



ICFO^R
www.icfo.eu

Clean Planet Program

Frontier research for a sustainable future

 Generalitat
de Catalunya

Fundació Privada
CELLEX

 UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

Fundació Privada
MIR-PUIG

FUNDACIÓ
JOAN RIBAS ARAQUISTAIN

Un Bon Amic Sempre Ajuda



ACER^R
Associació
Catalana
d'Entitats
de Recerca

 **CERCA**
Institució
Catalana
d'Entitats
de Recerca



Barcelona Institute of
Science and Technology

ICFO^R at a glance

Frontier Research – Graduate education – Technology Transfer

- Founded in 2002; +450 ICFOrians, +60 nationalities

- 80 research labs, 6 core facilities, +18.000 m²

- 26 research groups in 3 Focus programs:



- 3,860 publications and 186,990 citations to date
- Strong Knowledge & Technology Transfer (KTT) capacities
 - +100 patent families; 11 spin-offs; +50 industrial projects



ICFO^R Clean Planet Program

Develop disruptive, deep-tech innovations in renewable and sustainable technologies



cleanplanet.icfo.eu

- Nurture a **multidisciplinary** environment
- Facilitate **exploitation-focused** approaches
- Team-up with **external partners** and industries
- **Train** young researchers within the scope
- Join larger national and **international efforts**

... and the team leaders behind them



Prof. Dr. Georgia
Papadakis



Prof. Dr. Gerasimos
Konstantatos



Prof. Dr. Jordi
Martorell



Prof. Dr. Pelayo
Garcia de Arquer

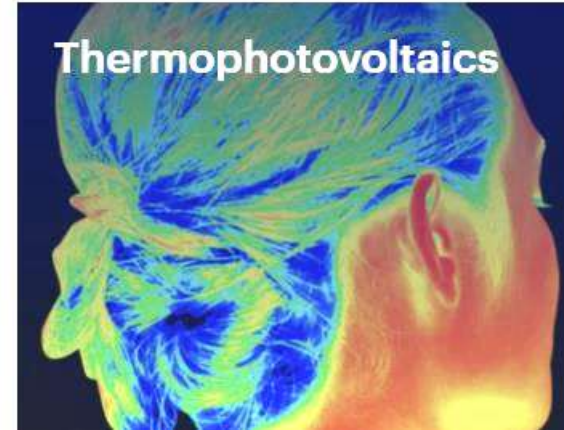


Prof. Dr. Niek van
Hulst



Prof. Dr. Nicoletta
Liguori

Game-changing technologies...

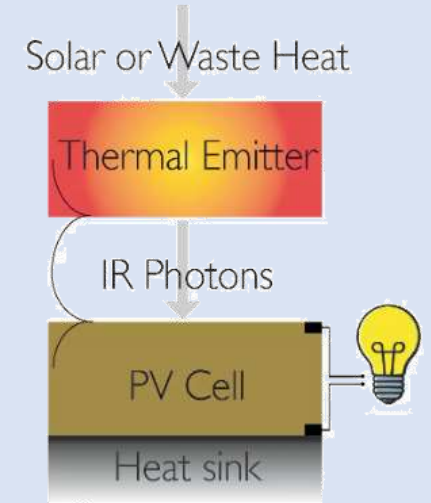


Thermal Photonics



Prof. Dr. Georgia Papadakis

- 10+ years experience in nanoscience and clean energy
- 30+ scientific articles; 4 patents
- Topics: thermo-photovoltaics, tailored thermal emission, radiative heat transfer
- Landmark: leading researcher in near-field heat transfer

