



DC 3	Perovskite solar cells for sustainably powering IoT electronics.
Host Institution	Saule Spolka Akcyjna
Supervisor	Tanja Ivanovska
Duration	36 months
Subject Area	Materials, Semiconductor, Photovoltaic
Doctoral degree	Doctoral Program in Physics (MAP-Fis) or Materials Engineering Doctoral Program at UMINHO

Description

Using indoor photovoltaics (IPVs) to power the IoT device and recharge its energy storage device (e.g., supercapacitor) when lights are on, and using the energy storage device to power the IoT device in the dark, obviates the need to replace batteries. However, commercial-standard IPV (hydrogenated amorphous silicon; a-Si:H) have power conversion efficiencies (PCEs) up to ~20%, with most showing <10% efficiency. The selected candidate will fabricate phase-pure perovskite solar cells based on wide bandgap iodide based formulations and will optimize the performance of the photovoltaic devices in particular for indoor low light energy harvesting through materials engineering.

The candidate will spend a period at the University of Oxford, at the University of Cambridge and the University of Minho to grow and characterize the devices.

Project-specific selection criteria:

- Master's degree in materials engineering, physics, chemistry or a related discipline.
- Good understanding of solid-state chemistry, semiconductor physics and solar cell operation.
- Experience with solution processable materials and deposition methods, thin-film formation, solar cell fabrication and electrical and optical characterization methods.

Other criteria:

- Highly proficient English language skills.
- Affinity to experimental work.
- Willingness to work collaboratively in a research environment.
- A strong commitment to his/her own continuous professional development.
- Willingness to travel and work across Europe.

Additional information

As part of the MSCA programme, all recruited MASAUTO researchers must comply with the Horizon Europe MSCA eligibility criteria:

- Do not have a doctoral degree at the date of the recruitment by the host organisation.
- At the time of recruitment by the host organisation, DCs must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the three years immediately prior to the recruitment date. Compulsory national service and/or short stays such as holidays and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

