



Workshop on HIPERION hybrid CPV/PV modules pilot installations at UPM and Fraunhofer ISE

Maximizing energy yield in space-constrained PV applications

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Welcome to the Institute of Solar Energy



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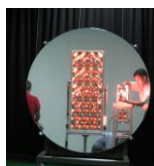


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Innovation in photovoltaics since 1979



POLITÉCNICA



SILSTORE

Workshop on Hiperion hybrid CPV/PV modules



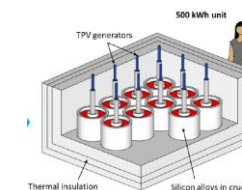
Becquerel 1992



Becquerel 2013



Becquerel 2015



Where we are



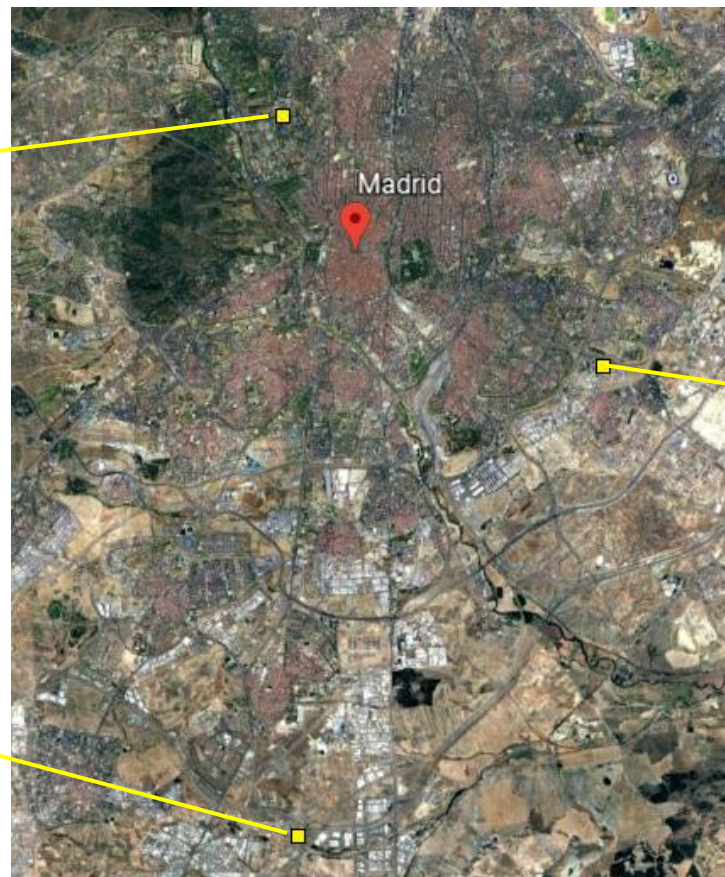
Three campuses in Madrid



Headquarters
University City



TechnoGetafe
Crystalline silicon technology



PV Systems group
UPM South Campus



- 3 research lines with a vertically-integrated approach: “from the material to the system”

- Conventional PV technology

- Crystalline silicon technology
- PV modules and plants
- Distributed generation and smart grids
- Off-grid and rural PV
- Energy storage



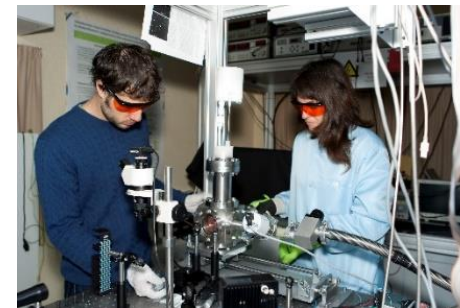
- High efficiency PV

- III-V multijunction solar cells
- CPV modules, instruments and systems
- Novel applications

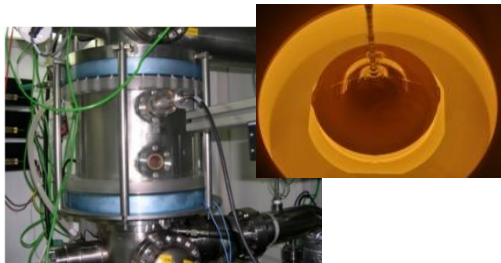


- Novel materials and concepts

- Intermediate band solar cells
- Nanostructures for photovoltaics
- Thermophotovoltaic cells and applications
- Space solar cells

