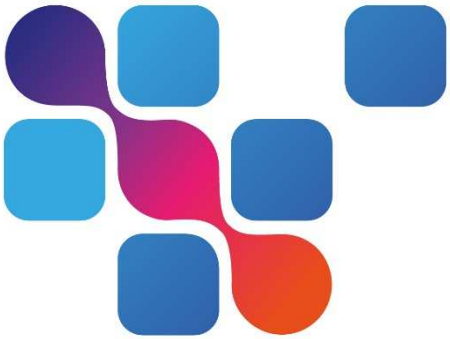

NAMEC

Nanotechnologies and Advanced Materials for Energy Cluster

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European Commission

WHAT IS NAMEC?

- **NAMEC** is an overarching **cluster** set up in 2016 by the European Commission, in order to bring together **EU funded R&I projects** focused on **advanced materials** and **nanotechnologies** for **renewable energy**, **energy storage** and **energy efficiency technologies**.

- **NAMEC** builds on the experience of the EU PV Cluster, which has run with success since 2010 to highlight the key enabling role of nanotechnologies and advanced materials for photovoltaics.




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NAMEC COORDINATION

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NAMEC OBJECTIVES

- To provide an up-to-date analysis of the **European R&I project portfolio** in several **thematic areas** (nanotechnologies and advanced materials for photovoltaics, solar thermal energy, wind energy, batteries, thermoelectrics, etc.).

- To organize **thematic workshops** gathering project coordinators, in order to disseminate the **key results** from the projects and identify common **R&I priorities**.

- To address **common challenges** across the different thematic areas and projects (e.g., materials engineering and upscaling, characterization, modelling, standardization, safety).

- To share **best practices** and transfer lessons between the different thematic areas.

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NAMEC WORKSHOP OUTPUTS

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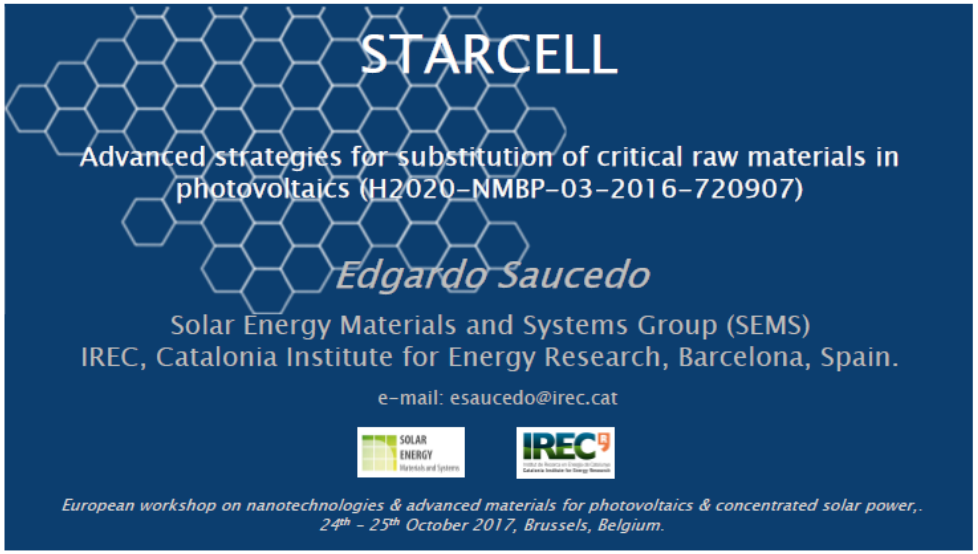
Project presentations



Project reviews (objectives, results, R&I priorities and recommendations to the EC)

