



## Consortium



### Contact

Dr. Edgardo Saucedo  
 Deputy Head of the Solar Energy Materials & Systems Group  
 IREC – Catalonia Institute for Energy Research  
 c. Jardins de les Dones de Negre 1 2pl.  
 08930 Sant Adrià del Besòs (Barcelona), Spain  
 e-mail: esaucedo@irec.cat  
 Tel.: +34933562615



**STARCELL** proposes the substitution of critical raw materials in thin film photovoltaic technologies by the development and demonstration of a cost effective solution based on kesterite semiconductors ( $\text{Cu}_2\text{ZnSn}(\text{S},\text{Se})_4$ )

**Acronym:** STARCELL

**Full Title:** Advanced strategies for substitution of critical raw materials in photovoltaics

**Project N°:** 720907

**Consortium:** IREC (ES), CEA (FR), EMPA (CH), Uppsala University (SE), ICL (UK), HZB (DE), Marthin-Lutther University Halle (DE), IMRA (FR), MIDSUMMER (SE), WIREC (ES), AYESA (ES), AIST (JP), Duke University (US)

**Project website:** [www.starcell.eu](http://www.starcell.eu)



# Objectives and Targets

STARCELL aims to substitute two critical raw materials (In and Ga) used in conventional thin film photovoltaic (PV) technologies, via the **introduction of sustainable Kesterite** ( $Cu_2ZnSn(S,Se)_4$  - CZTS) semiconductors. Through the optimization of materials, processes and devices the project target to achieve a **Kesterite solar cell with 18% efficiency** (16% at mini-module level) at a cost  $\leq 0.30$  €/Wp at TRL5.



# Work Plan

STARCELL is structured in **7 complementary work packages**:

- WP1 – CRM free PV absorber materials optimization
- WP2 – Materials solutions for optimised solar cell structure
- WP3 – Modelling and simulation
- WP4 – Up-scaling, test and validation of the CRM-free technology
- WP5 – Recycling/reuse, material supply chain and LCA
- WP6 – Dissemination and exploitation
- WP7 – Coordination & management



# Innovations

Through an innovative approach, STARCELL will cover the complete value chain of the technology under development, from the supply chain of raw materials to the product recycling/reuse, by planning the development of Kesterite PV in a sustainable circular economy approach from the beginning.

