

## Pressemitteilung

Fraunhofer-Institut für Angewandte Polymerforschung IAP

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Chemie, Elektrotechnik, Energie, Werkstoffwissenschaften  
überregional



## EU project SUNREY: Sustainable and efficient perovskite solar cells with reduced lead content

**Making perovskite solar cells more sustainable, efficient and durable – these are the goals pursued by 13 European partners in the project SUNREY. The project aims to further push the development of highly-efficient solar cells based on non-critical raw materials and to strengthen the innovation potential of the European industry. SUNREY is funded by the European Union’s research and innovation program Horizon Europe within the framework of the Green Deal Initiative with 4.25 Million Euro. The three-year project started on November 1, 2022, and is coordinated by the Fraunhofer Institute for Applied Polymer Research IAP in Potsdam, Germany.**

Currently, silicon is the material of choice for the fabrication of solar cells. However, the technology has limitations, such as high-energy production. An alternative are solar cells based on perovskite technology. Their efficiency is very close to that of silicon solar cells. However, less CO<sub>2</sub> equivalents are emitted during their production. In addition, the temperatures required during production of perovskite solar cells are lower, which saves costs and energy. The low stability of the perovskite materials and short life times of the modules still prevent a broader commercialization. In addition, the currently best performing perovskite materials contain lead, which is harmful to health and environment. According to the RoHS directive of the European Union hazardous substances such as lead are to be avoided in electrical and electronic devices. For lead, the maximum permitted concentration in homogeneous materials is 0.1 percent by weight. Thus, further development in materials is needed in order to reduce or eliminate lead in perovskite solar cells while maintaining efficiency and stability.

More sustainable, efficient, inexpensive and durable

“Making perovskite solar cells more sustainable and efficient in order to have less impact on the environment is the central goal of the SUNREY project. To this end, we are developing materials with low lead content. In addition, we are pursuing further strategies to make perovskite solar cells more sustainable, efficient, inexpensive and durable“, says Dr. Armin Wedel, who coordinates the EU project and is head of the Functional Polymer Department at Fraunhofer IAP in the Potsdam Science Park, Germany. SUNREY stands for “Boosting SUSTAINability, Reliability and Efficiency of perovskite PV through novel materials and process engineering”.

Besides the development of novel perovskite materials with reduced lead content the objectives of the project are: more stable and more efficient materials, novel charge transport and electrode materials, cost efficient deposition techniques, barriers and device encapsulation as well as process optimization. Simulation of device and degradation mechanisms are a central instrument for reaching these goals. Life cycle, circularity and stability analysis as well as lifetime analysis under realistic lab conditions in an accredited laboratory are accompanying this development.

For the European industry

13 partners – research institutes, universities, and companies from all over Europe combine their competencies to overcome the drawbacks of perovskite photovoltaics. SUNREY will be carried out in close cooperation between science and industry, in order to strengthen the innovation of the European industry along the value chain. "Our developments will enable the companies of our consortium to improve their capabilities for the fabrication of solar cells, taking another step towards a CO<sub>2</sub>-neutral future", explains Wedel. "We are thinking of new applications of such solar modules in microelectronics for the Internet of Things (IoT) or grid independent power supply of building integrated photovoltaics."

#### About SUNREY

SUNREY is funded in the framework of the Horizon Europe Research and Innovation program of the European Union and is part of the European Green Deal Initiative under the Grant agreement number 101084422. The UK partners are funded by UKRI under the UK Government's Horizon Europe Guarantee (UKRI Reference Numbers 10052189 and 10058454).

The SUNREY consortium consists of 13 European partners including research organizations, universities and companies: Fraunhofer-Gesellschaft (Fraunhofer IAP), Università Degli Studi di Roma Tor Vergata, CYCLECO SAS, AIT Austrian Institute of Technology, Dyenamo AB, Great Cell Solar Italia Societa 'A Responsabiliata' Limitata, Materia Nova, Universidad de Córdoba, n-ink AB, and Technische Universität Graz. Three non-EU partners are associated to the project: University of Leicester, Teesside University, and Solaronix SA.