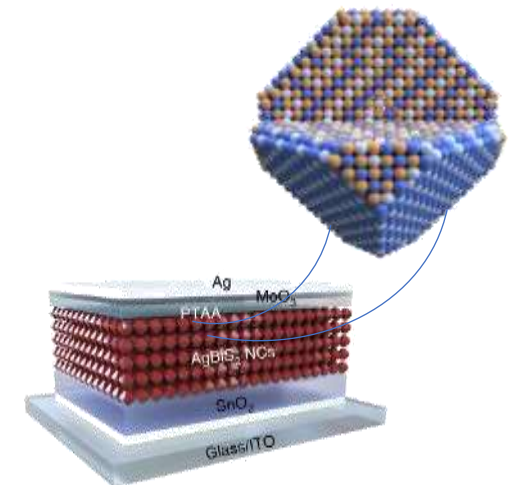


Functional Optoelectronic Nanomaterials

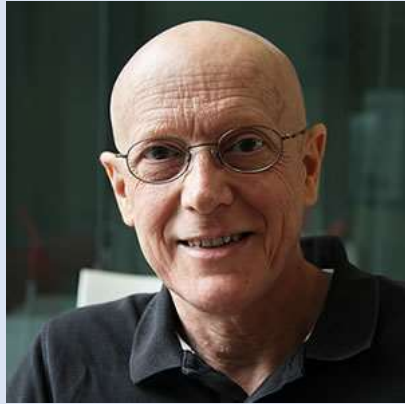


Prof. Dr. Gerasimos Konstantatos

- 15+ years experience in photonics and photovoltaic technologies
- 105+ scientific articles; 25 patents
- Topics: Quantum dot photovoltaics, Lead-free nanocrystal photovoltaics
- Landmark: Co-founder of ICFO's spin-off company Qurv (broad range image sensors)

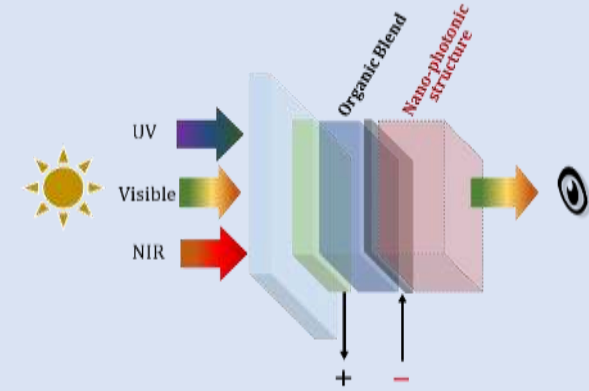


Organic Nanostructured Photovoltaics



Prof. Dr. Jordi Martorell

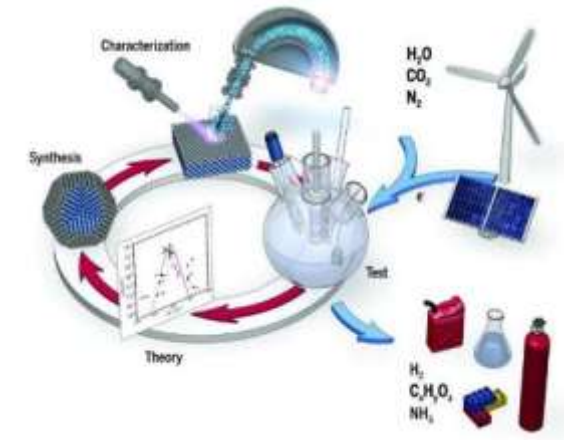
- 30+ years experience in photonics and photovoltaic technologies
- 85+ scientific articles; 4 patents
- Expertise: Transparent photovoltaics, H₂ storage, Photoelectrochemical cells
- Landmark: Co-founder of ICFO's spin-off company Vitsolc (transparent solar cells)



CO₂ Mitigation Accelerated by Photons



- 15+ years experience in nanoscience and clean energy
- 90+ scientific articles; 6 patents
- Expertise: CO₂ capture and electrolysis, Green H₂ and Green ammonia
- Landmark: Member of finalist team CERT in renown Carbon Xprize



