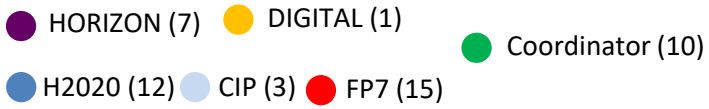
Organisation Name:

<u>Lurederra Technological Centre</u>, non-profit R&D private entity created in June 1999 and member of ADITECH**:**

- **Staff:** 37 **Facilities:** 8.630 m^2 (4.530 m^2 built)
- **Involved in European projects since FP4 up to HE as partner and coordinator**

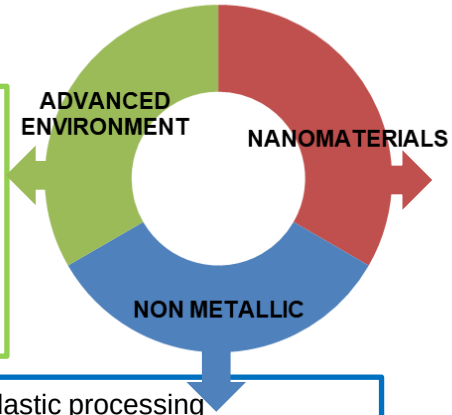


- **Field of expertise:** Nanomaterials and coatings development
  Recycling and critical raw material extraction
- **Addressed topic:** HORIZON-CL5-2025-01-Two-Stage-D2-02: Cost-effective next-generation batteries for long-duration stationary storage (Batt4EU Partnership)

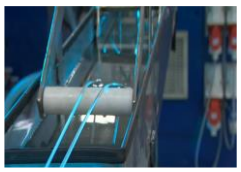
REFERENCE PROJECTS
FREE4LIB (ongoing): Feasible recovery of critical raw materials through a new circular ecosystem for a Li-ion battery cross-value chain in Europe. HORIZON-CL5-2021-101069890
BATSAFE (ongoing): Development of safer battery components for liquid and solid state Lithium ion battery cells. Spanish Minister. PLEC 2022-009472
NANOMATIA (ongoing): New nanomaterials driven by artificial intelligence for batteries. PLEC 2023-010301
POWERFLOW & FLOW GRID (2012-2015) Subcontracted: Surface coatings & carbon-composite electrodes (Redox flow batteries)
STABLE (FP7-2012-GC-314508): Production of catalyst, nano mixed oxides based on Co/Mn, production of nanofillers for anodes and membranes (Lithium-air batteries).
MANANO (PEOPLE-2010-264710): Production of nanomaterials for Li-ion batteries

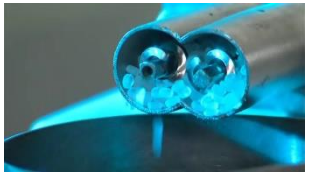
Lurederra –RTD AREAS:

- **Recycling of WEEEs, mechanical separation and metal extraction**
- Wastewater Treatment
- Revalorisation of organic wastes

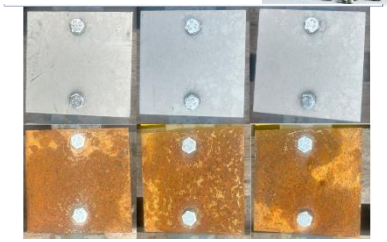


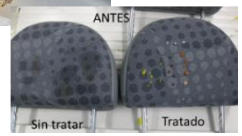
- Plastic processing technologies.
- Development of solutions / physical-chemical systems for recycling plastics
- Advanced materials development (functionalised)





- **Advanced nanomaterials synthesis**
- **Facilities for upscaling up to kilogram scale: simple and complex oxides (mixed, doped, core-shell), phosphates …**
- **Dispersion, deagglomeration and surface functionalisation up to 100 litres/hour**
- **Specific surface treatments and ready to use coatings**





Lurederra – Contributions:

Nanomaterials for batteries. *Exploration of* ***new chemistries*** *and compositions and upscaling*

- **Flame Spray Pyrolisis production technology**:
  - **High Materials versatility:** from simple oxides to a wider range of multicomponent complex nanostructures
  - High Scalability up to kilograms/hour
  - Short synthesis time: One-step synthesis
  - High Control over particle properties
  - High thermal stability and purity
  - Cost-effectiveness