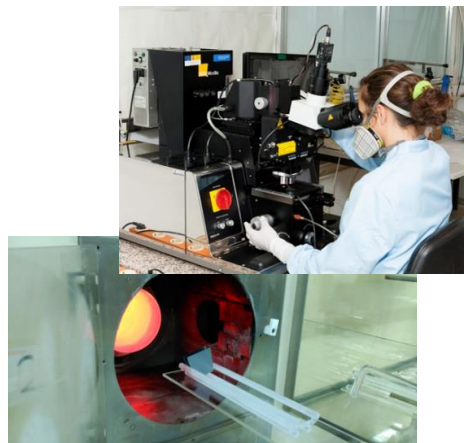


How we do it: our infrastructure



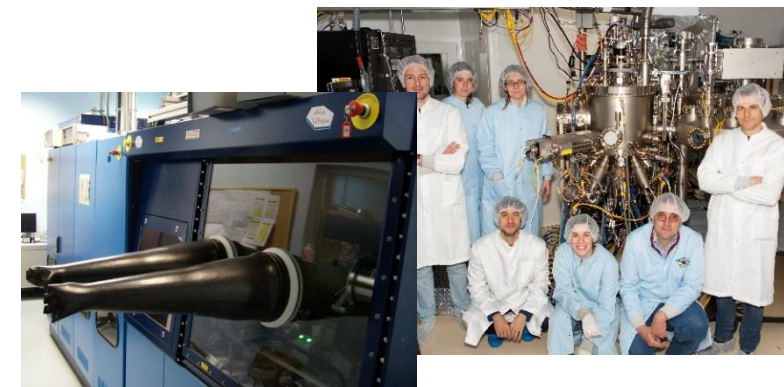
Silicon production

Characterization of PV
materials and devices



Solar cell manufacturing

MBE y MOVPE epitaxial reactors



Concentrator PV
test benches



Quality of PV systems



Building integrated PV

Workshop on Hiperion hybrid CPV/PV modules



<https://www.ies.upm.es/Master>

- ✓ **Master of Science in Photovoltaic Solar Energy**
- ✓ Students coming from 25+ different countries

Máster en Energía
Solar Fotovoltaica

12th Edition • Year 2019-2020



CAMPUS
DE EXCELENCIA
INTERNACIONAL

"Ingeniamos el futuro"



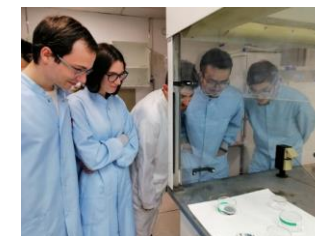
PhD

- ✓ More than 140 PhD degrees in PV awarded since 1979



- And ...

- ✓ Other Masters & PhD programs, summer school, courses for industry, ...



Irradiating PV all over the globe



PV-tech Dec 2018



Bifacial | Bifacial technology is seen by many as the shape of things to come for the solar industry.

2,221 views | Jan 30, 2019, 07:15am

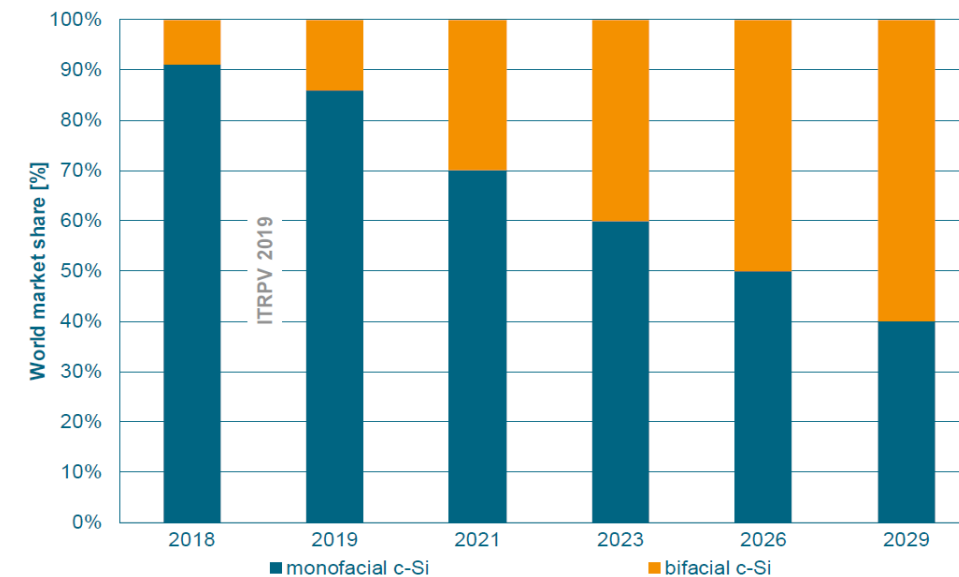
Is Bifacial Technology About To Enter The Mainstream Of Solar Power Generation?



Joern Hackbarth Forbes Councils Member

Bifacial cell in world market

ITRPV 2019



Historical footnote: Bifacial solar cells



Welcome to the Hiperion workshop



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hiperion
MAX SOLAR POWER



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Fraunhofer
ISE

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installations at UPM and Fraunhofer ISE

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22nd of July 2021, 12:00-15:35 (CEST), Online

HIPERION stands for *Hybrid Photovoltaics for Efficiency Record using Integrated Optical Technology*. The project goal is to bring to industrial scale high efficiency hybrid solar modules.



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csem



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Time Presentations and Speakers

1st Part:

12:00 Welcome, presentation of IES-UPM

12:10 Static tracking-integrated hybrid micro-concentrator module, a disruptive PV technology

12:25 Hiperion, an overview

12:30 Virtual visits to hybrid CPV/PV modules pilot installations at IES-UPM and Fraunhofer ISE

13:00 Q&A

13:15 Applications and deployment of micro-CPV

13:30 Manufacturing of hybrid CPV/PV modules

13:45 Q&A

14:00 Break (Breakfast, Lunch, Dinner, Coffee,...)

2nd Part:

14:30 Area constrained applications, where efficiency really matters

14:45 High efficiency photovoltaics, principles and technologies

15:05 Micro optics, principles and architectures

15:20 Micro-CPV, a review of key technologies



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Instruments and System Integration Group





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