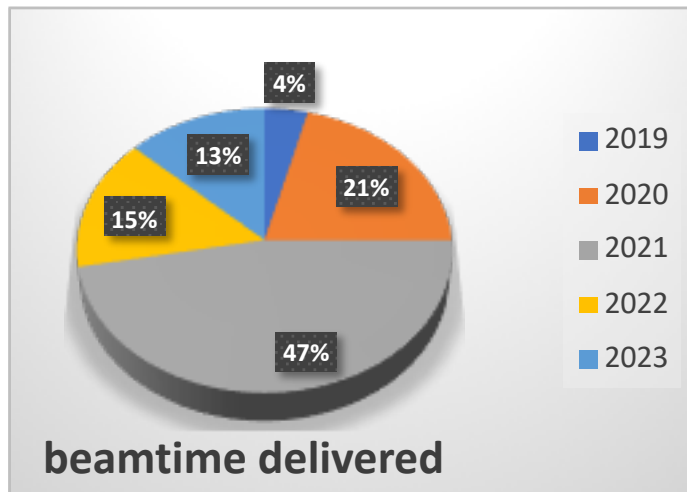
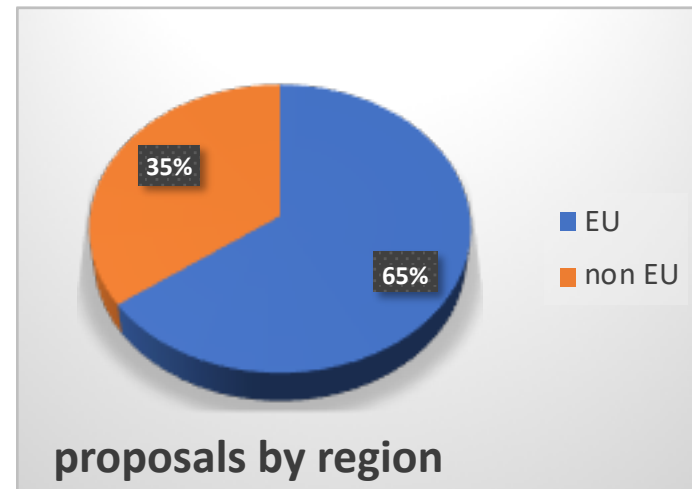
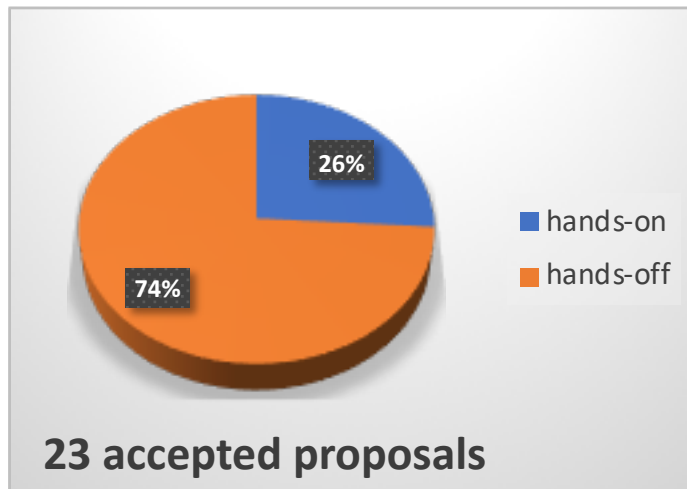


External beam high-current and high-throughput PIXE and PIGE analysis of atmospheric aerosols