FSP Configurations	Advanced nanomaterials
Standard	**Simple and mixed oxides, phosphates HEOs, noble metals**
Ring deposition	**Core-shells**
Double-Nozzle & Sequential deposition	**Well distributed supported materials**
O2 lean/Reductant atmosphere	**Oxygen vacancies in oxides Non-oxides: metals, carbon doping, metal-sufides and oxynitrides**
Thin-film deposition	**Nanoporous thin films for electrodes**

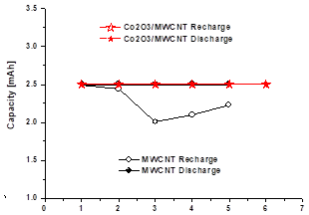
- **Laboratory scale for fast design and screening of compositions:** 10g/h
- **Upscaling of compositions:** 100 g/h & 1 kg/h
- **Possibility to transfer to close cooperator company for industrial production**

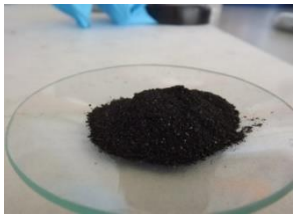
Lurederra – Main Contribution:

Nanomaterials for batteries & upscaling

HORIZON-CL5-2025-01-Two-Stage-D2-02: Cost-effective next-generation batteries for long-duration stationary storage (Batt4EU Partnership)

- ***Bifunctional catalyst for ORR/OER for metal-air batteries***
  - Spinel structure metal oxides: Co_3O_4, $MnCo_2O_4$, $MnFe_2O_4$, $CoFe_2O_4$, $NiFe_2O_4$, (FeCrCoMnZn)3O4-δ
  - Perovskite structure metal oxides such as $LaMnO_3$, $LaNiO_3$, $LaCoO_3$
  - Pt supported on C with reduced Pt loadings < 0.1 $mg_{Pt}cm^{-2}$





- ***Inorganic nanomaterials for solid-state electrolytes***
  - **Perovskites** like LLTOs even doped such as $Li_{0,33+2x}La_{0,56}Ti_{1-x}Ge_xO_3$,
  - **Garnets** such as $Li_7La_3Zr_2O_{12}$
  - **NASICON type** such as Lithium metal phosphates

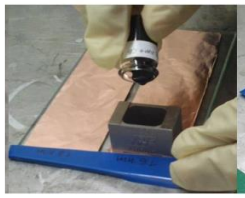
- ***Sulfide-oxide nanoparticles and metal-sulfides*** that can promote polysulfide conversion in Metal-S batteries
- ***Open to work in other requested compositions on demand for other battery chemistries***

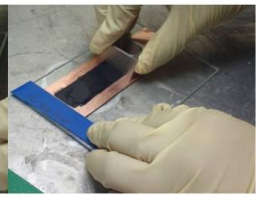
Lurederra – Other Contributions & topics:

- ***Li-ion batteries***
  - ***Nanomaterials for cathodes:*** **LFMP** ($LiMn_xFe_{1-x}PO_4$), **NMC** and **HVS (High-Voltage Spinel)** $LiMn_{2-x}M_xO_4$. Core-shell structures for high-capacity inner core and structural stable outer shell materials.
  - ***Nanomaterials for anodes:*** Titanium-based spinel $Li_4Ti_5O_{12}$ **LTO**, titanium suboxide based materials TiO_{2-x}.

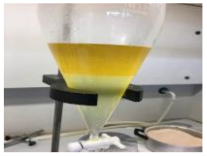
HORIZON-CL5-2026-01-D2-01: Development of sustainable and design-to-cost batteries with (energy) efficient manufacturing processes and based on advanced and safer materials

HORIZON-CL5-2026-01-D2-04: Integrating advanced material, cell design and manufacturing development for high-performance batteries aimed at mobility





- ***Cross-cutting activities***
  - **Inks development & coatings**
  - **Protective anticorrosion coatings and wettability modification**
  - **Leaching, solvent extraction and precipitation technologies** for recovery of precious metals and CRMs



HORIZON-CL5-2025-02-D2-03: Sustainable processing and refining of raw materials to produce battery grade Li-ion battery materials (Batt4EU Partnership)

Consortium

We offer as partners:			
Name	**Type**	**Country**	**Role in the project**
Lurederra	RTD	Spain	Development and upscaling of new tailored compositions for batteries

Contact details

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