

Nanophotonics4energy

Nanophotonics for Energy Efficiency



Project reference: 248855

Instrument: NoE

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Web site:

<http://www.n4e.eu/>
<http://www.nanophotonics4energy.eu/>

Timeline:

Start Date: 01/01/2010
End Date: 31/12/2013

Budget:

Overall Cost: 3 345 607 EUR
Funding: 2 900 000 EUR

Project Partners:

- Institut de Ciències Fotòniques, Fundació Privada, ES
- Technische Universitaet Dresden, DE
- University of Southampton, UK
- CEA-LETI, Commissariat à l'Energie Atomique, FR
- Laboratorio Europeo di Spettroscopia Non Lineari, IT
- Agencia Estatal Consejo Superior De Investigaciones Científicas, ES
- Bilkent University, TR
- Kungliga Tekniska Högskolan, SE
- Universitat Politècnica De Catalunya, ES

Vision & Aim

The focus of the network of excellence is the development of economic and energy efficient materials and devices such as light sources and solar cells: from converting light collected on building surfaces into electricity to the design of organic molecules that simulate photosynthesis in plants.



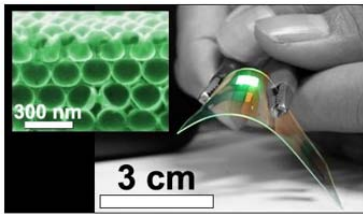
Images courtesy of TFM Energía Solar Fotovoltaica, S.A

Need for more efficient ways to produce and save energy

Switching to advanced lighting technologies, such as LEDs and OLEDs, offers great savings potential in terms of electricity consumption, while the uptake of solar cells would reduce the demand for oil and natural gases and in turn reduce CO2 emissions. However to meet current targets certain challenges must be met. Solar cell efficiency should be improved by at least 30%, OLED efficiency and lifetime must be enhanced if they are to be used for general lighting purposes.

*Switching to the best alternative existing technologies would save 30% of the energy needed for illumination...but would not reverse the trend towards higher energy needs.
(Photonics21 SRA 2010)*

The network of excellence aims to improve the efficiency of photonic materials for next-generation of these technologies.

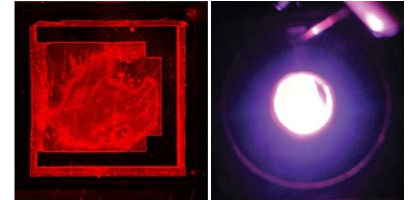


Nanophotonics

The key tool used to accomplish the objectives is nanophotonics, which combines nanotechnology (design of materials from components of few nanometres) and photonics (the science that studies the behaviour and applications of light).

New economic and efficient materials

The main challenge resides in understanding how light interacts with the smallest parts of the material to learn how to design more economic and efficient materials and new devices, from its tiniest components.



Courtesy of Bilkent University-
H.V. Demir Group

Who we are

The consortium consolidates know-how and resources of 9 research institutions, leaders in nanophotonics, in 6 European countries and integrates more than 130 scientists, engineers, technicians and managers in nanophotonics. Market and industrial relevance is also ensured through the involvement of a group of industrial advisors: T-Solar Global S.A., Merck Chemicals Ltd., Heliatek GmbH, Philips Lighting, Eni S.p.A.

Nanophotonics4Energy Goals

- ❖ To create a network of centres of research excellence and to integrate the skills and resources of these centre to focus on green nanophotonics
- ❖ To establish joint research project: foster collaborations among the leading groups in nanophotonics for energy efficiency, interchanging knowledge and best practices, and paving the way towards the establishment of common research agendas
- ❖ Transferring knowledge: education and training actions specially geared towards young researchers and technicians and communicating with the broader scientific community, industry, and the general public

