

## Objectives

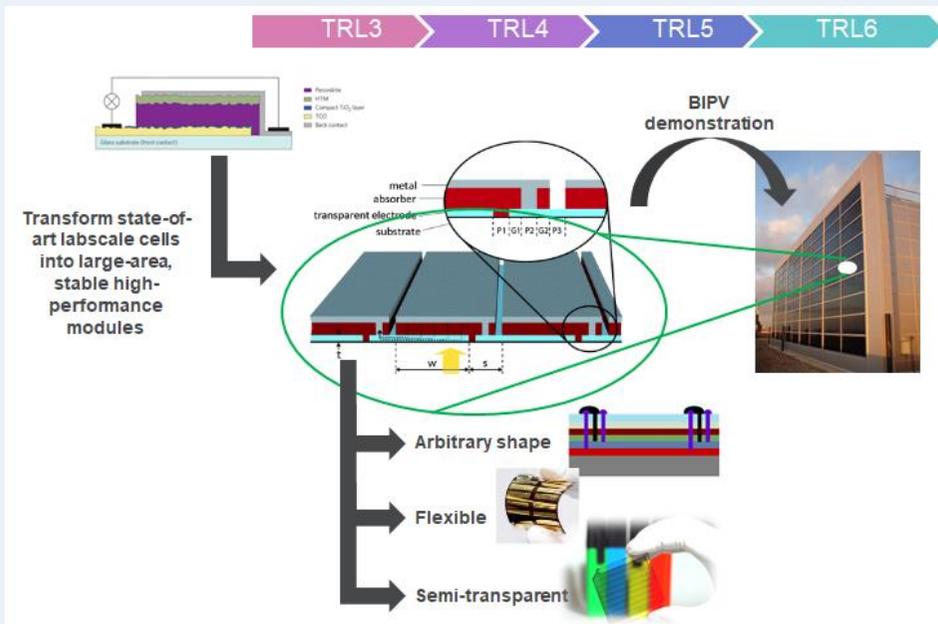
To **secure a firm European position** for PSC module fabrication, ESPResSo will bring forward technological solutions that combine high-throughput, low-cost manufacture of efficient and long-lasting PSC PV modules that can also have seamless integration in application areas that require customised end-products. This new approach is different to c-Si products produced as low-cost commodity products in low-labour cost countries outside Europe, in that customized products can create a high added value that allows for local European production close to the end-user.

Therefore, within the **three-year timeframe** of the project the consortium targets substantial progress on cell efficiency, stability, and module process upscaling which enables to combine these results into a **glass-based module result at TRL5** as a consolidated project outcome. Demonstration of such modules in a BIPV facade element, supported with outdoor test results, opens then the door for **technology validation at TRL6**, for a fully integrated product.

for e.g. window integration or for tandem applications by stacking on top of existing (e.g. c-Si) PV technologies to boost the overall power conversion. It is targeted to bring these technologies to TRL4. Full technology validation of these novel routes in more specified applications will however need **further developments also beyond the timeframe of this project**.

## Partners

The members of the consortium include the fundamental research organizations Ecole Polytechnique Federale de Lausanne (**EPFL**), Switzerland and Consiglio Nazionale delle Ricerche (**CNR**), Italy; perovskite solar cell scale-up and industrialization members **imec**, Belgium, Universita degli Studi di Roma Tor Vergata (**UNITOV-CHOSE**), Italy and Fraunhofer Institute for Solar Energy Systems (**Fraunhofer ISE**), Germany; and experts in sustainability and renewable energies **CSGI** (Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase), Italy and **University of Cyprus**, Cyprus. Members representing materials development include **Dycotec Materials LTD**, United Kingdom, **Dyename AB**, Sweden and **Corning SAS**, France; equipment manufacturer, **M-Solv LTD**, United Kingdom; along with perovskite solar cell technology developers **Saule Technologies**, Poland, and building-integrated photovoltaics developer, **Onyx Solar Energy SL**, Spain.



How ESPResSo progresses along TRL scale

The ESPResSo project will additionally open up **three more routes** towards customization and facilitation of integration. Novel processes will be initiated in this project to allow transfer of the PSC technology from the glass-based platform to various **flexible, plastic substrates**. Additionally, novel **interconnection schemes** will be investigated with the One-Step Interconnect (OSI) technology to allow for easy variation in sizes and shapes of PSC modules. Options to realize **semi-transparent** device designs will be explored, for use as see-through PV modules

## **ESPResso, an Ambitious EU Funded Collaboration to Make Perovskite Solar Cells a Market Reality**

“Every aspect of our lives – from our homes to our workplaces, hospitals, schools and farms - depends on the nonstop availability of energy,” stated Tom Aernouts, imec thin-film photovoltaics group leader and coordinator of this project.

“Perovskite cells demonstrate clear potential to support world’s energy demands cost-effectively. The ultimate aim of the partners of the ESPResSo project is to achieve this by bringing perovskite photovoltaics from the lab to the fab.”

More info:

[www.espresso-h2020.eu](http://www.espresso-h2020.eu)

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Efficient Structures and Processes for Reliable  
perovskite Solar modules



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