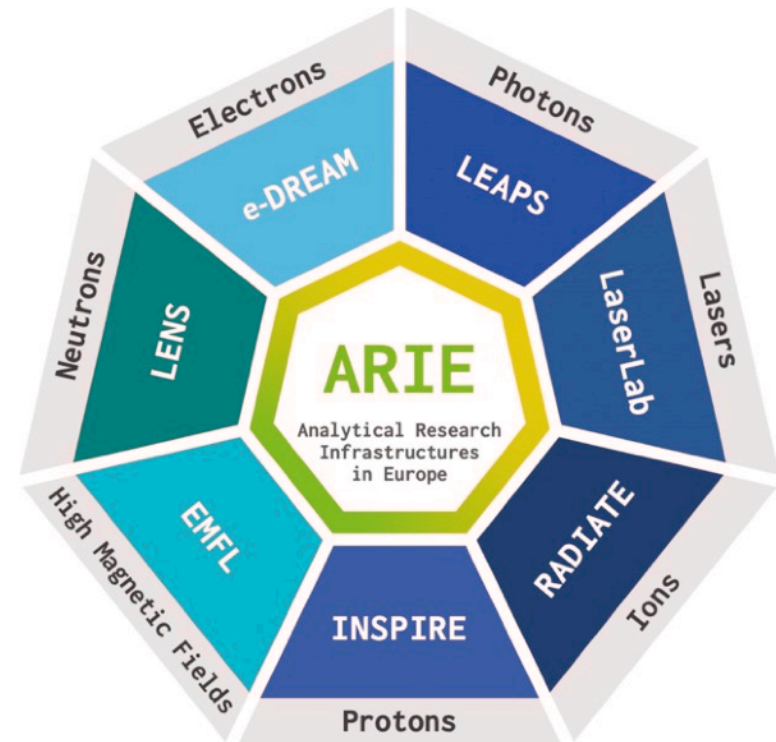
In-vacuum scattering chamber equipped for PIXE, PIGE and multi-detector RBS/EBS/PESA analysis

Transnational access at LABEC



From RADIATE to ARIE

- ARIE (Analytical Research Infrastructures in Europe) is a consortium of seven Europe-wide research networks that are working together to provide instruments and services to enable European researchers to address the Missions of Horizon Europe
- <https://arie-eu.org/>



To meet the challenge of designing new materials for a circular economy, the potential of 40 analytical research infrastructures of the ARIE network has been harnessed through a new project, ReMade@ARI.



The European research infrastructure project ReMade@ARI commits to leverage the development of innovative, sustainable materials for key components in the most diverse sectors, such as electronics, batteries, vehicles, construction, packaging, plastics, textiles and food on an unprecedented level.

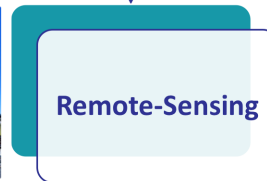
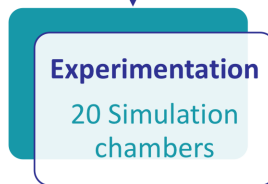
LABEC is offering 400 hours of beamtime for Transnational Access in 2022-2026 for material analysis



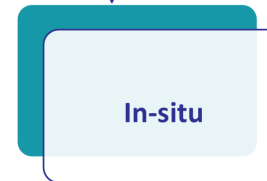
ACTRIS

ACTRIS (Aerosols, Clouds, and Trace Gas Research Infrastructure) is the pan-European research infrastructure producing high-quality data and information on short-lived atmospheric constituents and on the processes leading to the variability of these constituents in natural and controlled atmospheres.