Prof. Dr. Pelayo García de Arquer

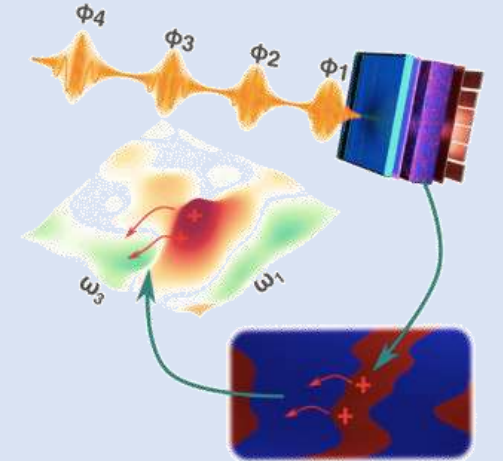


Molecular Nano-photonics



Prof. Dr. Niek van Hulst

- 35+ years experience in photonics and photovoltaic technologies
- 135+ scientific articles; 3 patents
- Topics: Artificial photosynthesis, Dynamics of photoactive systems
- Landmark: internationally recognized for contributions in optical nano-antennas.

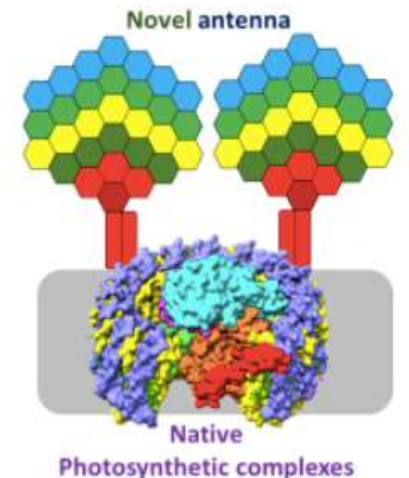


Photon Harvesting in Plants and Biomolecules



Prof. Dr. Nicoletta Liguori

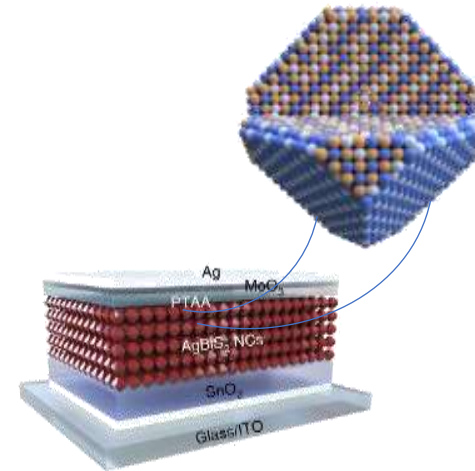
- 10+ years experience in nanoscience and clean energy
- 16+ scientific articles
- Topics: Light harvesting in bio-systems, Environment and light effects
- Landmark: establishing a mechanism for light regulation via protein conformational changes



Thin film photovoltaics

- Transparent solar cells for agrivoltaic installations
- Non-toxic lead-free quantum dot solar cells

synatra

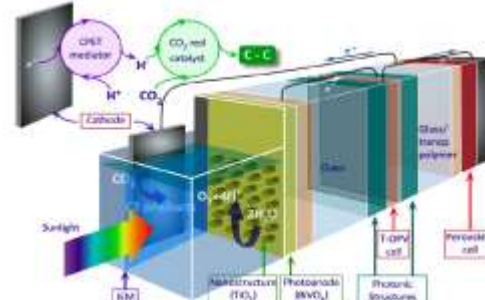


Energy storage

- Liquid Organic Hydrogen Carrier (LOHCs) based on reduced graphene oxide
- Photo-electrochemical solar cells for CO₂ valorization



