International cooperation for the development of cost-efficient kesterite/c-Si thin film next generation tandem solar cells

Fact Sheet

Project Information

INFINITE-CELL
Grant agreement ID: 777968

DOl
10.3030/777968

Funded under
EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

Total cost
€ 1 318 500,00

EU contribution
€ 1 318 500,00

Closed project

EC signature date
17 October 2017

FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATALUNYA
Spain

Start date
1 November 2017

End date
30 April 2023

Objective

Photovoltaic (PV) is recognized as one of the main renewable energy solutions for fulfilling the targets defined by the EU Energy Roadmap 2050 and the SET Plan. Most of the current commercial PV devices are formed by single junctions, and more
complex device concepts allowing a significant increase in device efficiency (well beyond the theoretical limit in the 30%-33% range) are still mostly limited to expensive III-V technologies. INFINITE-CELL proposes extending the very high efficiency tandem device concepts to emerging thin film PV technologies with high potential for reduction of costs and avoiding the use of critical raw materials. Within this context, the aim is to establish and consolidate an International and Intersectoral Cooperation between 6 EC/AC Academic Institutions (IREC, SINTEF AS, CNRS, UAM, IAP-ASM, HZB), 2 European Companies (SUNGA, MET), and 4 non EC/AC Academic Institutions (MASCIR, BSUIR, UM5, UWC), for the development of cost-efficient photovoltaic tandem devices based in the combination of wide band-gap kesterite absorbers (Cu2Zn(Si,Ge,Sn)(S,Se)4) as top cell, and low cost c-Si thin film as bottom cell. Thanks to the combination of the know-how generated in previous and successful FP7 projects (PVICOKEST (269167) and EUROSUNMED (608593)), INFINITE-CELL targets to develop stacked and monolithically integrated kesterite/c-Si thin film devices with efficiencies of 15% and 20% respectively, using only fully sustainable materials and processes. This will be possible through de definition of a very impacting Research Plan and a very ambitious Plan of Secondments, where 293 PMs will be exchanged among the partners. The seconded researchers will be immersed in an International and Intersectoral environment for the development and improvement of their networking, scientific, writing, effective communication, and time management skills, warranting the consolidation of a high level scientific community in Advanced Tandem Solar Cell.

**Fields of science**

- engineering and technology > materials engineering > crystals
- engineering and technology > environmental engineering > mining and mineral processing
- engineering and technology > materials engineering > coating and films
- natural sciences > physical sciences > electromagnetism and electronics > semiconductivity
- engineering and technology > environmental engineering > energy and fuels > renewable energy > solar energy > photovoltaic

**Keywords**

- kesterite
- c-Si thin film
- tandem devices
- cost-efficient solar cells

**Programme(s)**
H2020-EU.1.3. - EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

H2020-EU.1.3.3. - Stimulating innovation by means of cross-fertilisation of knowledge

Topic(s)

MSCA-RISE-2017 - Research and Innovation Staff Exchange

Call for proposal

H2020-MSCA-RISE-2017

See other projects for this call

Funding Scheme

MSCA-RISE - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)

Coordinator

FUNDACIO INSTITUT DE RECERCA DE L'ENERGIA DE CATALUNYA

Net EU contribution

€ 279 450,00

Address

C/ jardins de les dones de negre 1
08930 Sant adria de besos

Spain

Region

Este > Cataluña > Barcelona

Activity type

Research Organisations

Links

Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Total cost

€ 279 450,00
STIFTELSEN SINTEF
Norway

Net EU contribution
€ 0,00

Address
Strindveien 4
7034 Trondheim

Region
Norge > Trøndelag > Trøndelag

Activity type
Research Organisations

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Total cost
No data

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS
France

Net EU contribution
€ 158 940,00

Address
Rue michel ange 3
75794 Paris

Region
Ile-de-France > Ile-de-France > Paris

Activity type
Research Organisations

Links
Contact the organisation  Website  Participation in EU R&I programmes
UNIVERSIDAD AUTONOMA DE MADRID

Spain

Net EU contribution

€ 108 900,00

Address

Calle einstein 3 ciudad univ cantoblanco rectorado
28049 Madrid

Region

Comunidad de Madrid > Comunidad de Madrid > Madrid

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation  Website  Participation in EU R&I programmes

INSTITUTUL DE FIZICA APLICATA

Moldova

Net EU contribution

€ 261 180,00

Address

Academiei 5
MD2028 Chisinau

Activity type

Research Organisations

Links

Contact the organisation  Website  Participation in EU R&I programmes
**HORIZON collaboration network**

Total cost

€ 261 180,00

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**HELMHOLTZ-ZENTRUM BERLIN FUR MATERIALIEN UND ENERGIE GMBH**

Germany

Net EU contribution

€ 81 000,00

Address

Hahn meitner platz 1
14109 Berlin

Region

Berlin > Berlin > Berlin

Activity type

Research Organisations

Links

Contact the organisation
Website
Participation in EU R&I programmes

HORIZON collaboration network

Total cost

€ 81 000,00

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**SOCIETATEA CU RASPUNDERE LIMITATA SUNGA**

Moldova

Net EU contribution

€ 157 545,00

Address

Str bolgarscaia 87
6101 Ceadir-lunga

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

Contact the organisation
Participation in EU R&I programmes
**UAB MODERNIOS E-TECHNOLOGIJOS**

Lithuania

Net EU contribution

€ 166 365,00

Address

Vismaliuku g 34
10423 Vilnius

SME

Yes

Region

Lietuva > Sostinės regionas > Vilniaus apskritis

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

Contact the organisation
Website
Participation in EU R&I programmes
HORIZON collaboration network

Total cost

€ 166 365,00

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**UNIVERSITAT POLITECNICA DE CATALUNYA**

Spain

Net EU contribution

€ 49 500,00

Address

Calle jordi girona 31
08034 Barcelona

Region

Este > Cataluña > Barcelona
Partners (4)

**SINTEF AS**
Norway
Net EU contribution
€ 55 620,00
Address
Strindvegen 4
7034 Trondheim
Region
Norge > Trøndelag > Trøndelag
Activity type
Research Organisations
Links
Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network
Total cost
€ 55 620,00

**MOROCCAN FOUNDATION FOR ADVANCED SCIENCE INNOVATION AND RESEARCHFONDATION MASCIR**
Morocco

8 of 11
**PARTNER**

**BELARUSIAN STATE UNIVERSITY OF INFORMATICS AND RADIOELECTRONICS**

**Belarus**

**Address**

**P brovki str 6**
**220013 Minsk**

**Activity type**

**Higher or Secondary Education Establishments**

**Links**

- Contact the organisation
- Website
- Participation in EU R&I programmes
- HORIZON collaboration network

**Total cost**

**€ 71 730,00**

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**PARTNER**

**UNIVERSITE MOHAMMED V DE RABAT**

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Morocco

Net EU contribution
€ 0,00

Address
Avenue des nations unies agdal
10080 Rabat

SME  Yes

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation  Website
Participation in EU R&I programmes
HORIZON collaboration network

Total cost
€ 189 450,00

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PARTNER
UNIVERSITY OF THE WESTERN CAPE

South Africa

Net EU contribution
€ 0,00

Address
Robert sobukwe road
7535 Cape town

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation  Website
Participation in EU R&I programmes
HORIZON collaboration network

Total cost
€ 162 405,00

Last update: 29 December 2023