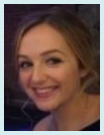
connected everything.

# Solar Skin: Additive manufacturing of customised, fully integrated, photovoltaic products


## Project Team:



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## The project team and timeframe

The feasibility study team comprises two investigators from the University of Liverpool, working in partnership with Novacentrix, Ecospheric, and Solar Capture Technologies. Bringing together expertise from solar energy, electronic devices and manufacturing to deliver an interdisciplinary approach to developing fully integrated solar cell products. The project runs from July 2021 to May 2022.

## What does the project demonstrate?

The aim of this project is to determine the feasibility of printing a bespoke solar skin directly onto a product during manufacturing to generate clean electricity from all available surfaces. The project will explore using low-cost additive manufacturing and low temperature photonic annealing to fabricate customized perovskite-based solar cells on flexible substrates. A tool will be created to allow the cells to be optimized for the light available within their intended environment. It will demonstrate the potential for customization of low-cost photovoltaics and two use-cases will demonstrate the wide applicability of this approach.

## Solar cells on mylar for space, and PET foils for flexible electronics.

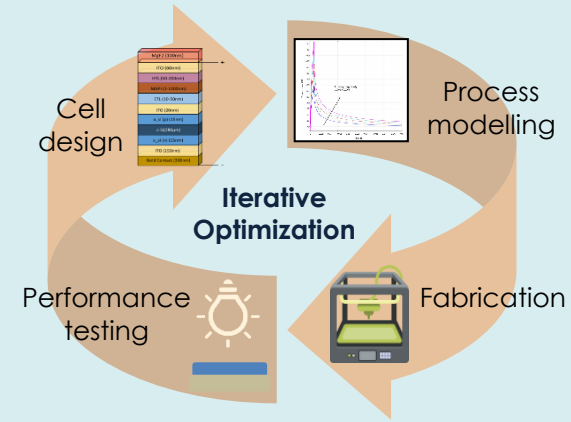
Current state-of-the-art solar cells are bulky, heavy, stand alone objects, with long energy payback times. They are also generally optimized for standardised conditions rather than a bespoke approach that factors in the actual environment and usage of the cells.

The project will develop a tool that optimises solar cell designs for specific products, based on environmental data, material properties and product usage analytics. These cells will then be fabricated using inkjet printing and photonic curing on mylar for space applications and thin PET foils for flexible tablets, showcasing the possibilities for lightweight, integrated photovoltaics.

**Video introduction:**

UKRI Engineering and Physical Sciences Research Council

## Flexible photovoltaic tablet



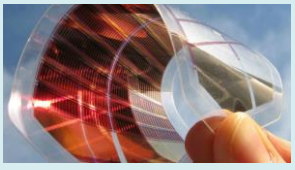



Fig. 1 Using additive manufacturing to create bespoke, integrated photovoltaics for power at the point of use.