



SmArt Designed Full Printed Flexible RObust Efficient Organic HaLide PerOvskite Solar Cells

LEITAT Technological Center

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Project objectives



1. Development of high efficiency (22%) sustainable PSC on flexible substrates at 1-10 cm² scale through:

- Advanced perovskite absorber development



- Advanced Electron and Hole Transport Materials development



- Light management strategies



- Development of an innovative design by modelling of PSC



- Antisoiling coatings:



Project objectives



2. Development of long lifetime flexible PSCs and module through:

- Long lifetime flexible PSC  
- Advanced materials transporting layers development 
- Novel low-cost encapsulation approach for PSC  
- Innovative integral testing for flexible PSC  
  

Project objectives



3. Development of sustainable and scalable printing processes for flexible PSC and modules using:

- High efficient flexible PS module



- Innovative low temperature process



- Innovative solvent engineering development



- Design and develop a complete recycling process for PSCs suitable for industrialization

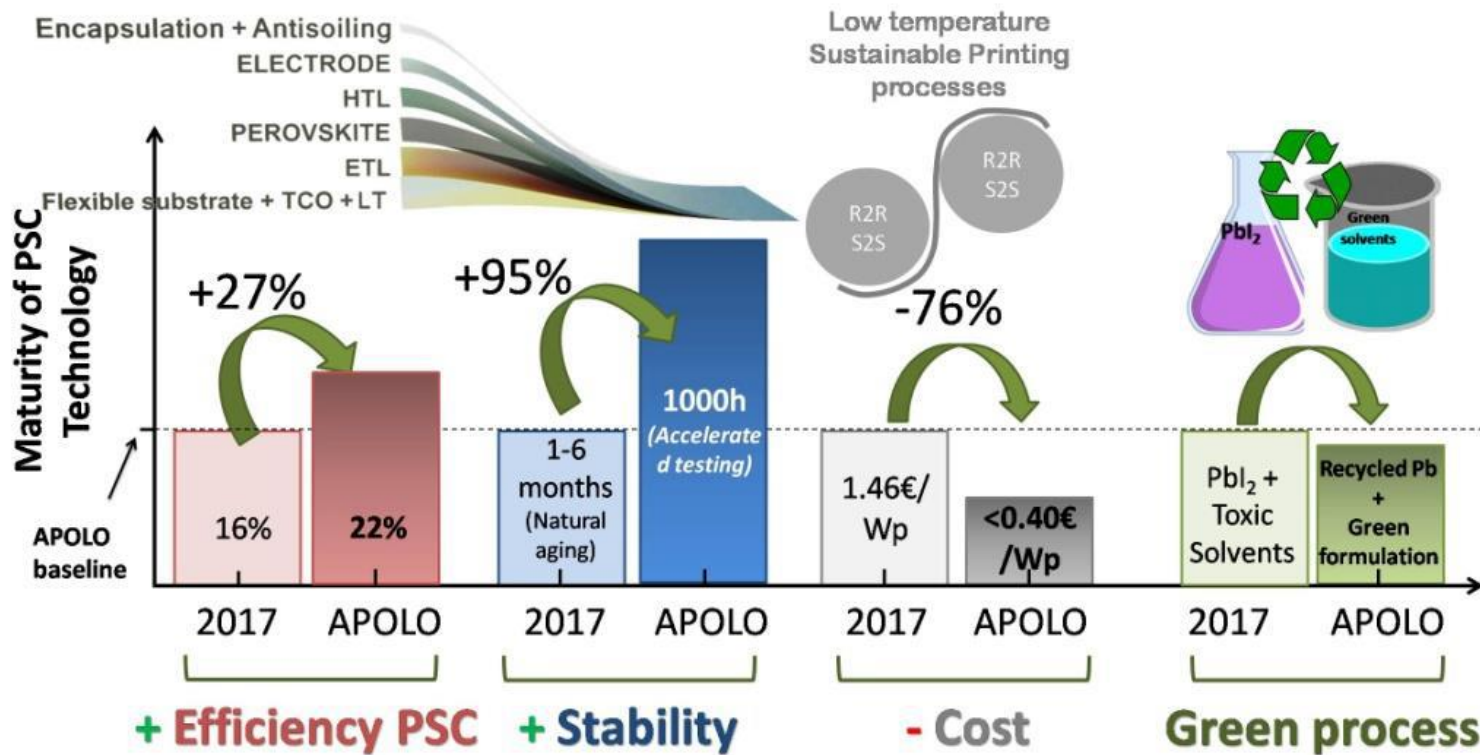
- Development of an innovative design by modelling of modules



- Development of a PSC integrated prototype Building Integrated PV applications



Project objectives

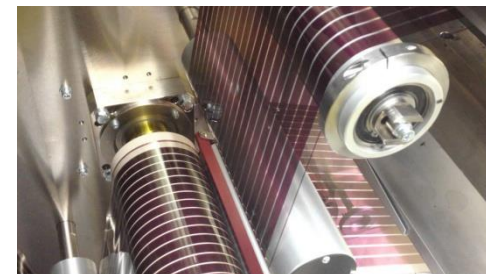


Open challenges

- High efficiency and high stability



- Scale up flexible devices with low temperature printing techniques



- Green and low cost production



- Dedicated recycling process



Open challenges



How ensure the acceptance of APOLO ...

- **Economical assessment for low cost PSC:** In order to guarantee PSC's market availability, APOLO will consider the cost of the materials and processes looking to reduce the cost in more than 50% (**0.34€/Wp**).



- **Standardization and common regulations assessment**



- **Environmental assessment: Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) of the final solutions**



- **Social acceptance assessment.** Assessment of Social Risk Perception in order to identify main facilitators, barriers and opportunities for the technology from the social side.



Future applications



BIPV



Solar plants



Smart Cities



Beyond APOLO



Wearable



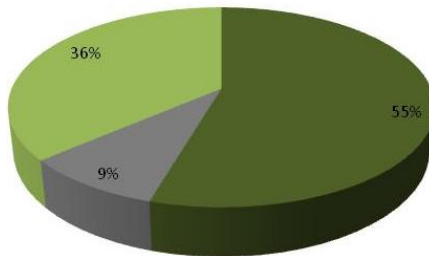
Transport



Consortium



■ RTO ■ LE ■ SME



No	Participant Organization	Country	Nature
1	LEITAT	SPAIN	RTO
2	UNITOV	ITALY	RTO
3	CEA	FRANCE	RTO
4	FRAUNHOFER ISE	GERMANY	RTO
5	UNINOVA	PORTUGAL	RTO
6	EPFL	SWITZERLAND	RTO
7	ARKEMA	FRANCE	LE
8	ACCUREC	GERMANY	SME
9	GSi	ITALY	SME
10	FLEXBRICK	SPAIN	SME
11	RELATIONAL	GREECE	SME