lesgo-project.eu



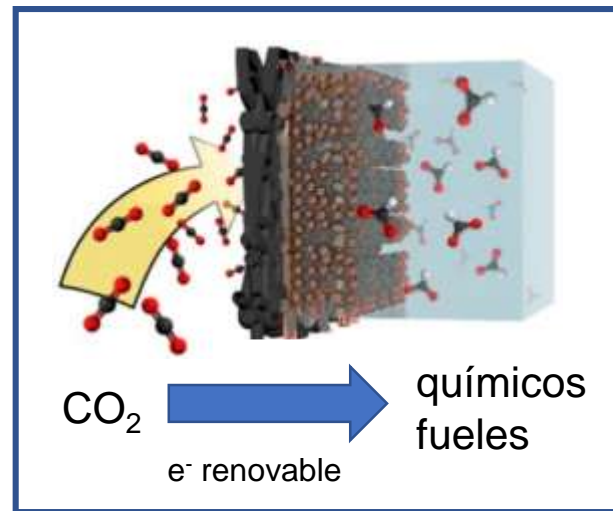
sorec2.eu



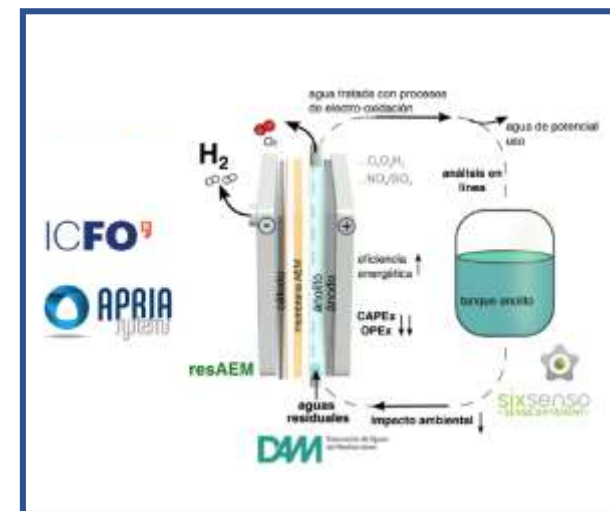
Solar fuels and chemicals

- Capture and electrochemical conversion of CO₂
- Hydrogen from wastewater electrolysis

