

# Research topic: The use of materials in new technology products (BID1)

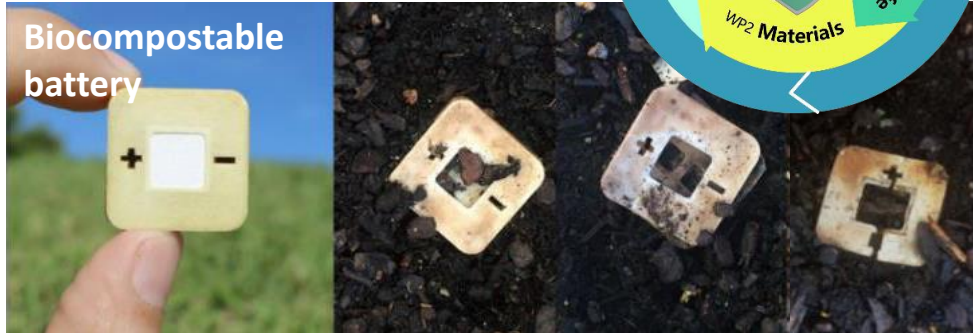
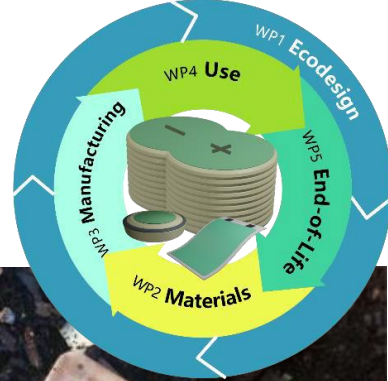
- Research line: Resource management for a Circular Economy
- Research group: Sostenipra

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## Making primary batteries more sustainable

The BIDEKO project aims to change the current paradigm of primary batteries from a *'one-size-fits-all'* to a new *'tailor-made'* model where batteries are ecodesigned to fit the life cycle of the device to be powered. The development of new ecodesigned batteries imply a detailed analysis of all the stages involved in their lifecycle, including the raw material selection, manufacturing process, demanded energy capacity, operational time and disposal. All these stages need to be assessed to ensure that new batteries will have a lower environmental impact along their entire life cycle.

In this Master Thesis, the student will investigate the diverse eco-design strategies suitable for primary batteries and develop a comparative analysis of one **current primary battery** and **a new biodegradable BIDEKO battery**.

**Main goal: To compare current primary batteries and new biodegradable batteries.**

### MAIN TASKS:

- 1) To perform a literature review about primary batteries (i.e. chemistries, market share, environmental footprint, etc).
- 2) To quantify the environmental impact of current batteries using LCA and suggest ecodesign strategies to reduce their impact.
- 3) To quantify the environmental impact of the BIDEKO primary batteries.
- 4) To gather information about the volume of primary batteries produced and manufactured in Europe, and the volume collected at the End of Life, to provide some estimates about the impact of the new BIDEKO batteries in terms of raw materials and emissions savings.
- 5) To write a peer-review paper for submission in a peer-review journal.