14. STARCELL

STARCELL			
GENERAL INFORMATION			
Project acronym	STARCELL		
Project title	Advanced strategies for substitution of critical raw materials in photovoltaics		
Grant agreement number	720907		
Workprogramme	NMBP		
Starting date	01/01/2017		
End date	31/12/2019		
Budget (€)	6 218 203		
Grant (€)	4 832 185		
Coordinator	IREC		
Partners (research)	IREC, CEA, EMPA, Uppsala University, Imperial College London, HZB, Martin Luther University, AIST, Duke University		
Partners (industry)	IMRA Europe SAS, Midsummer AB, WEEE International Recycling SL, ACT Sistemas SL		
Coordinator email address	esaucedo@irec.cat		
Project website	www.starcell.eu		
PROJECT CONCEPT			
Thematic area	Thin films		
TRL range	TRL3 - TRL5		
Main challenge	Substitution of In and Ga in current CIGS PV technology		
Proposed material solutions	Kesterite: $Cu_2ZnSn(S,Se)_4$ (CZTS)		
Technology risk	MEDIUM – This technology is very similar to already developed CIGS, sharing very similar device structure and processes.		
Main targeted market	Thin film PV modules, BIPV, BAPV, flexible PV, solar roofs.		
Market risk	MEDIUM/HIGH – It is a new technology that will require further improvement in terms of conversion efficiency, and become an established thin film technology.		
Expected benefits for advanced material manufacturers in Europe	Technology very similar to CIGS, then industries producing CIGS can easily modify/combine the production of CZTS. Free of critical raw materials: advantages in supply chain. Cu, Sn and Zn recycling very well-known from the microelectronic industry.		
Expected benefits for solar industry in Europe	Establishment of a European thin film PV industry with no constrains in terms of material supply.		
PROJECT RESULTS OBTAINED SO FAR			
Main project result #1	4 partners with devices demonstrating conversion efficiencies of ~12%		
Main project result #2	Development of advanced processes for alkaline doping		
Main project result #3	Development of strategies for graded band-gap concepts using cationic and anionic substitution		
Number of publications	5		
Number of patents	0		
PROJECT PROGRESS VERSUS KEY PERFORMANCE INDICATORS (KPIs)			
KPI	**Project target**	**Project status**	**Comments**
Cell power conversion efficiency,	18%	12.3%	At the beginning the groups involved in devices preparation reported efficiencies below 11%. More than 1% win in 6 months for the 4 groups.
Voltage deficit	400 mV	510 mV	Several strategies for surface and bulk passivation under implementation
Recovery of Se	Almost 100%	75%	Already achieved
RECOMMENDATIONS FOR FUTURE R&I ORIENTATIONS OR POLICY, TO TAKE THE PROJECT RESULTS FROM LAB TO MARKET			
Recommendation #1	Specific calls for thin film PV technologies including low CO_2 foot print and CRM free technologies		
Recommendation #2	Link between calls with progressive targets (TRL 3.5 followed by TRL4-6...)		
Recommendation #3	Low TRL calls addressing revenant issue for next generation PV (including MSCA instruments filling a top down approach)		

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EVENTS CO-ORGANIZED BY NAMEC (2017)

EMIRI Tech Talk & NAMEC workshop on nanotechnologies and advanced materials for batteries
February 23-24, 2017
Brussels, Belgium

NAMEC workshop: Nanotechnology and advanced materials for the Energy Union – Going circular
June 23, 2017
Valletta, Malta

EMIRI Tech Talk & NAMEC workshop on nanotechnologies and advanced materials for photovoltaics and concentrated solar power
October 24-25, 2017
Brussels, Belgium

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EVENTS CO-ORGANIZED BY NAMEC (2018)

EMIRI Tech Talk & NAMEC workshop on advanced materials and nanotechnologies for wind energy
June 29, 2018
Brussels, Belgium

Workshop on EU projects on nanotechnologies and advanced materials for organic and perovskite photovoltaics
July 3, 2018
Thessaloniki, Greece

NAMEC workshop on advanced materials and nanotechnologies for chemical energy storage
October 29, 2017
Vienna, Austria

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WORKSHOP AGENDA

- PNO Consultants – Nader AKIL – **REE4EU** project *(Integrated high temperature electrolysis and ion liquid extraction for a strong and independent European rare earth elements supply chain)* (20 min)
- THEVA Dünnschichttechnik GmbH – Markus BAUER – **ECOSWING** project (*Energy cost optimization using superconducting wind generators*) (20 min)
- TWI – Marta ALVAREZ – **EIROS** project (*Erosion and Ice Resistant Composite for Severe operating conditions*) (20 min)
- SINTEF – Christian SIMON – **LORCENIS** project (*Long Lasting Reinforced Concrete for Energy Infrastructure under Severe Operating Conditions*) (20 min)
- SINTEF - Jens Kjær JØRGENSEN – **DACOMAT** project (*Damage controlled composite materials*) (20 min)
- UNIVERSITAT DE BARCELONA – Javier Sanchez – **HYDROBOND** project (*New cost effective superhydrophobic coatings with enhanced bond strength and wear resistance for applications in large wind turbine blades*) (20 min)

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