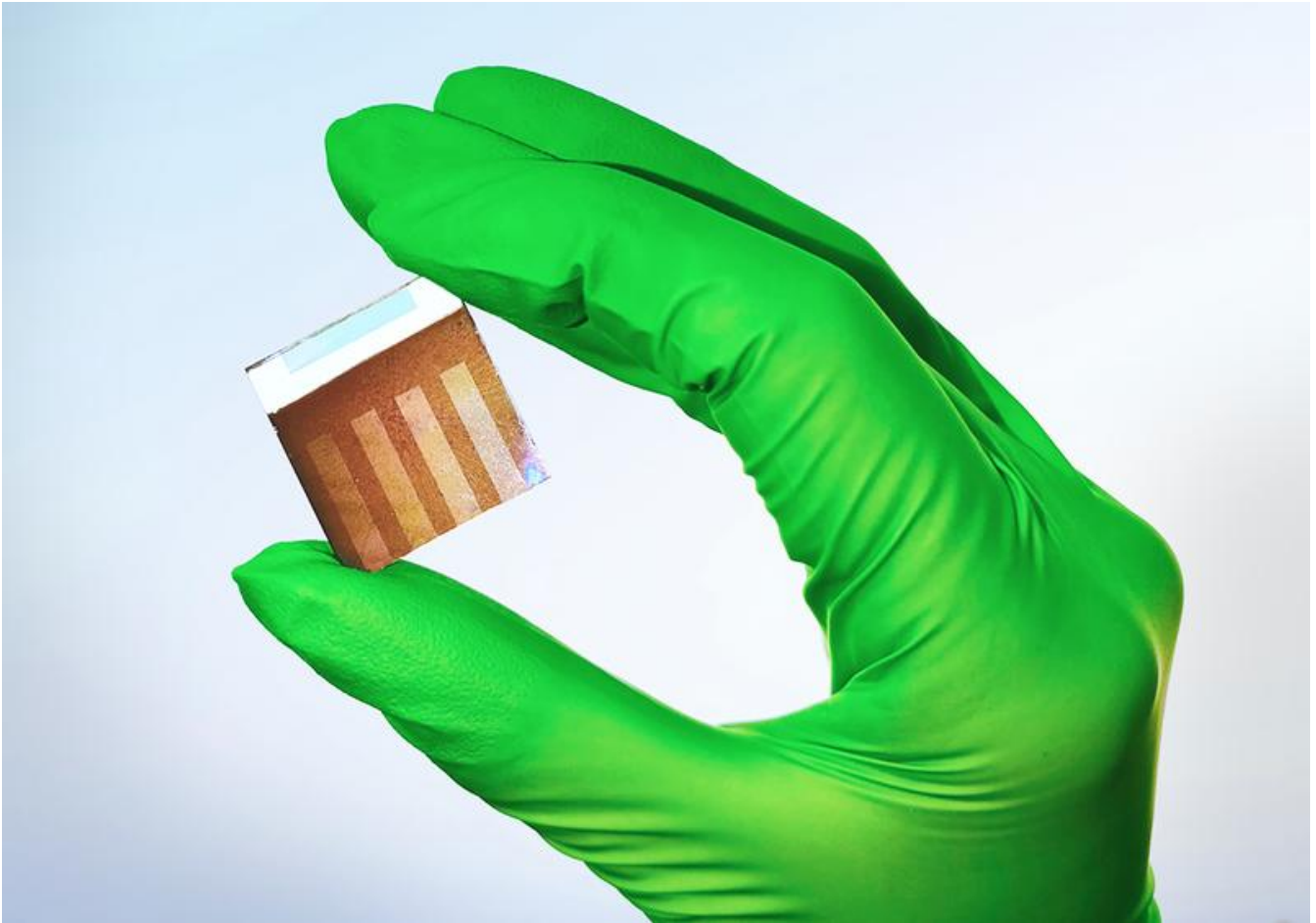
The project is coordinated by the Fraunhofer Institute of Applied Polymer Research IAP in Potsdam, Germany.

More information about the project can be found at [www.sunrey.eu](http://www.sunrey.eu) (available in March 2023).

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In the EU project SUNREY, perovskite solar cells are being made more sustainable, efficient and durable.  
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