NASCENT



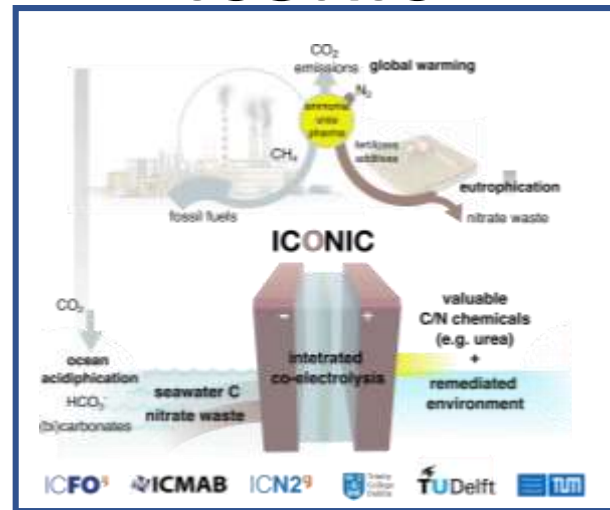
RES2H2



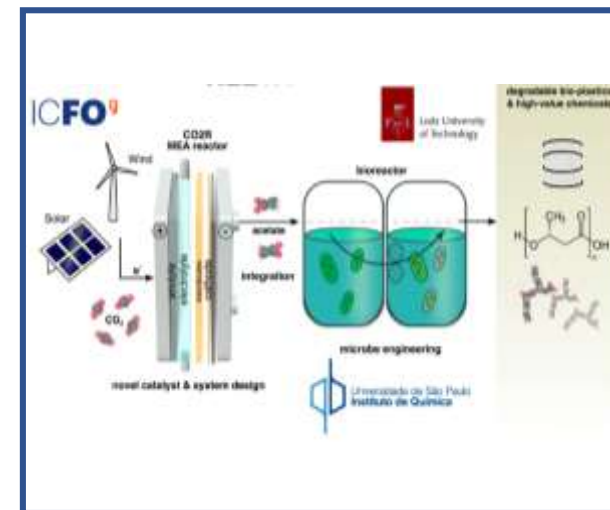
Solar fuels and chemicals

- Urea electrosynthesis from C/N residues
- CO₂ conversion into bioplastics

ICONIC



HELVA



Clean Planet milestones to date

Competitive and industrial funding secured

- HorizonEU/H2020 projects, accounting for >15 M€
- >4 running European Research Council (ERC) grants
- Philanthropic & institutional support to launch and secure the program



- An industrial PhD program with technology-based companies
- Industrial research projects with global corporations



- 3 spin-off companies



Innovation through photonics



**PhotonHub
Europe®**

PHOTONICS INNOVATION HUB
FOR EUROPE



Orienteering



Tailored advice to guide you on your best next step towards successful implementation of photonics innovation.

Support Activities



Training &
Reskilling



Innovation
Support
TRL 3-8



Business
Coaching



Investment
Coaching

TRL 3-4: PROTOTYPE LEVEL

Total innovation project budget	Subsidised for SME	Cash contribution of SME
€ 50.000	▷ € 45.000	⊕ € 5.000
€ 70.000	▷ € 60.000	⊕ € 10.000
€ 90.000	▷ € 75.000	⊕ € 15.000
€ 110.000	▷ € 90.000	⊕ € 20.000
€ 125.000	▷ € 100.000*	⊕ € 25.000

For Large Scale Companies:

50% subsidised (max. total budget: €200.000 of which €100.000 subsidised)

TRL 5-6: UPSCALING LEVEL

- 50% subsidised for early adopters & first user SMEs (only for EU-based!)
- Maximum budget of €500.000 of which €250.000 subsidised



Innovation through photonics



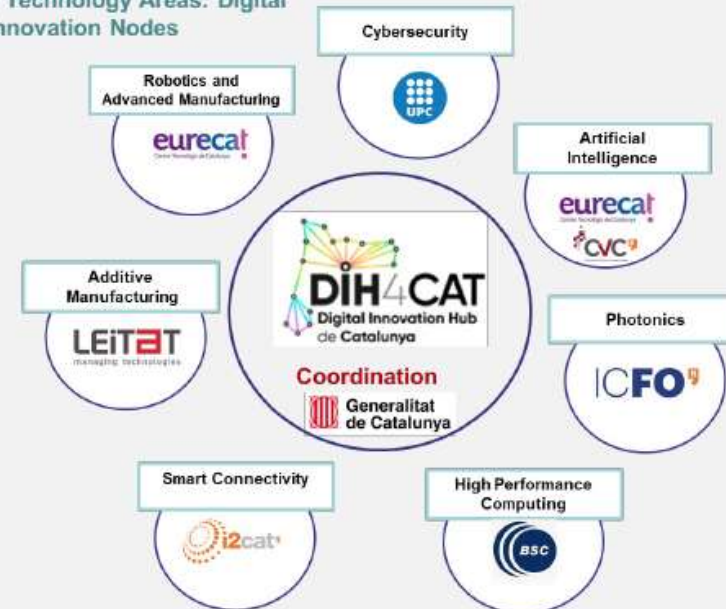
• TECHNOLOGICAL SERVICES

- *Technology Consultancy*
- *Testing and experimentation / solutions*
- *Transversal and technological training*

• TRANSVERSAL SERVICES

- *Preparatory services*
- *Dissemination and awareness*
- *Diagnosis, strategic thinking and definition of*
- *Access to financing*
- *Partner search and innovation ecosystem*

7 Technology Areas: Digital Innovation Nodes



Clean Planet Program

Research for a sustainable future

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Thank you!



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