ACTRIS Multi-dimension



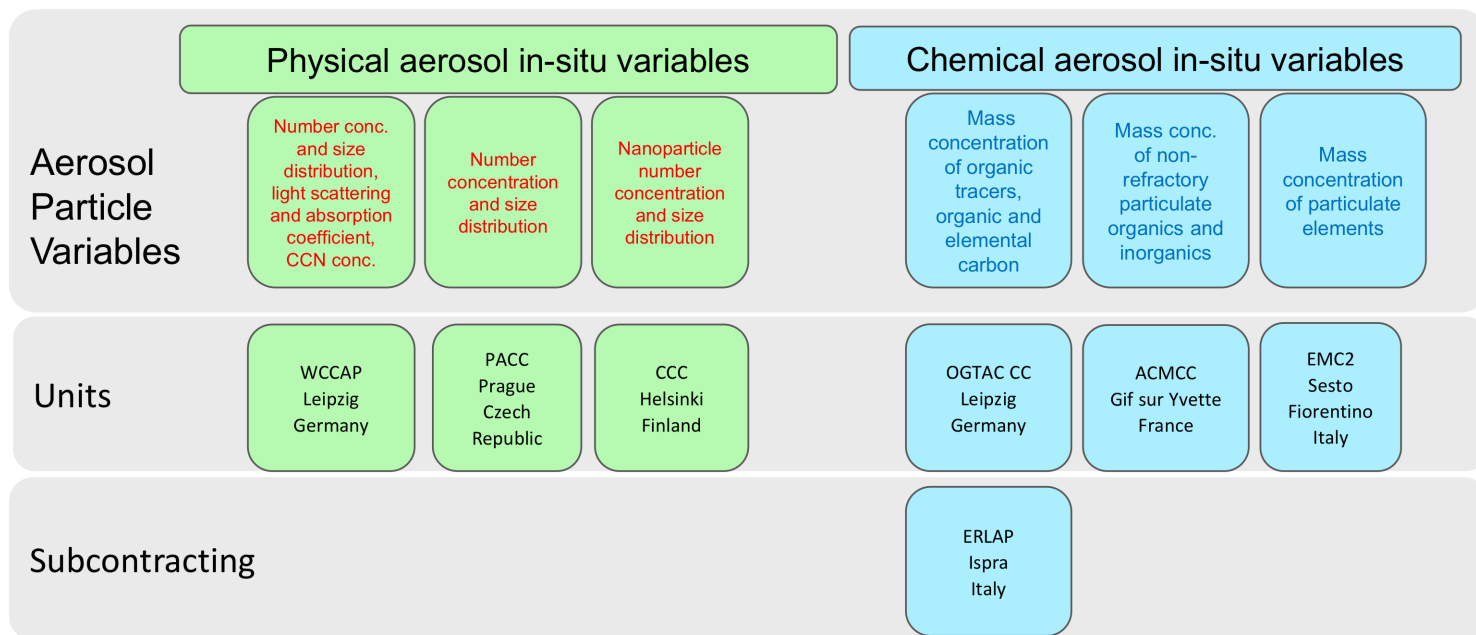
AEROSOL
CLOUDS
TRACE GASES



ACTRIS

CAIS-ECAC Organization

Center for Aerosol In-Situ Measurements (CAIS) –
European Center for Aerosol Calibration & Characterization (ECAC)





EMC2 service and support

- Elemental Mass Calibration Centre (EMC2) is hosted by LABEC
- Proficiency tests of individual laboratory analysis through the organization of Inter-comparison and round-robin exercises.
- Operation support for quality assurance and quality control for the measurement of mass concentration of particulate heavy metals and inorganic elements, by offline/filter based-analysis and online methods.
- Hands-on training of operators and scientists to NF and ACTRIS users.
- Analysis of samples from NF and ACTRIS users through TA provided by other networks

Ricadute su scala nazionale



Progetto PON PER-ACTRIS-IT: potenziamento della componente italiana di ACTRIS (419 k€)

- Nuovo set-up a 6 rivelatori per misure PIXE su aerosol.
- Digitalizzatori per nuovo sistema acquisizione dati per tutti i canali IBA del LABEC.
- Upgrade sistemi e servizi acceleratore.

Progetto PNRR ITINERIS (Italian Integrated Environmental Research Infrastructures System): potenziamento della componente italiana di ACTRIS (887 k€)

- Upgrade capacità analitiche al LABEC per analisi di aerosol mediante acquisizione nuova strumentazione ancillare.
- Upgrade sistemi e servizi acceleratore.
- 250 ore di fascio come accesso al LABEC.

